

UNIVERSITY OF LJUBLJANA
FACULTY OF ECONOMICS

URBAN SUŠNIK

**ECONOMIC GROWTH AND INCOME DISTRIBUTION IN MODERN
MONETARY ECONOMIES: THE IMPORTANCE OF EXPECTATIONS
AND THE ROLE OF INSTITUTIONS**

DOCTORAL DISSERTATION

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The undersigned **Urban Sušnik** a student at the University of Ljubljana, Faculty of Economics, (hereafter: FELU), declare that I am the author of the doctoral dissertation entitled **Economic growth and income distribution in modern monetary economies: the importance of expectations and the role of institutions**, written under supervision of **dr. Andrej Sušjan**.

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ACKNOWLEDGEMENT



Doctoral study has been in part financed by the European Union, namely from the European Social Fund, and in part by the Republic of Slovenia, namely from the Ministry for Education, Science and Sport, in the framework of the Operational Programme for Human Resources Development for the period 2007–2013, 1st development priority axis: “Promoting entrepreneurship and adaptability”, Priority 1.3: “Scholarship schemes”.

First and foremost I would like to express my sincere gratitude to my PhD adviser, dr. Andrej Sušjan for his guidance, valuable comments and support throughout the course of writing this doctoral dissertation. I would also like to thank dr. Marko Pahor, who advised me at a very early stage to undertake a more deductive approach in my thesis. Finally I would like to thank my friends and family for all their support during my doctoral studies.

ECONOMIC GROWTH AND INCOME DISTRIBUTION IN MODERN MONETARY ECONOMIES: THE IMPORTANCE OF EXPECTATIONS AND THE ROLE OF INSTITUTIONS

SUMMARY

The purpose of this dissertation is to study the social conditions underlying the production and distribution of commodities in a capitalist economy. Abstract theoretical systems represent a prerequisite for the analysis of growth and distribution of income, they help us to interpret social reality, for as was already noted by Alfred Marshall (1925), 'the facts themselves are silent'. That being said, we need to be aware that reductionism is a constant companion of the deductive approach. Every abstract model is built on certain assumptions which are essentially arbitrary and although they are somewhat dependent on the current state of things in the discipline, ultimately the assumptions are picked by the author of the model. While economics has often been criticised for employing supposedly unrealistic assumptions, it has to also be admitted, that as long as we use formal logical systems, this will always be the case to a certain degree. In fact this is true for any interaction between ideas and the real world, it just tends to be more pronounced in the field of economics, where economic analysis can change its own subject matter. Additionally, the core assumptions of any inquiry already determine, to a large extent, the possible range of results (Žižek, p. 21, 2005; Sušnik, 2011, p. 4). This is why the assumptions of the models in the thesis are carefully explained, because the only way to limit the problem of reductionism is to be aware of it.

Our analysis is focused on the connection between distribution and growth in monetary economies, including the role of expectations on prices, profits and the system of production. The models in the thesis are open, following the approach of Piero Sraffa they have at least one degree of freedom which resides outside the theoretical core, both analytically and in praxis. These exogenous factors represent the influence of institutions on the economic system. While this might not be explicitly stated, but the very core of our analysis is open to institutional influence through changes in the various parameters in the theoretical systems. Not only are the theoretical systems in the thesis responsive to exogenous institutional changes, but they allow us to see the consequences that these changes have on growth, distribution and other variables. Finally, this allows us to locate the institutional factors which aggravate issues of instability that plague the system of production, precluding the existence of a more stable and humane economic system. The formal analysis carried out in the thesis is therefore institutional in its very nature, from the very first step, and it is a useful tool for analysing different institutional constellations.

In the second chapter we carry out an analysis of the effects that income distribution has on the national income with the help of a 'stock-flow' macroeconomic model. The analysis is based on the idea of using the notion of the surplus within a modern stock-flow model. More to the point, the analysis is based around the connection between income shares accruing to certain social groups and how the changes in income shares influence the level (and fluctuations) of national

income. We find that the higher the share of capitalists, the lower is the equilibrium level of output. The greater is the consumption of capitalist households, given their income share, the higher is the national income. Our analysis also shows the inverse relationship between the profit rate of enterprise and the the national income, the higher is the profit rate, the lower is the national income. Additionally we can use the model to better understand the phenomena of financialization and financial deregulation, which have taken place in the second half of the 20th century. A higher interest rate, while obviously producing very clear negative short-term short term effects for industrial capitalists, can, in the long run, by increasing unemployment, reduce the bargaining power of labour and thus increase the surplus for both groups of capitalists.

The fourth chapter is aimed towards a formal analysis of a dynamic classical economic system with a propensity to hoard private wealth in money form and it represents the most extensive part of the thesis. The aim of the chapter is to establish a theoretical system and then use it to determine the price level and the consequent distribution of commodities in the economy. An important finding is that the price level in the economic system is not a monetary phenomenon, instead it is determined by labour productivity, loan creation and the distribution of income. An important innovation in the theoretical system is also the role of expectations on the accumulation of capital goods and a clear distinction between capital formation and the accumulation of titles of ownership. This distinction might not be relevant for the individual's perception of wealth, but it is an important distinction to make in an inquiry into the wealth of nations.

The fifth chapter uses an extended model from the fourth chapter to analyse, separately, the issues of long-term movements in the profit rate (and the surplus) and how the length of the workday influences profitability. We are able to show the institutional determination of the distributional variables in the model. This feature of the economic system had already been pointed out by Sraffa (1963), when mentioning the influence of the interest rate on the profit rate. I manage to show that the institutional determination is not limited strictly to monetary and fiscal policy, but can be extended by adding the influence of mass popular culture, religion, the capacity for institutional violence etc. Interestingly enough the analysis does not tell us what the actual empirical future movements of the profit rate will be, but it does show the causal channels, which will be used, should the profit rate start to decline and we see, that they will not be limited to the usual economic variables. The second part of the chapter is devoted to a separate model built on the same foundations but augmented with the length of the workday. From this extended model we can see that an increase in the workday increases the profit rate of enterprise.

The sixth chapter is an inquiry into the relation between expectations and actual price formation in markets for existing assets. In this chapter I manage to show that prices of such assets as stocks and land can suffer long periods of disequilibrium between actual market prices and fundamental equilibrium prices. The findings of this chapter tie into the analysis of chapter four by showing how price movements on these markets for fixed assets influence the actual system

of production. From the models in this chapter it becomes obvious how important of a role expectations play on the accumulation of private wealth in the form of titles of ownership. Should expectations lead to an increase in actual market prices, this leads to a decrease in the rate of actual capital formation thus affecting the whole social production system, decreasing the bargaining power and the income accruing to labour. Accumulation of private wealth and the speculation with regards to future prices of financial instruments are therefore not only reflections of the real economy but in fact influence the future evolution of the economic system.

Concluding his *magnum opus*, *The General Theory of Employment, Interest and Money*, Keynes find two outstanding faults with the economic system in his time. The first fault was its inability to provide for full employment, its second fault was the arbitrary and inequitable distribution of wealth and incomes. Similarly to Keynes, I find that the two phenomena are interconnected to a large degree, since the failure to employ labour will necessarily involve an inequitable distribution of income as well, meaning that there is at least some overlap between the two problems. In the dissertation I analyse the systematic reasons behind the problems of unemployment and inequality in monetary economies. The thesis itself was written with the hope that some of these causes would one day be resolved. Theoretical arguments in this work can help us glimpse the limits of the current institutional arrangement, which favours speculation and the accumulation of private wealth. I propose a more stable international monetary system, that takes us closer to a world where money is re-invested in productive human activity instead of being hoarded to augment private wealth.

Key words: Classical economics, Sraffa, Keynes, Marx, Kalecki, political economy, post-Keynesian, growth, distribution

GOSPODARSKA RAST IN RAZDELITEV DOHODKA V MODERNIH MONETARNIH GOSPODARSTVIH: POMEN PRIČAKOVANJ IN VLOGA INSTITUCIJ

POVZETEK

Namen te disertacije je preučiti družbene pogoje, ki predstavljajo podlago za proizvodnjo in razdelitev blaga v kapitalističnem gospodarstvu. Analiza gospodarske rasti in razdelitve dohodka zahteva uporabo abstraktnih sistemov, ki nam pomagajo pri razumevanju družbene realnosti, kajti, kot je pripomnil že Alfred Marshall (1925), 'dejstva sama zase molčijo'. Po drugi strani pa je pri deduktivnem pristopu vedno prisoten problem redukcionizma, ki se ga v resnici ne moremo znebiti. Vsak abstrakten model je namreč grajen na določenih predpostavkah, ki so v svoji osnovi arbitrarne in odvisne od stanja v disciplini ter avtorjeve svobodne izbire. Čeprav se ekonomija kot veda pogosto kritizira zaradi nerealističnih predpostavk, se moramo zavedati, da bomo pri uporabi formalne logike vedno imeli pomanjkljive predpostavke glede na ekonomsko realnost. To velja tako rekoč za vsako interakcijo med idejami in realnostjo, znotraj ekonomije pa postane tolikanj bolj problematično, kajti zaključki ekonomske analize lahko vplivajo na preučevano materijo te iste analize. Osnovne predpostavke raziskave pa lahko v veliki meri tudi determinirajo same rezultate, kar nekako pomeni, da že v prvi fazi analize omejimo možnosti glede njenih zaključkov (Žižek, 2005, p. 21; Sušnik, 2011, p. 4). Zaradi zgoraj naštetih razlogov je v doktorski nalogi veliko prostora namenjeno obrazložitvi samih predpostavk in sestave modelov, kar je tudi edina možna rešitev problema redukcionizma v ekonomski znanosti.

Jedro naše raziskave se vrti okoli povezave med razdelitvijo in rastjo v monetarnih gospodarstvih, vključujoč vpliv, ki ga imajo pričakovanja na proizvodnjo. To predstavlja formalno-analitični del doktorske naloge. Modeli v doktorski nalogi sledijo pristopu Piera Sraffe in so po svoji naravi odprti, imajo vsaj eno stopinjo prostosti, ki ni zaprta v osnovno teoretično jedro, temveč je analitično, kot tudi v praksi, zunaj tega jedra. V izrazoslovju ekonomske znanosti te eksogene, skorajda neekonomske dejavnike večinoma označimo za institucije. Morebiti to v nalogi ni vedno eksplicitno omenjeno, ampak predstavljena analiza je vedno odprta za institucionalne vplive prek sprememb različnih parametrov v teoretičnem sistemu. Analiza ekonomskega sistema se tako odziva na eksogene spremembe institucionalnega ustroja, obenem pa nam pokaže tudi posledice, ki jih imajo institucionalne spremembe za ekonomski sistem z vidika rasti, razdelitve in ostalih spremenljivk. V končni fazi nam analiza nestabilnosti sistema produkcije omogoča tudi vpogled v vzroke te nestabilnosti in pomaga pri iskanju institucionalnega ustroja, ki bi omogočal večjo stabilnost in humanost sistema produkcije. Z drugimi besedami, analiza je v osnovi vpeta v institucionalni ustroj družbe, obenem pa je uporabna tudi za razumevanje omejitev specifičnih institucionalnih konstalacij.

V drugem poglavju uporabim 'stock-flow' makroekonomski model za analizo vpliva sprememb v razdelitvi dohodka na celoten nacionalni dohodek. Ta del analize temelji na teoretični povezavi koncepta presežka znotraj modernega modela stogov in tokov. Bolj specifično v drugem poglavju opazujemo, kako spremembe v deležu nacionalnega dohodka, ki gre določeni družbeni skupini, vplivajo na raven (in fluktuacije) nacionalnega dohodka. Večji delež dohodka, ki gre obem skupinam kapitalistov implicira nižjo raven ravnotežnega narodnega dohodka. Večja je potrošnja kapitalističnih gospodinjestev, višji je nacionalni dohodek. Iz analize sledi tudi negativna povezava med profitno stopnjo podjetij in ravnotežnim nacionalnim dohodkom. Obenem nam analiza v drugem poglavju nam omogoča tudi boljše razumevanje dveh pomembnih gospodarskih fenomenov druge polovice 20. stoletja, financiranja in finančne deregulacije. Zvišanje obrestne mere, ki ima na kratek rok jasne negativne učinke za industrijske kapitaliste, lahko na dolgi rok zniža pogajalsko moč delavstva, prek zvišane brezposelnosti in s tem dejansko poveča presežek za obe skupini kapitalistov.

Četrto poglavje predstavlja daleč najobsežnejši del naloge je namenjen formalni analizi dinamičnega klasičnega ekonomskega sistema s konstantno, tj. vedno prisotno nagnjenostjo k akumuliranju in ohranjanju bogastva v denarni obliki. Cilj je ustvariti teoretičen sistem in nato determinirati raven cen in razdelitev blaga v gospodarstvu. Zelo pomembna ugotovitev je, da nivo cen v gospodarstvu ni monetarni fenomen, temveč ga determinirajo produktivnost dela, kreditna dejavnost in razdelitev dohodka. Inovacija teoretičnega sistema je tudi vloga pričakovanj na akumulacijo kapitalskih dobrin in jasna ločitev med formacijo kapitala in akumulacijo obstoječih naslovov lastništva. Ta ločitev ni pomembna za posameznikovo dožemanje bogastva, je pa zelo relevantna za raziskavo o bogastvu celotnih gospodarstev.

V petem poglavju je uporabljen razširjeni model iz četrtega poglavja za analizo dveh ločenih vprašanj na temo, kakšno je gibanje profitne stopnje (in presežka) na dolgi rok ter kako vpliva dolžina delovnega dne na profitno stopnjo. Analiza gibanja profitne stopnje pokaže institucionalno determinacijo razdelitvenih spremenljivk v modelu. Na to značilnost ekonomskega sistema je opozoril že Sraffa (1963) z omembo vpliva denarne obrestne mere na profitno stopnjo. V petem poglavju pokažem, da institucionalna determinacija ni vezana samo na monetarno in ekonomsko politiko, temveč igrajo vlogo tudi masovna popularna kultura, religija, kapaciteta za izvajanje institucionalnega nasilja ipd. Analiza nam ne pove, kakšno bo gibanje profitne stopnje v prihodnosti, nakaže pa vzročne kanale, ki bodo uporabljeni ob njenem morebitnem znižanju, in vidimo lahko, da ne bodo samo striktno ekonomske narave. V drugem delu poglavja je v teoretični sistem iz četrtega poglavja dodana še dolžina delovnega dne. Iz razširjenega modela izhaja, da daljši delovni dan zviša profitno stopnjo podjetij.

Šesto poglavje je namenjeno raziskavi povezave med pričakovanji in formacijo cen na trgih obstoječih sredstev oziroma naslovov lastništva nad temi sredstvi. Z uporabo teoretičnih modelov je pojasnjeno, zakaj so cene delnic in nepremičnin lahko dalj časa oddaljene od ravnotežnih in kakšen je vpliv finančnih in nepremičninskih trgov na sistem produkcije. Ugotovitve iz tega poglavja se navezujejo na analizo iz četrtega poglavja. Iz modelov v šestem poglavju postane namreč očitno kako veliko vlogo igrajo pri akumuliranju zasebnega bogastva

pričakovanja. Če slednja privedejo do zvišanja dejanskih tržnih cen ima to negativne implikacije za akumulacijo kapitalskih dobrin in s tem za celoten družbeni produkcijski sistem, obenem pa zniža tudi pogajalsko moč in posledično tudi dohodke delavstva. Akumulacija zasebnega bogastva in špekulacija o prihodnjih cenah finančnih instrumentov tako nista le odraz realnega bogastva v ekonomskem sistemu, temveč dejansko vplivata na sedanji in prihodnji razvoj tega sistema. Večji kot je vpliv špekulacije, večja bodo nihanja ne le na finančnih trgih, temveč tudi v produkcijskem sistemu.

V svojem *magnum opusu*, Splošni teoriji zaposlitve, obresti in denarja, Keynes (2003) najde dva glavna problema ekonomskega sistema v njegovem času: nesposobnost poskrbeti za zagotovitev polne zaposlenosti in arbitrarna ter nepravična razdelitev dohodka v družbi. Tako Keynesova kot moja analiza sta pokazali, da sta problema med seboj v veliki meri povezana. V doktorski nalogi so analizirani nekateri sistematični vzroki problematike brezposelnosti in neenakosti v monetarnih gospodarstvih. Naloga je bila pisana v upanju, da bi nekatere od teh vzrokov odpravili. Z uporabo teoretičnih zaključkov doktorske naloge postanejo jasne omejitve trenutnega institucionalnega ustroja predvsem z vidika mednarodne monetarne ureditve, ki favorizira špekulacijo in s tem akumulacijo zasebnega bogastva. Na koncu naloge zato predlagam stabilnejši mednarodni finančni sistem, ki služi akumulaciji dejanskih sredstev za proizvodnjo in ne zasebnemu kopičenju lastninskih pravic nad že obstoječimi sredstvi.

Ključne besede: klasična ekonomija, Sraffa, Keynes, Marx, Kalecki, politična ekonomija, post-Keynesianizem, rast, razdelitev

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INTRODUCTION

It is often stated that modern economic analysis begins with Adam Smith and his 1776 *magnum opus* *An Inquiry into the Nature and Causes of the Wealth of Nations*. Therefore if we were to look at growth as a subject matter of economic analysis, it has been a part of it since the very beginning. Within the analytical nucleus of classical growth theory, distribution, while often treated as exogenous, was nevertheless presented as a determining factor of growth itself therefore making issues of income distribution central to the inquiry into the accumulation of wealth in society. The object of this work is to examine this very same analytical nucleus in a monetary economy. The dominant view usually expounded, in various degrees of complexity, is that, in short, monetary factors can only cause slight fluctuations, but cannot influence the basic relationships between the real variables of the economic system.

There have been objections to this dominant view, where money only has an effect on the money side of things and no effect on the real economy, other than the effects on the price level. The General Theory can perhaps be considered as the most recognised attempt to criticise this view (Panico, 1988, p. 1). Along with Keynes, Marx was another economist who began his analysis at the money end, seeing capitalism as an inherently monetary system of production, that can only be understood properly within the scope of a monetary theory of production. While classical economic analysis rested on the assumptions of Say's law, Keynes and Marx were acutely aware, that in a monetary system, money is not only used and demanded as a means of circulation, instead it can also be kept idle. This quality of money drives a wedge between the act of buying and selling that has important implications for the economic system as a whole. In order for the classical nucleus of distribution and growth to be relevant, the basic institutional features of a monetary economy have to be added to it.

In capitalism, production is mainly carried out with the aim of securing a profit. Every economic system faces a certain amount of uncertainty. Agrarian economies faced uncertain weather conditions, something which industrialisation has to a large degree negated. A farmer would plant a certain amount of seed, his initial capital so to speak, and nature would either grant him a positive or negative return. The entrepreneur in a monetary economy faces a somewhat different problem, for the commodities which are produced need to be successfully sold if the entrepreneur is to realize his profits. In other words, production itself is aimed at realizing monetary profits. This has at least two effects, on the one hand more commodities of different sorts get produced (in order to make profit) and on the other hand, not everything that gets produced is also successfully sold and consumed. In other words, production in capitalism will depend to a large degree on expectations of future profitability. So while the basic classical idea of the interrelationship between distribution and growth is still important when analysing a monetary economy, it needs to be augmented with an inquiry into the role of expectations on the productive system. A very obvious consequence of this state of affairs is the trade cycle.

The main nexus of investigation will therefore revolve around the interconnectedness of distribution and growth in monetary economies, acknowledging the role that expectations play in the determination of production. This represents the formal part of the analysis of the thesis.

However, the very nature of the models in the thesis is open in the Sraffian sense, where there exists a degree of freedom, which is not necessarily closed within the main theoretical system itself, existing instead in a separate analytical nucleus. In economic parlance these exogenous, to some extent almost non-economic factors, are usually labeled as institutions, of which various kinds exist, some formal and some less so. This might not be always apparent, but the analysis here presented is always open to institutional influence, mainly through the changes in various parameters of the system. While the analysis itself responds to the exogenous changes in the institutional setting, it also gives analytic results as to what those changes imply for the economic system. This allows us to capture the effects of distribution on output and future accumulation of capital, for example. Finally, by analysing the instability of the system of production we gain a glimpse of what sort of an institutional setting would be most helpful for its stability. In other words, the analysis itself is both inherently informed by the institutional setting and it can be used to understand its potential limits as well.

While I would not call these hypothesis, there are some key issues which will be investigated in the thesis. Firstly, it is my aim to show, in a simple stock-flow model, how changes in distribution affect the level of output, thus potentially creating a distributionally induced trade cycle. In a way, this first part of the analysis represents the surplus approach within the context of a stock-flow model. More specifically, we will observe how changes in the share of income that goes to different social groups influences the level of output. By far the largest body of formal analysis will be a dynamic classical system with a constant propensity towards hoarding wealth. There the aim is twofold, first to fashion a dynamic monetary economic system and secondly, to determine the price level and the distribution of commodities in the economy. An important feature of the system will be the role of expectations on accumulation of capital goods and the clear distinction between capital formation and the accumulation of existing assets. This is a distinction that is not relevant for the individual, but it is very relevant for the inquiry into the wealth of nations. Additionally, we will look at the role of expectations in the formation of prices in the markets for existing assets, such as stocks or land, and why extended periods of disequilibrium can come about endogenously.

The thesis itself is roughly divided into five larger sections. I begin with a short excursus on methodology in economic analysis. Then in the second section I develop a simple stock-flow model in order to analyse how issues of distribution affect the natural states of rest in an otherwise stationary monetary economy. This section is based on a paper of mine titled *Janus Ante Portas: Distribution and Class Struggle in a Bank-Money World Model* published in the *Review of Radical Political Economics*. The third section, which is also by far the longest, is devoted to an examination of a growing economic system, with a constant hoard and expectations affecting the issue of credit into the economy. I begin the third section with a foray into the nature of money and wealth in chapter three, continue with the core of the analysis in chapters four and five and end it with the analysis of the movements in prices of stocks and land presented in chapter six. The fifth section is devoted to a social philosophy of the thesis in chapter seven followed by a short conclusion. At the very end, in the appendix, the reader can find the list of variables and parameters from all the models in the thesis.

1. SOME NOTES ON METHODOLOGY IN ECONOMIC ANALYSIS

The purpose of this dissertation is to examine the social conditions underlying the production and distribution of commodities in a pure capitalist economy. Conducting an analysis of accumulation and distribution requires the use of logical abstract systems, which help us see the forest for the trees. In so doing, however, we always run the risk of falling into the trap of reductionism, indeed this almost seems inevitable. While specific assumptions will be accompanying the models themselves and therefore need not be mentioned in this methodological introduction, I believe that an excursus in the meta-methodology of the thesis is in order. This has mainly to do with the inescapable fact, that all assumptions we make when using logical abstract systems of thought are arbitrary. While there have always been calls for more realistic assumptions in economics, we must admit, that in the end, when it comes to formal logic, it is separate from what is usually understood as reality. Systems of thought are creatures of the world of ideas, where they represent not only perfection, but they represent reality itself, since in that realm ideas are reality. Once we allow for the interaction of these ideas with what we consider to be 'the real', is when things become complicated not only with respect to analysis, but with respect to the influence of these ideas in form of a theory on the social fabric of society. Of course this is true for any relation between ideas and reality, but it is perhaps even more problematic for economic theory, since its conclusions filter into the subject matter which those ideas were supposedly constructed to analyze. To make matters worse, the methodological formulation of our analysis might be said, in a Lacanian fashion, already contains its solution (Žižek, 2005, p. 21; Sušnik, 2011, p. 4), meaning that the fundamental assumptions underlying the investigation already limit the scope of the possible results.

When Pasinetti (2005) describes what he calls the Cambridge School of Keynesian Economics, or what I would call the post-Keynesian school, he notes realistic assumptions as one of its main methodological fortes. Pasinetti (2005) explains, that whereas traditional economic theory uses very abstract constructs which it then later tests empirically, the Cambridge School likes to have a sound foundation in factual evidence. A clear example of this reasoning can be seen in the way post-Keynesians approach to macroeconomic models, where the financial sector and the firm sector are separated from the outset, whereas the same distinction is not always present in neoclassical models that are used for the same purpose. As such, cantabrigian theory is almost always grounded in a set of stylised facts (Kaldor, 1961) that are deemed relevant in a given historical context. This further implies, that as such, most of post-Keynesian theory does not strive for ahistoric universality, which, again cannot be said for models containing utility optimisation, as one can easily argue that mankind has always optimised its utility and will continue to do so indefinitely, irrespective of the social setting. Note that both routes of formal economic reasoning can be employed and there is no reason why the profession as a whole should prefer one to the other. When we are concerned merely with economic reasoning, it is essentially down to the economist to choose which route she or he might prefer. However, I would argue that the same is not true once we consider the link between economic theory and policy, but that is an altogether different matter. Confining ourselves simply to the realm of theory, we can safely say that the Feyerabendian notion of 'anything goes' holds true.

Reasoning is always abstract, which is why when we say that the Cambridge School of Keynesian Economics is grounded in realistic assumptions, this does not mean, that it is not theoretical, like the German Historical School, for example. In fact both Keynes and Marshall were very critical of the empirical approach taken by the German Historical School, the first having criticized their exclusive use of empirical methods thus discarding any formal analysis (Keynes, 1973, p. xxv) and Marshall (1925) noting that the 'facts themselves are silent' if no coherent analytical framework is present. Another thing we need to understand is that even though the aim for supposedly realistic assumptions is commendable, strictly speaking, there will always be a disconnect between the material and the abstract. This is not intended as a criticism of an approach that wishes for economic analysis to be grounded in stylised facts, it is merely a reminder, that even this approach does not, for lack of better phrasing, contain a final solution. I would argue that the connection between these two distinct sets of phenomena, is best understood in the context of a Kantian 'transcendental illusion', where we should be aware that while there is always a link between the two levels, no synthesis between the two is possible (Žižek, 2005, p. xix), they are incommensurable. Perhaps a simpler way to explain it is to imagine that while there is a link between the two sides, it is precisely because these are two sides of the same phenomenon, that they can never meet (Žižek, 2005, p. xx), the same way that heads and tails of the same coin can never meet one another. In the Hegelian sense we could also argue that the 'word is the murder of the thing', namely that whenever we have an abstract construct, be it mathematical or in the form of words, it is not a simple reflection of something empirical, but it becomes the thing itself (Žižek, 2005, p. 15) and this logic remains the same irrespective of the differences between the attitude towards the empirical reality between different economic schools.

There is, however, a belief that there can be a reconciliation between what we believe to be knowledge and what could be said to constitute truth. That is to say that if we evolve our theories and test them with the proper empirical apparatus along the way, we will eventually come to a point where this Hegelian conundrum will no longer be relevant, with the idea finally becoming a perfect representation of the underlying reality, our knowledge finally fusing with the truth. This view is very present in natural sciences, where we can always hear mutterings of a general theory of everything, but the same basic logic seems to be present in economics as well, especially in the neoclassical branch which has always made it a point to mimic the natural sciences (to some degree at least). A more refined view of the same process represents a progressive approximation to truth and is captured in Victor Hugo's saying (Žižek, 2005, p. 19): 'Science is an asymptote of Truth. It ever approaches it but never touches it.' However, this seems to be, again, a rather determinate and pedestrian view of science, where knowledge and truth are completely distinct from one another and there is no influence running from one sphere to the other. As Žižek (2005, p. 19) explains this seems unlikely since:

'On the contrary, the Hegelian coincidence of the movement toward truth with truth itself implies that there already has been contact with the truth: truth itself must change with the changing of knowledge, which is to say that, once knowledge no longer corresponds to truth, we must not merely adjust knowledge accordingly but rather transform both poles – the insufficiency of knowledge, its lack apropos of the truth, radically indicates a lack, a non-achievement at the heart of truth itself.'

Fundamentally therefore, the quest for truth, changes truth itself. This should not come as a shock, because our every action creates changes in reality, a basic consequence of the laws of thermodynamics, so we should not expect that economic analysis would be any different. In light of this fact, however, it is good to keep an open mind with respect to the changing fabric which is under investigation. Here the Cambridge School can look to its founder's saying: 'When the facts change, I change my mind.' Of course, the question then becomes, when have the facts changed enough for someone to change their mind, for Pasinetti (2005) and Keynes, among others, the shift to an industrial society warrants a shift in the economic theory as well, to one which was dubbed by Keynes a 'Monetary Theory of Production', whereas the same view is not shared by most of the neoclassical school. Here no theory can help us and it is because of this that economics comes closest to an art form, something admitted by both Keynes (1973B, p. 296) and Kaldor (1989). Finally, this quip from Keynes does not solve the underlying problem, it does, however, show a healthy attitude towards the reality of the problem which is under investigation and the limits of pure theory, irrespective of the subject matter itself.

Another distinguishing feature of the Cambridge School, if we may use Pasinetti's (2005) term, is the aim for internal consistency alongside formal rigour. One can quickly achieve the latter, whereas the former is harder to attain. A Solow-Swan growth model is formally rigorous, it can be fully presented in mathematical form, but in a world of multiple capital goods – which is a realistic *a priori* assumption to make – it is not internally consistent. There is a clear danger in pursuing rigour for its own sake, where form gains the upper hand over substance and, for lack of a better word, reality. This was noted by Schwartz (1986, p. 22):

'To dress scientific brilliancies and scientific absurdities alike in the impressive uniform of formulae and theorems. Unfortunately however, an absurdity in uniform is far more persuasive than an absurdity unclad.'

Not only does form matter in matters of persuasion, but it can also influence the way we think about a problem, as Keynes (1973, pp. 297-8) explains:

'It is a great fault of symbolic pseudo-mathematical methods of formalising a system of economic analysis ... that they expressly assume strict independence between the factors involved and lose all their cogency and authority if this hypothesis is disallowed; whereas, in ordinary discourse, where we are not blindly manipulating but know all the time what we are doing and what the words mean, we can keep 'at the back of our heads' the necessary reserves and qualifications and the adjustments which we shall have to make later on, in a way in which we cannot keep complicated partial differentials 'at the back' of several pages of algebra which assume that they all vanish. Too large a proportion of recent 'mathematical' economics are merely concoctions, as imprecise as the initial assumptions they rest on, which allow the author to lose sight of the complexities and interdependencies of the real world in a maze of pretentious and unhelpful symbols.'

It is clear that for Keynes, the method chosen already by itself implies the way we think about the problem under investigation and it will have implications for our decisions as well. The danger

with formal analysis is usually, that what is gained in rigour is lost when it comes to complexity. Even when it comes to works of pure theory, such as Sraffa's *Production of Commodities by means of Commodities* (1963), Sraffa insisted on not using matrix notation and purely mathematical language (Pasinetti, 2005), which would not add anything to the rigour, nor would it make his take on classical political economy any less internally consistent. However, yet again, the same problem remains, that the degree to which one wishes to pursue formal mathematic presentation essentially rests with the author. Since the subject matter of economics is essentially that of complex systems, there is a clear need for formal rigour, where I myself have strived in this thesis for realistic assumptions with respect to the issues that are under investigation. I believe that there is nothing wrong with the use of formal reasoning in economic analysis, in fact, were it not for these apparatus of the mind or techniques of thinking as Keynes (1983, p. 856) called them, we would be hard pressed to say anything of substance about the economic system as a whole, or that part which we are interested in. This was clear to Keynes (1971, pp. 181-2) at a very early stage in his academic career:

'It is impossible to say everything at once, and an author must needs sacrifice from time to time the complexity and interdependence of fact in the interests of the clearness of his exposition. But the complexity and the coherence of the system require the constant attention of anyone who would criticise the parts. This is not a peculiarity of Indian Finance. It is the characteristic of all monetary problems.'

In his 1992 *Foundations of post-Keynesian economic analysis* Marc Lavoie in spite of the title of his book, often uses the term post-classicals as an umbrella term for post-Keynesians, neo-Marxians, radical political economists and neo-Ricardians. The reason for this labeling is to show that all of these schools share a connection with classical political economy thus warranting the label post-classical on the basis of methodological issues and the focus of the respective research programmes. Pasinetti (2005) argues that for the Cambridge school Classical economists are also one of the main inspiring schools of thought, together with the Keynesian revolution in the 20th century. The fact that the following analysis is grounded in what could be called a post-classical tradition or in the tradition of the Cambridge school and neglecting the more traditional neoclassic approach should not be viewed as something negative. Pasinetti (2005) sees the break as something that ought to be viewed with a positive connotation and not as something which is inherently destructive. Indeed what this different orientation entails is an intellectual connection to the tradition of classical authors such as Smith, Ricardo and Marx. For Marginalists it is said that there is also a connection between Smith and Ricardo¹, but I would argue, and I am not alone in this, that the connection is more along the lines of ideology – both of these authors were supporters of the *laissez-faire* regime – and less along the lines of inquiry and methodology. This can be clearly seen in the focus of analysis between the Marginalists, who focus on exchange and the post-classicals, who favour the analysis of production (and distribution) instead (Pasinetti, 2005).

¹ Unlike with what has now become a dominant Sraffian interpretation of Ricardo, Morishima (1996) reads Ricardo in a proto-Walrasian vein and thus sees less of a disconnect between traditional economic theory and Ricardo.

Since the thrust of my analysis is centered around the questions of growth and distribution, it is only natural, that there should also be a methodological connection with Classical economists. However, as the aim is to analyze an industrial society with at least a rudimentary financial sector, it becomes necessary to supplement the Classics with Keynes and the circuit school. In general, however, I think that the Classical tradition is much better suited to understanding capitalist industrial society than traditional economics, especially if we couple it with more modern post-Keynesian stock-flow approaches, where one can make full use of economic analysis in a realistic setting of existing institutions. With this approach comes a way of looking at the economic system which could be best described as being inherently macroeconomic and not grounded in utility maximization of individual economic agents. In fact this represents one of the great divides in economics, between traditional economics, where there is almost a one-to-one relationship between the individual and the society as a whole and one could almost say that an individual is simply the n-th part of society, and between the view that what holds on the individual level, does not necessarily hold on the level of the economic system as a whole. In more simple terms, authors such as Keynes (2003) and Sraffa (1963), have showed very clearly that the system as a whole is not reducible to its parts (Pasinetti, 1960). This is called a fallacy of composition and there are many such examples in post-Keynesian analysis, the most famous being perhaps the paradox of thrift. Keynes (1972, p. 262) explains the failure of what has recently become known as microfoundations of macroeconomics:

'The atomic hypothesis which had worked so splendidly in physics breaks down in psychics. We are faced at every turn with the problem of organic unity, of discreteness, of discontinuity—the whole is not equal to the sum of the parts, comparison of quantity fails us, small changes produce large effects, the assumptions of a uniform and homogeneous continuum are not satisfied.'

For Keynes the question seems to be one of pragmatism – the subject matter that is being analysed is such that the atomistic approach cannot be directly applied because it would yield no results. Sraffa, on the other hand, sees the problem to be much worse than that, for him there can be no individual utility functions to maximize if individuals are not members of a society themselves (Signorino, 2001). Additionally, for Sraffa using assumptions such as economic agents being like Robinson Crusoe, living isolated from society – physiologically practically impossible anyway – was a counterfactual, something which he very rarely entertained. In his own words the chief objection to utility (and hence *a fortiori* against the optimising behaviour of individual agents both in life and in economic analysis) is:

'...that it makes value an individual conception: it implies that the problems of Rob[inson] Crusoes and those of an economic man living in the City are exactly the same. Now, value is a social phenomenon: it would not exist outside society: all our utilities are derived from social conventions and therefor dependent upon social conditions and standard.' (Sraffa Papers, D1/16, p. 1 as cited in Signorino, 2001)

Of course the additional problem, even if utility could be imagined to exist outside of society, is the idea that one could somehow sum up these different preferences to form a coherent whole –

which is essentially what traditional marginal economics tries to do. In the same note Sraffa explains this (Signorino, 2001):

'Error in economic theory postulates independence (in utility, demand, cost, etc.) of individual, and building up by 'summing' the individual equilibria into a social one... economics is only social – no Crusoe. Individual conditions (hypothetical) in the first place do not exist as such (individual always influenced by education, habits, imitation, social standards and conventions, etc.): in the second, if they existed, they could not be simply summed up – they should be combined in a much more complex way. Proceeding from individual to social is legitimate if it is a way of proceeding from simple to complex as we shall do; not if it intends to proceed from cause to effect, as often is done. External economies are a great addition to economic theory in this respect – though they may be criticised in other respects. But social influences are greatly underestimated in demand where (Pigou,..., Cournot) they are admitted only in such things as top hats, prayer books, diamonds and orchids.'

Firstly, for Sraffa there can be no economic agent that is not part of a society. However, even though it is clear that society is made up of different individuals, and one can therefore see why some social scientists would employ the atomistic hypothesis, there is no clear or simple way in which those individuals and their preferences could be summed up in a coherent theoretical framework. To put it in a different way, even if we imagine that every person is an atom and that together we form different social structures, knowing the characteristics of those atoms will still not give us a clear understanding of the 'social molecule'. A similar point is made by Fleetwood (2014), who gives an interesting example of water, which has fundamentally different characteristics to the atoms of hydrogen and oxygen which make it up. Nobody is denying the fact that there is no society without individuals, the same way there is no water without hydrogen and oxygen, what Sraffa and Keynes argue is that knowing the characteristics of the atoms in isolation, will tell us precious little about the characteristics of a qualitatively different structure which is attained once different atoms are mixed together in a particular fashion. Much the same way as people will act differently in different social structures, the overall bond between economic agents is an important feature of how they operate. An interesting point about what are essentially two different views about the nature of society is made by Žižek (2005, p. 20):

'Take an example from Adorno: today, it is impossible to find a single definition of society; it is always a matter of a multitude of definitions that are more or less contradictory, even exclusive (for example as an organic Whole that transcends particular individuals, and on the other those who conceive of society as a relationship between atomized individuals – 'organicism' versus 'individualism'). At first glance, these contradictions would seem to block any knowledge of society 'in itself', so that whoever presupposes society as a 'thing in itself' can only approach it by way of a multitude of partial, relative conceptions that are incapable of grasping it. The dialectical turn takes place when this very contradiction becomes the answer: the different definitions of society do not function as an obstacle, but are inherent to the 'thing in itself'; they become indicators of actual social contradictions – the antagonism between society as an organic Whole as opposed to

atomized individuals is not simplygnoseological; it is the fundamental antagonism which constitutes the very thing that one wants to comprehend.'

I think we can find a connection with the Sraffian stance, because for Sraffa, as for Žižek, it is obvious that society is made up of individuals, but the opposite view of an organicist whole is also undeniable. Sraffa looked at the issue from the perspective of economic theory and found the atomistic approach logically untenable for economic analysis, for Žižek the fact that these two opposites exist, is telling by itself; the two different ideas about society are both wrong by themselves, yet they both give us glimpses of what society is: the antagonism between the whole and the parts, the antagonism between organicism and individualism. It is often true, that we learn more from what a theory does not say as opposed to what it does say, and looking at these two opposing views, we can say that they give us a glimpse of the underlying truth indirectly, almost simply because they exist. A similar logic, perhaps, would be a look at different ideologies, while looking at one of them in isolation might not be revealing, looking at more of them together, indirectly tells you something about all of them (and about society). Or as Žižek puts it, the antagonism between the two ideas, represents the 'thing itself'. The same way as we cannot sum individuals to get a society, we cannot sum and divide ideas to get to the truth, just because there is interaction between these differing views about the nature of society, it doesn't mean that truth has to be somewhere in between the two extremes.

In other words, the sheer fact that we know that there exist two opposing notions of society gives us a glimpse into the nature of society, which can be therefore said to exist as both a group of individuals and as something more (or different) to those individuals. I do not, therefore, claim the atomic hypothesis is *a priori* incorrect, or that any serious analysis of economic systems has to be made at the organic level of institutions, social groups, classes etc., nor do I claim that the individualist approach is superior due to its mimicry of natural sciences: both are true and both notions of society not only co-exist but make up society as such. Their existence is the glimpse of truth which has 'given away the secret'. The practical question then becomes, how does one resolve this issue. For the analysis of growth and distribution I believe that one cannot maintain a simple atomist approach and be logically consistent – simply because, as with the water analogy, the sheer fact that atoms make up the whole, this tells us precious little about the whole as such, and it is the whole that we are interested in. So from a pragmatic approach, economic analysis at the level of economic systems as a whole, it seems more reasonable to disregard the atomist approach favoured by neoclassical economics, even when they are faced with macroeconomic problems. On the other hand, the organicist stance usually entails a certain attachment to existing social institutions, which means that once this set of institutions changes, then so too do some of the interactions between different groups and individuals, which effectively means that the economic system as such has undergone a qualitative change. This, however, is not a problem inasmuch my analysis is connected with a very clear institutional setup of what I would call a pure capitalist economy.

For Pasinetti (2005) the initial stage of economic analysis should focus on 'pure theory' and should focus on objective elements of reality that are somewhat time-invariant. At this stage the analysis

is purely abstract. However, the Cambridge School approach to 'pure theory' differs somewhat from the neoclassical approach. This is perhaps best typified by Sraffa, whose economic system in *Production of Commodities* (1963) is rigorously defined, yet it still has a degree of freedom. In practice, any degree of freedom will eventually resolve itself through human actions, but this approach allows for different outcomes, a society can opt for policies of full employment or it can allow high rates of unemployment to exist, but the 'pure theory' in the Sraffian sense has to be able to tell us something about both these states (Pasinetti, 2005). In traditional economics, one usually obtains a unique solutions, which are ultimately reflected in preferences and endowments of economic agents. It is also interesting, that while the Cantabrigian approach is not based on methodological individualism, it does allow for individual actions to actually affect the system as a whole exactly because, already at the basic level of pure theory, the logical system contains one or more degrees of freedom. The irony is, that traditional theory based on methodological individualism actually leaves no room for freedom of said individual, since an individual is simply reduced to an entity that takes into account its endowments and preferences, both of which are essentially exogenous to it.

This sort of an approach has to be linked with history, even though models themselves are crafted on the basis of logical time, the fact that there is room in pure theory for different institutional setups, means that the theory itself is on the one hand dependent on a specific set of institutions, but the approach as a whole is in fact a lot more general, since it allows for institutional changes. Obviously a specific model, no matter how pure and abstract the theory, will always be, at least to a certain extent, grounded in a specific historical moment with its social characteristics. This more open approach, however, is general inasmuch as these different characteristics can be taken into account in a separate model, if need be. As mentioned previously, my aim is to model a very simple capitalist economy, this means that some, if not most, of the conclusions are therefore only relevant for the capitalist mode of production. No claim is made on the universality of this analysis for other modes of production.

Another important *differentia specifica* between orthodox theory and the Cambridge Keynesians is their respective view on time in economic theory. For Keynesians it is vital that economic analysis is carried out in a framework of historical time, which means that the economic system has no state of rest, nor can we simply turn back the clock (Pasinetti, 2005). In economic models the economy is usually presented as a mechanical system, but this does not conform with social reality: once a new commodity enters the market, to give a simple example, everything changes and there is no way back to the time before that commodity was brought to the market. As I have argued elsewhere with Sušjan and Hrovatin (2015) the problem is the following:

'...in a mechanical system, besides changes of place, which can be brought about simply by manipulating parameter values, absolutely nothing else happens (Georgescu-Roegen, 1971, p. 6). Mechanics knows only locomotion, it is devoid of any real change and therefore completely ahistorical (Georgescu-Roegen, 1971, p. 1; Georgescu-Roegen, 1986). As should be quite obvious, and as is usually recognised within the heterodox tradition, this is not generally the case when we think of open systems like societies which are nonergodic (Davidson, 1991) and path dependent

(Shaikh, 2010). In society, as in nature, therefore, some changes are irreversible, the changes which occur in those systems are not merely a reconfiguration – movements from point A to point B and then back to A again – but represent a permanent and irreversible change of the system, meaning that the original point cannot be reached again. Or to put it differently once we have reached the final point in a closed thermodynamic system, the initial conditions are already forgotten (Prigogine & Stengers, 1984, p. 121).'

Again, from a purely practical perspective, even post-Keynesians and other heterodox schools make use of logical time, because it is convenient, since it allows for formal reasoning. In itself there is nothing wrong with that as long as the author realises the limits to such an approach – which is why the Cantabrigian approach of open systems at the initial stage of economic analysis is so appealing, because it allows for history to take its course. There is nothing in a Sraffian system that would limit the invention of new products in the market, or of a social change in society, which would change the monetary policy and lower the profit rate, for example, and the Sraffian system would change. While for the specific example, we cannot say anything about how the change came about within the Sraffian framework, but we can capture both points in time in a logically coherent fashion, while allowing for history, and thus humanity, to run its course, without imposing any *a priori* hard constraints. So while at first glance the logical system might seem flawed in the Sraffian example, it really is not, since it captures points in time, but does not impose any limits as to how society can bridge those points, it is an intellectual apparatus akin to a birdwatcher, making no judgements, its only aim to dutifully take notes.

If the economic system is a hydraulic one and moves through time, as will be the case with my analysis, then the situation changes somewhat from the Sraffian scenario. This could lead one to argue, that the approach neglects historical time in favour of logical time and has gained rigour but lost its consistency and relevance as a mode of thought. This was never my aim. The abstract economic systems presented in this thesis, while making use of logical time as a tool, are all trapped in that space of historical time where the past is given and the future is unknown and are as such true to the Keynesian tradition. Additionally, the exogenous nature of some parameters, allows yet again for various influences by individuals and society on the economic system, meaning that human action is just as important in determining the future path of the system as, for example, the endowment of capital goods or some other purely physical feature of the system. Additionally, in the second part of the analysis, from chapter four onwards, where the objective is to analyse a growing economic system, animal spirits effectively determine the growth of the economy itself. The point is, that even though it is essentially a hydraulic system, it is not a closed system, and parameters can be made endogenous or exogenous at will, meaning we can allow for more or less degrees of freedom according to whatever the aim of the analysis might be in the particular instance. So while employing formal methods, the whole aim is actually to be able to interpret history in a logical system and not to neglect it. According to the nature of investigation we can then make use of various connections between the variables, while still maintaining some order and structure in the analysis. For example, we can imagine, that during one point in time the system had, for whatever reason, undergone a period of high inflation and then we can further imagine, that this will leave a lasting memory on the society in question, making the future policies

more averse to situations of possible inflation. At the end, however, should the wage rate fall for whatever reason, we would wish to analyse the consequences of this fall in the wage rate, since that has very objective consequences on the economic system. In other words, while we allow for some freedom and path dependency, the basic relations between variables are given. I make no claim, however, that these relationships themselves are also not prone to change in the long run. However I have strived to capture the relationships which represent, to my mind at least, defining features of the capitalist mode of production, meaning that as long as this mode of production is relevant in its current form, then the analysis itself should also retain at least some of its relevance.

Another departure that can be found in the Keynesian and Marxian tradition is the view that at least for modern industrial economies, disequilibrium and instability are the normal *modus operandi* of the system and not a simply an occasional occurrence. To some degree this can be linked to the point about society in general being a non-ergodic system, but this is even more true for the modern vibrant industrial society, which is inherently cyclical, as opposed to traditional societies, where disequilibria were in fact made up of exogenous natural and social shocks, such as natural catastrophies or wars. This is why real business cycle models, so popular in traditional neoclassical theory, might actually be a useful tool for the analysis of pre-capitalist economic systems. This characteristic of capitalist instability can already be found in Marx, but it features prominently amongst the Cambridge Keynesians as well according to Pasinetti (2005), who points out that authors like Kahn (1972), Robinson (1976) and Kaldor (1985) all agreed that modern economies could not be represented by the notion of a 'flat ocean' (Keynes, 1923).

Encapsulated at the very heart of economic analysis in the tradition of Keynes, Marx and the circuit school is the notion of a monetary economy. Prabhat Patnaik (2009, p. xi) starts the introduction to his book, *The Value of Money* noting the importance of money:

'It is an intriguing aspect of our daily life that intrinsically worthless bits of paper, which we call money, appear to possess value and are exchanged against useful objects. The purpose of this book is to examine the social arrangement underlying this fact. While this social arrangement is none other than the entire social arrangement underlying capitalism there is a point in starting our investigation from the »money end«.'

Starting at the money end is somewhat at odds with how traditional economic theory usually begins its analysis, as explained by Lavoie (1992, p. 149) who begins the macroeconomic investigation in his book with the section on credit and money. For post-Keynesians this approach makes sense because production in a modern economy requires access to credit, meaning that it is, at least at the level of the economy as a whole, a pre-requisite to production. And finally another very important feature of monetary economies is that, unlike in a barter economy where the acts of selling and purchasing are simultaneous, Say's law does not necessarily hold (Sardoni, 1987, p. 26). This means that, depending on the point of view, there is a possibility for a general crisis of overproduction or a general crisis of under-consumption. By abstracting from this feature of modern monetary economies, or by adding it on at the second, empirical stage of analysis instead at the level of pure theory, we are assuming the problem away (Keynes, 1973, p. 410) or we see the problem as being one of the institutions of the real world not conforming to our theory – and we can see why this would be so, because if the theory assumes that modern economies are

essentially the same as pre-industrial barter economies, whereas in reality they are not, then once this theory is confronted with empirical reality, the latter will seem to it to be full of institutional rigidities.

An immediate consequence of these facts is that the market mechanism will not always furnish the optimal outcomes that the dominant paradigm, firmly grounded in Say's Law and the belief in neutrality of money, would have us believe (Pasinetti, 2005). What begins as a question of methodology, quickly becomes a question of policy and ideology. For Pasinetti (2005) the Cambridge Keynesians, or what I would call the post-Keynesians, share the view that in a dynamic an developed industrial economy an uncritical view of *laissez-faire* doctrine should not be adopted. On the grounds of methodology and historical relevance real-exchange economics constitute an *ignoratio elenchi*, ignoring the actual problems of the system under investigation at the level of basic assumptions. On the other hand, for post-Keynesians, the analysis of the reasons behind the instability of modern societies is crucial in their search for a more comprehensive institutional set-up (Pasinetti, 2005) aimed at limiting some of the negative effects that such instability inevitably brings. Therefore going back to Keynes himself, the post-Keynesians have always strived to give specific policy proposals which would limit some of these negative effects, such as mass unemployment which is a constant companion of capitalism, and an inequitable distribution of income (Pasinetti, 2005).

By appealing to reason and not the irrational whims of the economic man, the legacy of the Cambridge Keynesians rests on the idea, that a society ought to be governed by reason instead of being based on the most basic of human instincts. For if a society is run along the latter lines, then we can understand Nietzsche's quip that the problem of humanity is that we are far too human and that the most gruesome episodes of human history were not due to a deficit of humanity as is usually presented, but due to humans being far too human (Žižek, 2005). Perhaps the Keynesian legacy is naive in believing that by appealing to reason, a better way to manage the economic affairs of the world is possible; but it is just as naive to believe that the current state of affairs will never cease to exist and be able to perpetuate itself forever. In their belief that a society can be run along the lines of the public use of reason, the Cambridge Keynesians are agents of enlightenment. Traditional economics glorifies the private use of reason in managing the economic system, but when we engage in the private use of reason, we act as immature individuals and not as free human beings who dwell in the dimension of the universality of reason (Žižek, 2005, p. xxii).

Of course man will always be a creature who exists in both realms and he can never fully embrace the universality of reason in his private affairs which are often governed by completely irrational whims, some of which, like love, are considered amongst the most noble of human sentiments. However, that is not a good reason to consciously promote this same logic in the organisation of economic life in the world economy. This is why I argue that the approach championed by Keynes and his followers, while perhaps idealistic, is in the true nature of enlightenment ideals and strives to bring universality of reason in the economic sphere, to free humanity from its own private shackles, from its more basic instincts, or, if we wish to be completely cynical – like Nietzsche – the ethos of post-Keynesian thought is to free humanity from itself. Theoretical conclusions and policy advice that come from this tradition might not be politically expedient, and might seem

even less politically realistic given the current constellation of powers in a society, but it follows the idea and ideal of universal reason as the guiding principle of societies.

If during the reading of this work the reader should feel that too much space has been allocated to certain parts of the investigation, the reader should know, that this is not done in order to be patronising, but in order to better formulate a theoretical point for my own understanding. Or as Žižek (2005, p. 39) explains: the idiot for whom I need to formulate these points is ultimately myself. The reason for this should be clear, writing is an ongoing endeavour, one does not simply follow the initial aims of the text without having both himself and his analysis transformed along the way. Economic analysis itself, much like the subject matter it studies, is also trapped between an unalterable past and an unknown future. Economic writing is non-ergodic in that respect, once it begins, the initial conditions become irrelevant, since the path taken will inform, and therefore change, the initial goal. However, while the goal itself might change, the aim does not, because even failing to reach the goal means that we have already reached it and surpassed it, otherwise it would have still remained relevant. Furthermore, even if the goal itself should change along the way, meaning that the original goal can never be reached, this will have nevertheless satisfied the aim of our endeavour: economic analysis. Any analytical investigation of society will always be unsatisfactory if it is to be successful, because it will find faults with its initial reasoning, carrying the seeds of its own demise.

2. ADDRESSING THE ISSUES OF INCOME DISTRIBUTION AND OUTPUT FLUCTUATIONS IN A STATIONARY MONETARY ECONOMY

This chapter will deal with issues of income distribution in the tradition of the classical school, as typified by the surplus approach, where distribution still features prominently. For this purpose we will fashion a stock-flow consistent model, following in the footsteps of Godley and Lavoie (2012), who have themselves continued the tradition of James Tobin. However, we will add an explicit 'classist' twist to their models, bringing the divide and the power struggle between capitalists, rentiers and workers to the forefront of investigation. The aim was to infuse the classical theory of distribution in a modern stock-flow model, having the surplus approach come to life in a different framework. Once in possession of steady state results, we can make use of them to get a meaningful interpretation of how changes in distribution influence output fluctuations, and how consequently, these very same fluctuations bring about changes in distributional parameters. This will hopefully shed a new light on crises of capitalism and even such phenomena as financial deregulation and financialization. With the power to invest firmly in their hands, capitalists are indeed, as noted by Kalecki (1971, p. 13), the masters of their own fate. However, only by changing the tempo of their spending, so to speak, can they hope to maintain this favourable position indefinitely. In this light certain theoretically viable results become highly unlikely in practice, as higher output could lead to changes in distribution which could, in the long run, change the structure of the capitalist system altogether.

In this part of the chapter I intend to briefly explain the difference between the neoclassical and classical approach to factor remuneration. Whereas in the neoclassical approach distribution is endogenous, depending on factor endowments, the classical system is open, allowing for different influences on distribution, since the latter is not determined within the sphere of production. Having laid the logical foundations of the model, I set it up in the second part, first by presenting the behavioural matrix of the economy and then by defining every variable in that matrix with a mathematical relationship. The system itself is solved in the appendix. The third subsection of this chapter deals with steady state results and comparative statics. I show the influence of changes in distributional parameters on the level of output and try to convince the reader, that at the heart of the trade cycle are again issues of distribution and the maintenance of capitalism in its current form. Finally, in the last part, I discuss why seemingly sub-optimal levels of output might be preferred by capitalists, confirming analytically, some of Kalecki's (1943) intuition in *Political Aspects of Full Employment*.

2.1 Classical theory of distribution

Neoclassical or marginalist economic theory has dominated the economic literature ever since the 1870s. Making possible the simultaneous determination of prices, quantities and *all* distributive variables (Panico, 1988, p. 2), it is not only aesthetically pleasing in its universality, but it has been able to effectively 'marginalize' the issue of distribution. Historically, neoclassical theory can be shown to derive from a generalisation, to all factors of production, including capital, of the theory of rent in terms of land of uniform quality and intensive margins (Kurz & Salvadori, 2003).

Roughly speaking marginalist theory is simply an universal version of the Ricardian theory of rent on land, where a single principle, essentially scarcity, is said to govern the remuneration of all production factors (Quadrio-Curzio, 2003). Distribution in this system essentially depends on relative factor endowments, with the rate of remuneration of a production factor being inversely related to the quantity of that production factor (Garegnani, 2003). As noted in the Cambridge Capital Controversy, however, quantifying heterogenous capital is no mean feat², and the 'quantity' of capital might well be found to depend on the interest rate, instead of being used for its traditional purpose, to determine the rate of interest (Sraffa, 2003). One might also wonder, whether income distribution in reality is really quite so simplistic, hinging essentially, on one universal principle, and if this is not the case, may we not find a less universal, but perhaps more robust approach?

In short, the answer is yes. Before marginalist theory established itself, another approach to economic theory had been remarkably well developed: the surplus approach. First formulated by the French physiocrats and later on by the English classical political economists, distribution and the theory of value both occupy a central role within this approach (Panico, 1988, p. 4). Surplus theory, unlike its marginalist counterpart, does not determine all distributive variables, together with equilibrium prices and quantities, endogenously and simultaneously (Panico, 1988, p. 5). Factor remuneration becomes the determining instead of the determined factor, with either the wage or the profit rate known in advance, determined outside the sphere of production (Sraffa, 1963, p. 39). Classical authors often took the wage rate as given, with profits constituting the residue, however, within the same theoretical apparatus one could just as easily take profits as the independent variable with wages representing the residue (Panico, 1988, p. 5). While these variables are taken as independent by the theoretician, in practice, they are far from that, with different interest groups constantly trying to shift the parameters of the system, in their own favour. If this is true, it is handy to have an apparatus in place, which can explain the consequences of these shifts, if not the shifts themselves. No good can come from trying to find and define overly simplistic rules supposedly governing income distribution, that would in all likelihood just cloud the issue by portraying an inherently evolutionary process in an deterministic fashion.

Sraffa (1963, p. 39) has, quite rightly to my mind, posited that the profit rate might somehow be influenced by the interest rate, yet even that relationship is more elusive, than is usually perceived. I would not argue, for example, that higher interest rates automatically imply higher profits. We would first have to specify which interest rate Sraffa had in mind, because looking at the current situation after the great financial crash, corporate profits are up and interest rates are at historic lows. Of course if the interest rate is low for financial corporations and high for the rest of the populace (credit card debt, student loans etc.), this statement might hold, but what this does show is that while the interest rate is a distributive parameter at its very core, the impacts of this parameter are far from clear-cut. The fact that interest rates are low today might well have something to do with the central bankers trying to learn from the mistakes of the Great Depression; which is to say that a historical, and not a purely theoretical impulse might very well be at the heart

² However, as Robinson (1981, p. 115) mentions, the dispute was not about the *measurement* so much as it was about the *meaning* of capital. If we are simply referring to money, fine, if not, then we are most likely operating with fictional constructs of putty capital measured in tonnes, which makes no sense whatsoever.

of the issue. Typically the interest rate is seen as a distributive parameter between two groups of capitalists, in this chapter I show, that the rate of interest influences labour remuneration as well. As a distributive variable the interest rate can have a profound effect on the economy, as was shown by Panico et al. (2012); of course it itself is prone to exogenous determination and its value at any given point in time reflects past distributive conflicts, which manifest themselves in current monetary policy rules and financial regulation, with the latter heavily influenced by lobbying activities. Much the same could be said for the wage rate, another variable that is very dependent on past bargaining position of the workers and capitalists, with these bargaining positions themselves depending on a wide array of institutional and cultural factors (Garegnani, 2003). As opposed to having a single determinant, this system has many determinants that manifest themselves in the form of these distributive variables.

At its very core, classical theory is open to various influences, which, ironically, grants it a sort of universality that could never be reached by neoclassical theory, exactly because neoclassical theory had been striving for universality, based on a single principle. Classical theory going back to Adam Smith had not only been defined by competition on the product markets, but with respect to distribution as well (Garegnani, 2003). As institutions and customs change, so do the channels of influence over the distributive variables. The rise of the trade unions in the 19th and 20th centuries must have had some effect on the long run changes in the wage rate. And their demise in the second half of the 20th century wasn't a spontaneous event, the high interest rates during the Volcker era were not a manifestation of some invisible hand, much like the dismantling of the barriers on international capital flows and general financial de-regulation were not spontaneous, but intentional and focused measures that shifted distributional parameters. Kalecki (1943) had already anticipated that something like this would happen, where industrial and rentier capitalists would eventually find a way to get the wage rate down. So whereas we can be sure about the goals of different groups, we cannot be sure what kind of levers will be used in a given historical context. Fiscal and monetary policy are bound to play a big role, which, by the way, makes monetary policy *a priori* non-neutral; but we can also imagine soft, cultural factors coming into play as well, like the emergence of FOX news in the US or the general rise of tabloid journalism at the expense of investigative journalism, that is able to transcend the hysteria and creates a synthesis. Even movies are a reflection of the ideological zeitgeist and while none of these soft phenomena can be measured – well one can always construe pseudo-scientific indices – that does not mean, they are irrelevant or without consequence, far from it. Again, what we see with classical theory is that changes in distribution could be influenced by a plethora of different factors and that there is no reason to presuppose time invariant functional relationships between those factors. Economic reality³ is not ergodic (Davidson, 1991), as post-Keynesians have been saying for quite some time now. This is why the classical notion of competition is so handy, because it is dynamic in nature and allows us to suppose that the different interest groups will adapt to a given situation and will have also learned from past mistakes. The goals might stay the same – bringing the wage rate down if you're an industrial capitalist, charging high interest rates for loanable money capital if you're a financial capitalist – yet how those goals are pursued, through which institutional channels, for lack of a better word, will change with time.

³ Economics on the other hand, often is.

Having roughly sketched some of the differences between the neoclassical and the classical approach – a more detailed view will be presented in chapter four – and explaining why it is the classical approach that should be used when dealing with complex issues like distribution of income and wealth, I want to outline, briefly, the reasoning that went into building my model. Obviously I wanted it to allow for the richness of interpretations which meant that it had to be fairly simple and not too specific when it comes to possible changes in distributional parameters, which is, I believe, in line with the tradition of classical political economy⁴. In essence the model is able to replicate the schematic from Marx (1972, p. 343): $M \rightarrow M \rightarrow C \rightarrow M' \rightarrow M''$. Seeing as how production in this system therefore begins with money it should be obvious that monetary phenomena will play a role in determining real magnitudes, which some authors have begun to argue, is in fact a possible reading of Marx (Pivetti, 2015; Hein, 2006). Pivetti (2015) argues that the intellectual legacy of Marx also entails income distribution in terms of the parties' relative strength and the decisive influence of income distribution on the capitalists' incentive to invest, which are both features of the model in this chapter.

In order to explain the schematic from Marx we can imagine a pure bank-money world where money capital is lent to the firms, which then produce goods and make a surplus. From this surplus we must then deduct the part which goes back to the banks and what we end up is M'' . Only this latter part is distributed amongst workers and industrial capitalists, the difference between M' and M'' goes to the banking sector, from whence it came. I wanted to capture the difference between profits of firms on the one hand, and banks on the other, where it is quite clear that surplus is created by the former and not the latter, which is not to say, however, that the latter are not essential to the workings of modern monetary economies. In fact, the post-classical school sees credit money as a vital component of the production process (Lavoie, 1992, p. 150). While the model tries to replicate the aforementioned Marxian logic, there is also a fundamental difference in how the reader should imagine the sequence of events to take place (even though in a pure mathematical sense these events would occur simultaneously). Whilst in the Marxian schematic firm profits pre-date bank profits, the logic in our model is different: banks, as the source of finance, are the first out of the three social groups that get their share, the rest of the national income should be seen as a residual that is then contested by industrial capitalists and workers. In Marx the conflict between capital and labour determines gross profits and the interest rate then determines net profits of enterprise (Hein, 2006). My aim was to show the direct and indirect effects that autonomous decisions of the banking sector (in spite of there being no central bank in the model) have on the distribution of national income not just between two sets of capitalists, but between workers and industrial capitalists as well. While there already exists a body of work on the distribution of income between financial rentiers, industrial capitalists and workers, with similar conclusions to my own, this alternative treatment of distribution involves different transmission mechanisms to those that are usually found, for example, in Sraffian models that deal with the same issues.

⁴ Whereas we have seen the constant expansion of the neoclassical paradigm – new institutional economics and the creation of 'artificial markets' comes to mind – bringing the same singular logic outside the original sphere of our discipline; classical economics tends to embrace the findings of other social sciences, instead of encroaching and forcing its own logic upon them.

What I have been able to do, is take the classical system and bring it in a formal and comprehensive stock-flow model, which is something that has not been done before. In a similar fashion to myself, Hein (2006B) constructs a Kaleckian model, which deals with movements of the mark-up. It should be added, however, that my model in this chapter is clearly situated in the short-run. Perhaps a very important point of difference is that in my model in a given period of production, profits of enterprise and bank profits are treated somewhat differently, while they can obviously added up *ex post* to form a mass of profits, they are clearly antagonistic in a given time period. However, we will show that in a dynamic setting a more complex relationship between the two emerges. Another difference that has to be stressed is the importance of the interest rate transmission mechanism on the profit rates of enterprise, which will be shown to operate directly and via the labour market. As we will see, my model was also constructed with the aim of capturing the phenomenon of financialization, albeit in a somewhat different way from Panico (2012 et al.) where the financial sector changes distribution through an increase in its size. In the following analysis we will focus more on the relation between the interest rate, the profit share and the profit rate as factors that shift income distribution.

The model itself is a simple variant of stock-flow models presented by Godley and Lavoie (2012), treating distribution in the fashion mentioned above, with wages and profits on the one hand and interest rates (rents) on the other. Additionally the household sector is made up of two classes, capitalists and workers, which is another innovation with respect to existing work that's been done on this field. For all its simplicity the model does a fairly good job at explaining how the level of output is affected by changes in the distributional variables. Now, having explained the reasoning behind my decisions, let us plunge into the heart of the matter to see how the model itself is fashioned.

2.2 The model

Following a very common-sensical approach by Godley and Lavoie (2012) I start by first presenting the model in the form of a behavioural transaction matrix. Bear in mind the setting is one of »pure capitalism«, to borrow from Binswanger (2009), where there is no central bank, no government and all financial needs of the firms are met by a private banking sector.

Workers	Capitalists	Firms		Banks	
		Current	Capital	Current	Capital
$-CW_D$	$-CC_D$	$+C_S$			
		$+I_S$	$-I_D$		
		$[Y]$			
$+(1 - \theta)FF_D$	$+\theta FF_D$	$-FF_S$			

	$-IF_S = -\Lambda\theta FF_D$		$IF_D = IF_S$		
		$-r_{L-1}L_{-1}$		$+r_{L-1}L_{-1}$	
	$+r_{M-1}M_{-1}$			$-r_{M-1}M_{-1}$	
	$+PB_D$			$-PB_S$	
			$+\Delta L_D$		$-\Delta L_S$
	$-\Delta M_C$				$+\Delta M_S$

Table 1 Behavioral matrix

Each of the categories above now needs to be defined as a dependent variable. This is what I propose we do next in order to get a complete system of equations that describe the bank-money world economy, made up of two classes (more on that later), vertically integrated firms *a la* GE, Siemens and the big Japanese conglomerates, with a banking sector providing loans to firms. I will explain the notations together with the equations below.

$$C_S = CW_D + CC_D \quad (1)$$

$$I_S = I_D \quad (2)$$

$$\Delta L_S = \Delta L_D \quad (3)$$

In essence the first three equations tell us that scarcity is not a symptomatic problem in this economy. Supply of consumer goods (C_S), investment goods (I_S) and loans (ΔL_S) is able to adapt to whatever the demand might be. Equation (3) implies that the banks are very good at their job; telling apart those who are and those who aren't credit worthy (Minsky 1986: 229). In this paper we do not concern ourselves with the »fringe of unsatisfied borrowers«.

$$PB_D = PB_S \quad (4)$$

$$PB_S = r_{L-1}L_{-1} - r_{M-1}M_{-1} \quad (5)$$

$$IF_D = IF_S \quad (6)$$

$$IF_S = \Lambda\theta FF \quad (7)$$

Where the parameters are $0 < \Lambda < 1$ and $0 < \theta < 1$.

$$Y = C_S + I_S \quad (8)$$

$$FF = Y - r_{L-1}L_{-1} \quad (9)$$

Equation (4) basically states that even though all the profits from banks (PB_S) go directly to financial capitalists, they cannot demand more than is supplied. In other words, no matter how influential, financial capitalists – barring government intervention or an act from God – cannot decide what they earn. In this sense financial capitalists, or rentiers, are not »masters of their fate«,

as their fate is inextricably linked to that of industrial capitalists and their willingness to take new loans for further investments. This is in line with Kalecki's (1971) view that capitalists can decide what they spend but they cannot decide what they earn.

Investment funds (*IF*) as defined by equations (6) and (7) tell a similar tale of one coin with two sides. In fact we could be talking of a fake duality, because there is no demand for investment funds – unless we believe capitalists, in aggregate, to be schizophrenic – without that same amount being previously supplied. The amount supplied depends on what I have called firm funds (*FF*) and the two parameters θ and λ , representing respectively the power of capitalists relative to the workers and their propensity to invest.

In our economic reality there is no need for a state, so national income (*Y*) is simply defined as the sum of aggregate consumption and investment. With a vertical firm structure both of these two categories must in some way funnel through the firm, which means that the national income also represents the sales of the firms. These sales – or what comes to the same thing, the national income – are then distributed to three groups. The first to get their share are the banks, for interest payments on past loans. What remains is the residual, which I have very unimaginatively dubbed as 'firm funds'. These funds are then distributed amongst two other groups, the workers and the capitalists, with their shares being determined by, in this model at least, exogenous factors. Realistically, I suppose, only profits would make up the residual, with wages representing certain agreements from the past (the proverbial stickyness). There are also no distinctions made between firm profits and dividends, as the whole amount of *FF* is distributed to one party or the other. Note that like in the classical framework, we have three income categories, wages, interest payments (rents) and profits, replicating, if you will, Marx's (1972 [1863]) schematic of $M \rightarrow M \rightarrow C \rightarrow M' \rightarrow M''$ in a stock-flow setting, representing a monetary capitalist economy.

In reality, investment funds would probably never go to the capitalists bank accounts in the first place, but would instead stay within the firm, and be re-invested. Here, however, the point was to show, that it is the capitalists who are the ones that get to decide how much is being invested and they would be in a position to do this even if the funds were not first transferred to them, but if they had remained within the firm. They are the ones that control for parameter λ , the willingness to invest. Disregarding transaction costs, it is really quite irrelevant how the investment funds reach their final destination. That being said in practice the decisions to save and to invest are separate. However the contribution of this chapter is not with respect to investment decisions undertaken in uncertain conditions which then determine the level of output and influence distribution of income in society. The economic universe of this chapter is classical in the sense that decisions to save and to invest are essentially in the hands of firm owners. The aim of the chapter was not so much to go into the uncertain nature of investment decisions as it was to show that even in a perfectly deterministic universe, distribution between workers and the two sets of capitalists is not always straightforward, and to show the different effects of the interest rate on the distribution between these three groups. Admittedly, we could add the extra layer of realism, but it would not serve the main purpose of this chapter. That being said, we can easily imagine that if certain effects of changes in distribution are found in a deterministic model, that these results might in fact be even more pronounced in a world of fundamental uncertainty, where, for example, a fall in the

profitability would not only decrease the amount of funds available for investment, but might very well also decrease the amount of those profits being actually invested in capital equipment.

We could easily add depreciation allowances and separate dividends from profits, with both of those two categories representing outside restraints on the firms – technical and societal respectively. For sake of simplicity, however, I have opted against doing so instead assuming that there exists a $\bar{\Lambda}$, representing a minimum willingness to invest that corresponds to depreciation allowances, with the further assumption, that the exogenous power relation parameter θ accounts for both profits and dividends⁵ under the same category, as they would eventually end up in the same pockets anyway.

$$\Delta L_D = I_D - IF_D = I_D - \Lambda\theta FF \quad (10)$$

It is worth noting that (10) can also be rewritten thus:

$$L = L_{-1} + (I_D - \Lambda\theta FF) \quad (10a)$$

$$CW_D = (1 - \theta)FF \quad (11)$$

$$YD_W = CW_D \quad (12)$$

Looking at (10), you can see the impetus for new loans (ΔL_D) comes from investments (I_D). Obviously most projects get funded partially by both internal funds (non-distributed profits) and loans, the former serving to reassure bankers that the latter will be repaid. There is nothing scientific *per se* in these assurances that represent nothing more than a part of past profits. They fall prey to the famous rule of thumb proposed by Keynes (1937); namely that we expect the current state of things to continue into the future.

The assumptions behind equations (11) and (12) are within both the Kaleckian and classical traditions. Workers spend what they earn as opposed to capitalists who earn what they spend (Kalecki, 1971, p. 13). There is nothing to stop us from adding workers' savings into the mix yet I have opted against it, because we can safely assume that workers will not be able to live off their savings for long. In their case savings usually do not represent a continuous hoard, instead we can speak of saving as being merely postponed consumption. If a family is saving for their offspring to go to college, this saving has a qualitatively different role to that of a capitalist, whose savings do constitute a continuous hoard.

$$YD_C = (1 - \Lambda)\theta FF + r_{L-1}L_{-1} \quad (13)$$

$$YD = YD_W + YD_C \quad (14)$$

$$\Delta M_C = YD_C - CC_D \quad (15)$$

$$r_L = \bar{r}_L \quad (16)$$

⁵ The latter themselves a sort of indicator of the relative power of shareholders, with almost the same qualities as interest payments, due to the fact that dividend payments represent something akin to a convention, according to Robinson (1962); a tribute to the lords of the land, if you like.

$$r_M = \bar{r}_L - \varepsilon \quad (17)$$

$$\Delta M_S = \Delta L_S \quad (18)$$

Equations (13) and (14) revolve around disposable income (YD) with the latter being a sum of both the capitalist's (YD_C) and worker's (YD_W) aggregate disposable incomes. The difference between capitalist's disposable income and consumption constitutes saving, or what comes to the same thing, the change in the stock of money (ΔM_C) they decide to hold. In reality, they could opt for other holdings as well, but here, the only way to store wealth, is in the form of money.

We can see by looking at (16) that the interest rate (r_L) is exogenous, determined by the banks themselves in absence of a central bank. In essence we are following the post-Keynesian 'horizontalist' view developed by Kaldor (1970, 1982, 1985), Moore (1988, 1989) and Lavoie (1984, 1992, 1996) and others, which was also adopted in a similar post-Kaleckian model to ours by Hein (2006B). Similar views regarding the exogenous interest determination exist in the surplus approach (Panico, 1988; Pivetti, 1988). Although more recently authors like Shaikh (2016) and Panico et al. (2012) tend to treat the interest rate as being part of the profit-rate-equalization process. The deposit rate (r_M) is indirectly set by the loan rate, the difference between the two obviously constituting bank profits. In the short term one can reasonably assume that the interest rates are completely exogenous. To borrow an analogy from Kaldor (1982), banks find themselves in a position somewhat akin to that of a constitutional monarch – being able to set the interest rates at will, yet unlikely to extend this privilege too far, for fear of losing it altogether. The last equation states that any change in the supply of money (ΔM_S) depends on the supply of new loans (ΔL_S), or to put it in a different way: loans create money and not the other way around.

A brief note about the exogeneity of interest rates is in order. What do I mean when I say the interest rate is exogenous? Certainly I could quote authors of the circuit school, post-Keynesians and others (Lavoie, 1992) but that is not the point. Sraffa (1963, p. 39) notes that the interest rate is determined outside the sphere of production and I would argue, that it is only with respect to the productive powers of society, that the interest rate is 'exogenous' – in other words it has nothing to do with the amount of 'physical capital' in a society or any such nonsense. However, I would be the first to agree that sociopolitically, the interest rate is endogenous⁶. So in the end it all boils down to methodology. The interest rate at any given point in time depends on a specific set of historical conditions which need not, and usually do not, go on indefinitely – this is also why the interest rate is often labeled as a convention. Since there is no general theory of history, there can be no general theory of the interest rate, meaning that methodologically at least, it is best to treat it as exogenous. However, when we will be discussing the issues of distribution and the trade cycle in the next chapter, the interest rate will definitely be endogenous with respect to both of those.

$$CC_D = \alpha_0 + \alpha_1 YD_C + \alpha_2 M_{C-1} \quad (19)$$

$$K^T = \beta Y_{-1} \quad (20)$$

$$K = K_{-1} + (I_D - \Lambda \theta FF) \quad (21)$$

⁶ This would be even more true if we had a central bank in the model.

Capitalist consumption (CC_D) function described by equation (19) is rather simple and consists of three parts: autonomous consumption, consumption out of the current disposable income (YD_C) and consumption out of accumulated wealth (M_{C-1}). Equation (20) represents some aggregate target of capital (K^T) that capitalists aspire to reach in the short run. For example, an entrepreneur might want to build a new factory and that factory represents his capital target. However, his aspirations for the future depend on the results of the past, which is why K^T is a function of past sales – the latter also representing national income in this model. We do not know how the aspirations of a single agent transcend into the aggregate relation, but it is safe to assume that past results will play a large role in determining future targets, which is essentially what equation (20) does. Moving on, note the similarities between (21) and (10a). The capital stock moves in tandem with the loan volume. Talking about a stock of capital is always problematic so perhaps we could borrow from Jevons (Keynes 1964: 321), who says, 'not that a factory, or dock, or railway, or ship is capital, but that it represents so much capital sunk (equation (10) or (10a), if you will) in the enterprise. Accordingly, I would not say that a railway is fixed capital, but that capital is fixed in the railway.'

While the stock of loans is homogenous and simple, its mirror image is not, it is in fact a myriad of different things, created and made possible by the issue of new loans. Loans represent a simple quantitative leap whereas the growth of capital essentially produces qualitative changes to our lives; a different, more efficient and productive technology does not mean that more 'physical capital' was used, it simply means a different production method was used. Capital in our model should be understood essentially as the change in productive forces of mankind, a sort of proxy for (mainly) technological development of societies, with the volume of loans representing its abstract monetary value.

$$I_D = \gamma(K^T - K_{-1}) + \lambda\theta FF \quad (22)$$

$$\Delta M_C = \Delta M_S \quad (23)$$

The last two equations are pretty self explanatory. Investment demand (I_D) depends on the targeted capital stock and on how much profits the capitalists are willing to re-invest in any given period. Parameter γ is simply there to remind us that in reality things do not happen instantaneously, targets aren't achieved immediately and they change from one period to the next. Equation (23) follows from all the others and simply states that the change in the capitalist money stock (ΔM_C) is equal to the money supply (ΔM_S) from banks. However, as Moore (1997) had pointed out, capitalists – or for that matter anybody else – don't really demand deposits, they are in fact the ones who are supplying them to banks. The supply of new money originates with new loans and therefore with new investment. Equation (23) is a truism, because the money for deposits had already been supplied in form of loans.

2.3 Classical income distribution and a simple trade cycle

With the system in place, we can start looking at the implications of the results. We have a simple, yet comprehensive model, that represents a classical system of distribution with three types of incomes, rents, wages and profits in a bank-money world. Yet whereas, for example, Ricardo's

exposition was based on what was essentially a one-good economy, where corn was both the output and the input, this model represents a monetary capitalist economy, with endogenous money. I have been able to create a stock-flow model that represents classical competition on the factor markets, between two types of capital (industrial and financial) and the workers, which is something, that has not been done in this fashion before.

Within the classical surplus approach one can take either the wage rate or the profit rate as an independent variable. Originally, the wage rate was assumed to be given and due to population pressures it was further assumed that the wage rate would remain at subsistence levels, where customary influences were allowed as well (Garegnani, 2003). While this might have been a stylized fact back in 19th century Britain, subsistence level wages do not constitute a general law and there is no reason why workers could not accrue a share of the surplus large enough, for the wage rate to go above that level. Within the Sraffian system (1963) there are no assumptions made about the level of wages, the surplus can be distributed in any way, ranging between the two extremes where all of it accrues to either workers in form of wages (or profit sharing schemes of some sort) or to capitalists in form of profits. In my model the distribution of firm funds, the part of the national income left after the repayment of interest on past loans, follows the same logic; namely that at least theoretically, there is nothing to stop θ (the »power« parameter, which reflects the current bargaining position between capitalists and workers) from being either 0 – with all of the firm funds going to workers – or 1, where the opposite situation occurs. Realistically, θ will most likely vary between certain upper and lower bounds, never reaching the extremes and moving slowly in time, representing the »grinding« scramble for income as one of the defining characteristics of capitalism.

The other distributive variable, one which defines the amount of firm funds which are distributed amongst capitalists and workers, is the interest rate. Much the same way as θ could be said to represent, in the spirit of classical factor market competition (Garegnani, 2003), both the current and past bargaining positions between industrial capitalists and workers, the same could be said for the interest rate; itself dependent on a myriad of different considerations, all of which are essentially aimed at maintaining or increasing the rentier capitalist's share of the total output and at perpetuating the system that grants this class the leisurely route of capital accumulation. The interest rate primarily reflects the seemingly antagonistic relationship between financial and industrial capitalists, where it should be noted, however, that both of these groups receive the surplus, and while issues of division will, almost by definition, be divisive, it is in both their interest that the surplus is as large as possible. Marx (1972) speaks of the relationship as representing a quantitative division of gross profits between the two groups. In my model the situation could be said to be similar, except that there is no explicit 'surplus' category and that there is no equivalent category to gross profits in the sense that Marx envisioned them. Net profits are only determined after we know θ and they are contested as a residual, with interest payments having already been deducted from the national income. Regardless, I will try to argue later on that Kalecki's (1943) idea of a grand coalition between industrial and financial capitalists, makes intuitive sense, given the results of the model.

Solving the model can be done without having to make use of any artificial processing power, yet nevertheless, the process itself has been left for the appendix. The category – perhaps a more appropriate term than a variable – which will prove to be of interest for us in the further analysis in this paper, revolves around national income variations with respect to parameter shifts. This is why not every category from the behavioural matrix has been expressed in parameter form and why some have been, again, left for the appendix. What distinguishes this model, among other innovations, from the similar ones by Godley and Lavoie (2012) is that the interest rate parameter for loanable money capital comes directly into the results. The interest rate is an important distributive variable, one over which the financial system has direct control and one which influences the level of output.

$$Y^* = \frac{\alpha_0}{(1 - \alpha_1)((1 - \lambda)\theta(1 - \bar{r}_L\beta) + \bar{r}_L\beta) - \alpha_2\beta} \quad (30)$$

The equilibrium level of national income is captured by relation (30). At this point it is perhaps worth noting, that the paper will not deal with disequilibrium dynamics, which is not to say that out-of-equilibrium positions are not worth analysing in general, but that changes distribution, the *leitmotif* of this chapter, which lead to changes in the level of output, constitute various, different equilibrium positions of the model – even if they are not optimal from the viewpoint of employment, for example. Having a concept of equilibrium based on full employment of resources is hardly helpful, knowing that capitalism has never experienced long periods of full employment. The question of stability and the possibility of the system reaching equilibrium in the first place, is dealt with in the appendix.

Now we turn to the issues concerning distribution and the trade cycle. Obviously there are different reasons for the existence of trade cycles, some of which have accompanying theories and some of which do not. The model in this paper was built to show how output reacts to changes in distribution and we can use this feature to give a meaningful interpretation of a trade cycle. It is quite clear from (30) that distributional parameters (\bar{r}_L and θ), among others, influence the level of output, what I will argue is that these changes in distribution can be shown to induce a trade cycle. Obviously causality runs both ways and changes in the level of output can themselves induce changes in distribution. All we need to do is imagine successive periods of falling output, eventually leading to a higher unemployment rate, which brings down the bargaining power of workers *vis-a-vis* the capitalists in form of a growing theta. Unemployment is far from the only factor which could influence theta – in fact we could imagine a plethora of factors influencing the »power parameter« between workers and industrial capitalists – yet »the sack« remains a disciplinary mechanism *par excellence* in capitalism. It is precisely because of its role that capitalists will never be keen on protracted periods of full employment, something noted by Kalecki (1943). In terms of distribution, therefore, crises, by dint of inducing unemployment on the economic system, play a vital role in bringing the bargaining power of workers from the previous periods, back down again. While this phase of the trade cycle is unpleasant and far from Pareto optimal, I would not characterize it as out-of-the equilibrium, and indeed within my

framework, it remains fully within it; all that changes in the model is the theta, which, should unemployment persist, will likely shift in favour of capitalists (that is, it will go up).

Theta, θ , and the interest rate, \bar{r}_L , have a rather simple and straightforward relationship with the national income, should any of the two variables increase in value, the level of output goes down *ceteris paribus*. As far as potential levels of output are concerned, a low theta, coupled with low interest rates on loanable money capital would constitute the most beneficial social arrangement. Financial capitalists especially, will not be keen on such an arrangement, where a relatively small part of national income ends up in their pockets; an unhappy consequence of low interest rates for a class which lives of those very same interest rates. Additionally high levels of output, coupled with low unemployment eventually start shifting theta downwards, eroding the share of capitalist profits even further. While in absolute terms the whole society might be better off, in relative (and absolute) terms this arrangement favours the workers, who are able to accrue for themselves an ever increasing chunk of the national income. I suppose the fear could be, that eventually, in the long run, the capitalist class, or at least its rentier aspect, would cease to exist, something which Keynes (1997) had actually hoped would happen, with a policy of continuous low levels of interest. So whereas Kalecki (1943) was, only seemingly of course, befuddled as to why capitalists were not keen on policies of full employment – even though those policies would bring about a higher mass of profits – in reality, no paradox exists. Protracted periods of near full employment bring about a change in the bargaining position of workers (theta goes down), meaning a larger part of firm funds will go into the pockets of workers, which, as we will see in the next section, is crucial. The biggest fear, I suppose, is that in the long run these sort of progressive policies could destabilize the existing class structure altogether. The exchange ratio between a unit of money (Keynesian term) and a unit of labour power (Marx's term) would change, leading to a devaluation of the unit of money in terms of labour power (Patnaik, 2009, p. 136). Essentially this means that the money wage (and the real wage) would go up (Patnaik, 2009, p. 165) at the expense of real profits and at the expense of the existing money stock, which would devalue in terms of labour power as well. Money in capitalism has a peculiar feature, namely it starts the production circuit and it therefore has to have command over labour power to have any value for the capitalist (Graziani 1998). Furthermore Graziani (1998) notes: 'The only exchange relation that involves money therefore is that between money and labor, and the only price that is formed is the wage rate. The problem of the value of money is therefore reduced to the problem of determining wages.' Therefore if the wage rate is allowed to go unchecked, it will erode the value of money (for the capitalists). However, as long as the power to invest is safely in the hands of capitalists, this is not a problem, because an 'investment strike' creates unemployment and eventually money regains its value compared to labour power, which is when investment will (eventually) start picking up pace again. Now if a government were to interfere with this 'natural' order of things, by trying to alleviate unemployment through public investment programmes, the well tried principles of capitalist business cycles would not be able to do what they were supposed to, which is to bring down the wage rate.

Fortunately there is another route, albeit a circuitous one, how one can bring profits up, without directly having to shift theta – the interest rate. Remember what the workers and capitalists contest

are the firm funds, (36), and their size varies inversely with the interest rate; the higher the rate, the lower the funds and the greater share of national income accrues to capitalists without there being any positive change in the value of theta. It should be noted, however, that there is antagonism between industrial and financial capitalists, but only to a certain point. Furthermore I would like to point out, that we won't touch on all of the aspects that the interest rate has on distribution, output and employment; high interest rates can keep down investments and employment *ex ante*, so to speak, meaning that since fewer projects are profitable, there will be more people unemployed and so on. This does not undermine the basic findings of the following paragraphs, I only mention it to remind the reader, that not all 'transmission mechanisms', for lack of a better word, will be considered here.

$$FF^* = \frac{\alpha_0(1 - \bar{r}_L\beta)}{(1 - \alpha_1)((1 - \Lambda)\theta(1 - \bar{r}_L\beta) + \bar{r}_L\beta) - \alpha_2\beta} \quad (36)$$

Much like firm funds, the level of output is also inversely related with the level of interest, which means that not only will higher interest rates translate into a smaller 'pot' for both workers and industrial capitalists, additionally, with a lower equilibrium level of output, the bargaining power of workers will (eventually) go down further – meaning theta will go up, so that even out of the already smaller firm funds an even lesser part will accrue to the workers. High interest rates therefore do two things, they increase the share of income that capitalists get as opposed to a situation of a low theta and low interest rates, and by making the workers worse off (lower wages, unemployment etc.), their wage claims fall, eventually making investment more profitable again. It is beggar thy neighbour in a class setting. With this policy, capitalists will have seemingly empowered themselves, only to empowerish workers even more, plunging them into desperation, thereby effectively enriching themselves. Again, what has to be noted is that high interest rates are not beneficial to all capitalists, but by putting pressure on wage claims – indirectly of course – they eventually benefit the class as a whole. We should remember also, that inasmuch as every capitalist will want to acquire at least some part of their wealth in moneyed form (a constant hoard if you will), then every capitalist is at least partially a rentier and will not want to see the value of their accrued wealth erode due to ever higher wage claims. Of course industrial capitalists would ideally prefer high theta and low interest rates to prevail at all times. However, without going into too much detail, we should remember that in a competitive capitalist economy, capitalists will wish to produce as much as possible, which means that more people will need to be employed and output will rise. This process carries with it the seeds of its own destruction, because theta will eventually start falling. Therefore if high interest rates stop this process, by making old investments unprofitable and by discouraging new investments, the policy will have done its job in making sure that the workers share (and *pari passu* their wage claims) is kept down.

Essentially what this model shows is that the interest rate can influence the profit share and that the share of profits moves in the same direction as the interest rate. Sraffa (1963) mentions that the interest rate could influence the rate of profit and in Panico's (1988) model we see exactly that; high interest rates bringing about high profit rates and vice versa. What is the profit rate in our

model? Quite simply, following Graziani (2009, p. 103) it is the difference between output and the monetary costs of production, divided by these same costs, yielding the following result:

$$r = \theta(1 - \bar{r}_L\beta) \quad (39)$$

In our model the interest rate will obviously have negative direct effects on the the profit rate, indirectly, however, through its negative effects on the bargaining power of the working class (lowering output and firm funds), it will eventually have an overall positive effect on the rate of profit because of its influence on theta⁷. A further interesting feature of the profit rate (and the profit share as well, for that matter) is that if theta is zero, which would be optimal for society (maximum national income), the profit rate is also zero, a scenario that capitalists will do anything to avoid. In Panico's (1988) model the positive relationship between the interest rate and the rate of profit is more clear-cut, whereas in our model the same conclusions only hold if we posit that a higher interest rate will, by lowering output, eventually influence theta. It is also worth noting, of course, that once this has been done, the interest rates can of course go down again. In fact if prospects of profitability pick up and the confidence in the system is restored, this might very well happen automatically.

Interestingly enough Pivetti (2015) notes a similar relation between the interest rate and the rate of profit in Marx, where the profit rate is high or low in inverse proportion to the interest rate. Following Marx, the latter is expected to be lower than the profit rate under regular circumstances, a fact noted by Pivetti (2015) and Shaikh (2016, p. 447), among others. That being said apart from the upper bound set by the profit rate of enterprise, Marx claimed that there was no general law in determination of the interest rate (Pivetti, 1985), which is consistent with our exogenous treatment of it in the model. We should add, however, that in the above formulation of the profit rate, the Marxian interpretation is only logical with respect to given output withing a given period of production, whereas if we take into account the fact that a higher interest rate also influences theta, the same reasoning does not necessarily work when comparing different time periods, where we have to take into consideration both the direct negative effect that the interest rate has on the profit rate and the positive effect due to an increase in theta. What we in fact posit is that while theta is partially exogenous, it is also partially endogenous and a positive function of the interest rate on money capital, $\frac{\partial \theta}{\partial r_L} > 0$. The overall net effect on the profit rate therefore depends on how strong the response of theta is to a shift in the interest rate.

However, it isn't only distributional parameters that influence the level of output, or the distributional dynamics for that matter. Capitalist's propensity to consume, α_1 , also plays a major role and the higher α_1 , the higher is the level of output. Obviously this parameter, together with the propensity to invest, Λ , is very closely linked to Keynesian concepts of uncertainty and animal

⁷ At the risk of repetition, let me restate the argument. Higher interest rates, which may occur for a variety of reasons, will have a negative effect on output; lower levels of which will eventually – or so we posit in this chapter – have a positive influence on theta by dint of lowering the bargaining power of labour. Inasmuch as the financial system can start this process, intentionally or not, it is both an antagonist and an ally of industrial capital for reasons mentioned above.

spirits, bringing into play expectations and their influence on the level of output as well as the issue of distribution (with the two being interconnected anyway). Now were we to imagine that for whatever reason, maybe a fall in the level of output, or due to some more or less rational fears about what the future might hold, the capitalist would start hoarding their income, the level of output would fall even further. So what was already a crisis might develop into an even worse crisis, something that has been pointed out lately by Keynesians of all varieties, with respect to European austerity measures. However this paradox is only paradoxical with respect to the level of national income, whereas there is nothing paradoxical about its effects on distribution; for it is very likely, that a fall in national income will eventually lower the bargaining power of the workers and the capitalists's self-imposed 'austerity measures', will have done their job. Note also the effects of this so called austerity (a negative change in α_1) on the profit rate; as the bargaining power of labour falls, which it eventually must, both the share and the rate of profit will go up. Thrift can therefore be beneficial to the profit rate, not due to some moral reasons, but because we can realistically expect that a campaign of thrift will boost theta. In conclusion, capitalists can, through saving (or spending), determine the level of activity in an economy, and by doing so, they implicitly influence the distribution of income as well. It should be noted, however, that a previous change in the latter, could have been at the root of the capitalist's decision to change their spending habits in the first place. Distribution, therefore, both determines and is determined by the level of output, which is itself dependent on capitalist expenditures.

2.4 Scarcity, non-produced means of production, »luxury« commodities and distribution in capitalism

The disconnect between a high theta (income share of capitalists), high interest rates and low consumption on the one hand, and maximum level of output on the other, was made quite clear in the previous section. Paradoxically, even net profits of industrial capitalists, θFF^* suffer with a higher theta. So if by increasing their share they are actually undermining themselves in absolute terms, with a lower theta granting higher profits, then why would they ever be interested in increasing their income share in the first place? While we could simply refer to the profit rate and say that no paradox exists, I believe there is another, complementary, story to be told. From a purely mechanistic point of view, the system would be best served if no income at all accrued to industrial capitalists and if the interest rates were only barely positive. There are various reasons for this state of affairs, some might have to do with human nature, some with the way we're brought up, but at least some of it is connected with the fact, that there exists a whole range of commodities, which aren't producible. Another would have to do with control over the means of production, produced and non-produced alike. Finally, with control over the means of production one also dictates the levels and the composition of output, and, perhaps most importantly, its distribution as well.

A production circuit in capitalism starts and ends with money and as was noted, among others, by Graziani (1998); money needs to be able to acquire labour, where the wage rate is the price of labour in terms of money. Two things need to be mentioned, first, continuous full employment is likely to raise the wage rate, meaning the value of money will depreciate with respect to labour,

which also means that the fruits of past accumulation get devalued⁸. Secondly, prolonged periods of low theta, to use my terminology, could endanger the existing social arrangement, which is why, capitalists will always oppose any full employment policies. It is not in the interest of the long-term survival of the system for theta to be that low, hence, a system that produces more than any other in history, could actually – again in very straightforward mechanistic terms – produce a lot more. Strictly speaking, Kalecki (1943) was correct in saying that policies of full employment, in our model typified by a low theta, would increase the mass of industrial profits, θFF^* . The problem is, that this would increase all the other income categories in absolute terms as well and what Kalecki didn't take into account is that not all commodities are producible. All other things the same, if the income shares change, so does the command over these commodities (imagine beachfront property, to give but one example). Furthermore, and perhaps more worryingly, one could even imagine workers, or groups of workers, contesting control over means of production, as was the case in Sweden, with wage-earner funds (Whyman, 2008).

Let us, therefore, turn our attention to the means of production. It is essential, from the capitalist's point of view, that workers's purchasing power be constantly kept low enough, so that they are never able to contest the control over means of production and the income (essentially rents) generated by them. Control over means of production grants one indirect control over the level of employment and, consequently, over the money value of labour power; as long as labour's share is kept low enough to not contest control of the means of production, the status quo can persist. Note that in the current scheme, capitalists pay workers for wage goods – the proceeds of which end up flowing back to the capitalist class anyway – getting investment and (luxurious) consumption goods in return. If relative ratios change, the workers can afford to buy goods previously unavailable to them; meaning the capitalists lose in real terms.

Because of their scarcity, special consideration and importance should be given to non-produced means of production. With produced means of production and produced goods in general, there is always the possibility, that production will be able to keep up with demand and scarcity will not be the issue. The same cannot be said for non-produced goods, such as land, oil, natural gas etc. By keeping the income share of workers low, one essentially makes sure that these non-produced means will never be contested by them and the owners of these means of production, will be able to extract their rents. From this point of view, high interest rates and high theta make perfect sense; capitalists can make use of both levers to make sure that their control over scarce resources is kept intact – the price being that some firms go under and that fewer production circuits get started in the first place. Again we come to the same problem, that, should the wage rate go up, the playing field would be equalized. This is in the interest of both financial and industrial capitalists, which is not to say, however, that both of these groups won't compete amongst each other for control over these non-produced means of production.

Our model does not deal directly with scarcity, it merely shows the supposed paradox of sub-optimal positions⁹, at least some of which, are not paradoxical when we become aware that scarcity

⁸ This is why even industrial capitalists might find themselves siding with financial capitalists, when it comes to periods of higher interest rates, because nobody wants to see the value of their past accumulation erode.

⁹ Another reason for sub-optimal results is that capitalists are making decisions within a competitive context. That does not change the fact, however, that the whole community is worse off because of this.

has not, and likely never will, go away. Ricardo was well aware of this duality; in his theory we find both scarcity, connected with rent, and productiveness, connected with wages and profits (Quadrio-Curzio, 2003). However, from Wicksteed onwards, neoclassical theory had basically universalized Ricardo's theory of rent to all factors. Policywise this spontaneous neoclassical determinism implies the existence of only one set of optimal policies, thereby successfully subduing any policy alternatives (Branco, 2012). So part of the reaction, led mainly by the post-Keynesians, was to deny the influence of scarcity in modern capitalist societies (Quadrio-Curzio, 2003). Even if we disregard human nature, which in its competitive drive leads us to zero sum games, that manifest themselves through conspicuous consumption and the like; there is no denying the fact that certain means of production are, at any given point in time, limited in quantity and, given the technological constraints, non-reproducible. While it is true that things change and technological constraints disappear, scarcity remains; oil has replaced coal, to name but one example, which just means that one scarce commodity has driven out another scarce commodity. Knowing that non-producible means of production influence prices and distribution, sometimes in unexpected ways, as proven quite decisively in a raffian framework by Quadrio-Curzio (2003), is just another thing to consider, with respect to the role of theta and the interest rate. Perhaps in order for existing social relations to continue, the system cannot operate at the maximum theoretical value of Y^* . Keeping a high theta, coupled with occasional Volcker-like interest rate shocks goes a long way in making sure that a large part of the society will never have the purchasing power and the political power to gain hold over non-produced and produced means of production alike. If the distribution changes in favour of the workers, for the same amount of scarce non-producible commodities, they can buy more of these commodities, irrespective of the fact that profits might have risen in absolute terms, if the profit share falls, that's enough.

With respect to surplus product and luxury products Sraffa (1963) writes: 'One effect of the emergence of a surplus must be noticed. Previously, all commodities ranked equally, each of them being found both among the products and among the means of production...But now there is room for a new class of luxury products which are not used, whether as instruments of production or as articles of subsistence, in the production of others.' Characterized as passive by Sraffa (1963), with respect to the profit rate and the price-relation between them and all other goods, this is only true within the scope of Sraffa's own system. Sociologically we have to be aware of the importance of these products and we cannot even begin to describe, in one paragraph, what their importance to the system might be. The point is, if the system produces such goods, and there is nothing in our model saying that firms would not, among other things, produce luxury commodities as well; it is safe to assume, that one would wish to be in a financial position to acquire them. So ideally you want to have a system where a Ferrari factory exists in the first place, and you want to be able to buy that Ferrari without having to manufacture it yourself. A precondition for the existence of the Ferrari factory is a large enough pool of free labour. While I am not saying that no luxury goods are consumed by the working class, far from it; in general, the best of these goods will be consumed by capitalists, be they of the active or leisurely persuasion. Again, a relatively high theta gives you both, it makes sure there are workers who are willing to build your luxury sports car and you also make sure that by building this magnificent vehicle, they will not make enough money to buy it themselves. As long as the workers spend their earnings mainly on wage goods, all the other goods in the economy, scarce and abundant alike, will remain out of their reach.

These are just some of the reasons why it is highly unlikely that, given the current social system, we would see the 'optimal' possible levels of output. The model makes explicit the intuition of Kalecki (1943) and tries to provide some explanations, as to why certain equilibria might not prove tenable in capitalism. I do not believe that, in the long-run, the coexistence-antagonism between rising wealth on the one hand, and massive poverty on the other can be bridged, because the latter is the pre-requisite for the former – this becomes especially obvious knowing that θ has a positive relationship with the rate of profit and a negative relationship with output. That being said, the period after the second world war was a rather successful example of how things can be done differently and why we shouldn't give into the 'tyranny of now'. On the other hand it is also true, that in spite (or because) of a great crisis of capitalism, the system, seems stronger than ever. The bargaining power of first world workers is falling and, judging by the financial results of the worlds most prominent financial houses, the rentier interests seem to have recovered; everything seems to be in motion for an eventual new 'recovery'. In the meantime, keeping the θ in favour of the capitalists, a global pauperised underclass has emerged; a class of price-takers, a reserve army of labour of unimaginable proportions (Patnaik. 2009, p. xvi), that if nothing else, constitute a constant 'threat' to the employed, and as we have seen in Greece, can have devastating political consequences. Remember that full employment in it of itself is not problematic, it is the improved bargaining position which inevitably follows full employment, that makes these policies undesirable. So were we to one day wake up to a Golden dawn of a brave new world, with a regime that would ensure full employment, due to popular demand of this pauperised underclass, it is very likely that real wages would be kept down by other means. And this would not be unheard of; after all, one of the important functions of fascism, was to remove capitalist objections to full employment (Kalecki, 1943), by doing exactly that – keeping the appetites of workers (θ) in check. If such a system would be stable in the long run, is hard to say. Due to the nature of investments undertaken in that social climate, war seems a likely scenario; destroying wealth, only to create it anew.

2.5 Conclusions

In this chapter we presented a stock-flow model in the tradition of Godley and Lavoie (2012), with some innovations, such as the explicit class division of households between capitalists and workers. However, the most important change lies in the treatment of distribution between different classes and amongst the two groups of capitalists, industrialists and financiers. National income in any period is divided between interest payments on past loans and the residual, called firm funds, FF , which are contested by industrial, firm-owning capitalists and workers. Thus what I have managed to replicate, in a different setting, is the simple division of the surplus, as envisioned by Marx (1972) and represented by this simple schematic: $M \rightarrow M \rightarrow C \rightarrow M' \rightarrow M''$. The comparative static analysis of equilibrium positions gives interesting insights into the role of distribution and fluctuations of output.

Comparing various equilibrium positions, by shifting parameters such as θ , or the interest rate, \bar{r}_L , or even the capitalists' propensity to consume, α_1 , can be seen as a portrayal of a distributionally induced trade cycle. While uncertainty and expectational mismatches might certainly play a big role in various crises of capitalism, I also believe there is a systemic, structural,

even deterministic explanation of output fluctuations which essentially hinges on issues of distribution. Some of the results reaffirm what we already know, whereas some reveal additional interesting insights. The level of output is inversely related to changes of theta and the interest rate, whereas more capitalists' consumption boosts the level of output. Furthermore, the model shows that the profit rate is a positive function of theta, whereas exactly the opposite is true for output, making the disconnect between what is good for society and what is good for the capitalists painfully obvious.

In the light of distributional struggle such phenomena as financialization and financial deregulation start making more sense as well. When facing a given and unmovable theta, what remains is the use of the interest rate. While industrial capitalists might be adversely effected by this measure in the short run, and indeed many might go under due to this change in monetary policy, in the long run, this course of action brings back control of the economy to the capitalist class. After all, if the division of firm funds is in favour of workers, the logical thing to do is to make these firm funds smaller, thereby negating the success of the struggle against industrial capitalists. A rising interest rate lowers the share of income going to the workers, making the real wages go down or remain constant, with no further gains being made possible. A similar result, but in a Sraffian setting, was reached by Panico (1988, p. 94). The profit share (both industrial and bank profit) moves with the interest rate. This obviously means that with prices staying the same, workers wages go down, or unemployment goes up, either way, the power relations are restored and labour power depreciates with respect to money. We see that industrial capitalists and rentiers are therefore merely two sides of the same coin, they are like Janus, the two-faced god of beginnings, endings and transitions – a swinging pendulum that dances to (and creates) the rhythms of the zeitgeist. As the two souls of capitalists duel with themselves, they are both the orchestra and the dancers in the great symphony of capitalism.

3. A TREATISE ON MONEY AS A STORE OF VALUE AND THE CONSEQUENCES FOR THE ECONOMIC SYSTEM IN THEORY AND PRACTICE

'No man can serve two masters: for either he will hate the one, and love the other; or else he will hold to the one, and despise the other. Ye cannot serve God and mammon.'

Matthew 6:24, King James Bible

The aim of the following chapter is to set up the groundwork for the analysis of a growing monetary economic system in chapter four. I begin by making a brief distinction between the 'real analysis' that is found in neoclassical economics and the 'monetary analysis' of the surplus approach. This fundamental methodological treatment of money has implications for the determination of distribution, employment and growth in the economic system (Hein, 2006). Following this introductory part I look at the role of money, specifically its role as a store of value in Keynes, Marx and Sraffa. While most of the chapter could be said to constitute a regular literature review of a select group of authors, there is an attempt to show, in a simple monetary circuit *a la* Graziani, where distribution depends on the relative strength of different parties (Pivetti, 2015), a contradiction between money as a medium of circulation and money as a store of value in capitalism. This is why this chapter could be said to reside in the purgatory, trapped between a regular literature review and the expounding of genuinely new insights concerning the role of money as a store of value.

What becomes quickly apparent when one compares the traditional, neoclassical paradigm with most other theoretical traditions in economics is that there exist at least two main pervasive divisions: one is in their respective analysis of money and the other (which is not unconnected to the first) in their analysis of distribution. The neoclassical theoretical universe rests on essentially three groups of data (Panico, 1988, p. 2):

- a) consumers' preferences
- b) technical conditions of production
- c) the existing endowments of factors of production as they are distributed in the hands of economic agents

Once in possession of this data – no small task, it should be noted – the neoclassical system endogenously determines prices, quantities and all distributive variables such as the rate of profits, wages etc. While a whole treatise could be written about the data inputs used, the problematic groups being especially the first and the last, this is not our aim here. However, it is rather curious that a theoretical system so intent on mimicking the analytical rigour of physics, operates with very vague and inherently unquantifiable concepts such as consumers' preferences. We are therefore left with rigour built on foundations of quicksand (Hodgson, 2012). With respect to factor endowments we again find ourselves facing a problem of quantifying these endowments. As has been shown in the Cambridge Capital Controversies, this is something which cannot be done unless one already knows the distributive parameters in advance, which then makes the endowments themselves irrelevant insofar as we would be interested in them to determine these very distributive parameters in the first place, a point noted by Sraffa (1963). Neoclassical theory

has since tried to distance itself from aggregated models *a la* Solow-Swan and we are left with what are essentially microeconomic models with optimising agents. However, I would argue that the basic idea of factor endowments remains intact even in disaggregated models, where distribution would depend essentially on genetic traits or some other inherent abilities possessed by different agents, where the degree to which these abilities were present in different agents would determine their rent. In essence this is Ricardo's theory of land in the land of the selfish gene, and land has, yet again, become universal in neoclassical economic theory. Once more we find ourselves in a situation, where dubious quantification of qualitative factors takes place and where metaphysics enters into an unholy union with mathematical rigour.

The system presented in this chapter will be based more on what could be considered in some sense the classical surplus approach. There a different set of data are required (Panico, 1988, p. 4):

- a) the social product, i.e. the level and composition of output of the economy
- b) the technical conditions of production
- c) the real wage rate or the general rate of profits

The first thing to note in the classical system is that it has a degree of freedom and that it therefore does not determine all distributive variables, equilibrium prices and quantities endogenously and simultaneously (Panico, 1988, p. 4). Note that either the real wage or the profit rate are given exogenously (with the other variable then obviously becoming endogenous), meaning that their determination lies outside the system of production, yet determining in a very important way, that very same system. Perhaps another difference worth noting is with respect to the level and composition of the social product, in the classical system proper, it is simply taken as given and not much more is said about it, whereas the same is obviously not true in the neoclassical system, where preferences and endowments meet at the intersection between demand and supply, to create the level and composition of goods in any given economy. In that sense neoclassical theory again strives for universality, whereas in the classical surplus approach, less is said about how any given output came to be. I suspect this has something to do with the fact that in classical economic analysis there is a difference between use value and exchange value, something which is not true in neoclassical theory, where the two become, for all intents and purposes, the same. Strictly from the point of view of analysis, I prefer the classical approach where output is given and we do not try and delve into some imagined utility functions of consumers in order to try and explain its nature; neither from the viewpoint of quantity or composition. In essence we would be arguing in circles anyway, for we would need to assume some sort of rational behaviour and after seeing the results (which is to say, when output would become apparent), we would hail them as rational, not achieving much in way economic analysis in between those two steps¹⁰. This is a real problem for rational choice theory, as it can be used to prove anything, all human endeavour can be portrayed as rational, within the scope of some exogenous utility functions being; hence the quip from Hodgson (2012): a theory which fits everything and therefore fails to explain anything.

It should be noted, however, that there are some neoclassical authors who would disagree with this dichotomy. Kahn (2003) for example, claims that the Sraffian take on classical surplus theory is

¹⁰ We would, however, by proposing what we wish to prove, be able to show, that output at any given point in time is optimal from the point of view of individual consumers and society as a whole.

merely a special case of neoclassical economics, where technology is treated as exogenous. Additionally Kahn (2003) argues that neoclassical theory, contrary to the Sraffian paradigm, can explain the reasons behind the choices of consumers thus making the composition of output endogenous. Essentially the claim is based around the idea, that the surplus approach as espoused by Sraffa takes technological coefficients as fixed, whereas in the neoclassical paradigm these can be variable due to the profit motive, which will lead producers to changes production techniques. Mr Kahn's criticism surely has its merits, but it seems reasonable to assume that Mr Sraffa was aware of the effect that the profit motive has on technology, yet he still favoured taking technological coefficients as given, because his aim was not system dynamics but a comparison of long-run positions, with exogenous technology and for this purpose he developed a different set of tools as opposed to the more traditional ones. Additionally, I would assume that he was sceptical of having a theoretical framework where subjective factors, such as utility, would shape objective physical reality.

It quickly becomes obvious, that dynamic systems cannot make use of the same data, such as the social product for example, since the social product itself will not only increase with time, but its composition will change as well. As this happens, we are dealing with qualitative changes that are best left out of quantitative analysis. That being said, however, I favour the classical approach with regards to its *nonchalance* concerning the impulses of producers and consumers that lead to the opening of a production circuit for a certain commodity. Nor do I believe that if we are concerned with fluctuations of the system in any meaningful analytical sense, much could be gleaned by understanding why a certain type of bread is favoured over another. These are interesting subjects by themselves, but not really pertinent to issues concerning growth and distribution.

Finally in the classical system, we cannot overstate the importance of that one degree of freedom which is left in the system, because in many ways it makes all the difference, when we compare the two theories. The fact that distribution is not determined endogenously means that there is room in the system for free will, whereas in the neoclassical system the world is fully determined by natural characteristics of economic agents. Classical analysis allows for the existence and importance of history both in theory and practice. It also means that the system is path-dependent, past struggles over distribution of the social product will inform the future states of the system not only with regards to distribution proper, but with respect to the quality and quantity of the social product. Different accumulation regimes will therefore have different influences on future states of the system, but crucially, these regimes are not determined solely¹¹ within the physical parameters of the system of production, in fact, as the reader might guess, they are more likely to be determined outside the sphere of production.

3.1 A monetary theory of production with the concept of a constant hoard

¹¹ It is my belief, however, that physical characteristics, especially concerning the means of production, can have a significant influence on distributive parameters as well, mainly because they have an effect on the level employment and hence on the remuneration of labour.

Discussing Hayek's (1931) *Prices and Production* in one of his notes, Sraffa provides us with a very good description of why a monetary economy requires a different analytical apparatus as opposed to a simple barter exchange economy:

'He is right to emphasise the importance of 'relative prices', rate of interest, and production on trade fluctuations. But this shows that his book has nothing to do with the theory of money: on the contrary it is an attempt to show how the general theory of value and distribution is not merely a study of equilibrium but can be extended to trade cycle. On top of this he puts money: which, all the work having been done, must be neutral. Is this a theory of money?' (D3/9/89)

Sraffa noted, very early on we should say, that, as he puts it, after all the work has been done in constructing a theory one than simply adds money on top and requires it to be neutral¹². Hayek in fact restated a theory and added on top of it the requirement that money be neutral in order for the original theory to hold in a world where money underlies the social fabric of society. One can then also see where the Austrian conclusions about the trade cycle come from: since the basic barter economy is said to be stable (as per the non-monetary theory), then it has to be that monetary authorities violated the requirement of money neutrality, which was added on the original theory. Keynes likewise identified the fault of 'real-exchange economics' in the fact that it:

'...is a singularly blunt weapon for dealing with the problem of booms and depressions. For it has assumed away the very matter under investigation.' Keynes (1973, p. 410-11)

Where a barter economy according to Keynes (1979, p. 66-7) would be:

'I define a barter economy as one in which the factors of production are rewarded by dividing up in agreed proportions the actual output of their co-operative efforts. It is not necessary that they should receive their share of the output in specie; the position is the same if they share the sale-proceeds of the output in agreed proportions. Since this economy does not exclude the use of money for purposes of transitory convenience, it might perhaps be better to call it a real wage economy, or a co-operative economy, as distinct from an entrepreneur economy. In a barter economy (or co-operative) only miscalculation or stupid obstinacy can stand in the way of production, if the value of the expected real product exceeds the real costs.'

There is therefore a fundamental divergence between two groups of theories, those which start their analysis with money and those that first deal with the so called 'real phenomena' and then just add money at the end. While there are various methodological (and ideological) reasons for this, the first being perhaps in the fact that for many heterodox schools of thought, if that clumsy expression can be used, money is *a priori* seen as a store of value, even though it is also a means of circulation and a unit of account. These latter two functions of money are not seen as problematic and they are also the two which usually feature more prominently in theories which suppose the neutrality of money (and therefore theories which in effect deal with what Keynes (1979) argued was a barter economy). However, as noted by Sraffa, it is very unlikely, that money would be both a medium of exchange without it also being a 'standard of deferred payments' or a

¹² This is reminiscent of Samuelson's claim, that for economics to be a science, ergodicity has to be upheld – much to the dismay of social reality, we might add.

'store of value' (Deleplace, 2014). And even if one were to prove, that this is a theoretical option, it does not reflect the current state of things in contemporary capitalism.

Historically, one could point to post-Keynesians, the French and Italian Circuitists and Marxist authors, as having realised these different functions of money (Fontana, 2000; Deleplace & Nell, 1996). We should perhaps note, that while all three functions of money are important, it is the ability to hoard money, which distorts and makes irrelevant all comparisons between a barter and a monetary economy. Post-keynesians traditionally start their analysis of money with fundamental uncertainty as the prime reason for the existence of a liquid store of wealth, which allows for the postponement of consumption and investment decisions. Money is the link between the present and an uncertain future (Michell, 2015). In the General Theory Keynes (1936) lists three reasons for the holding of money: the precautionary, transactions and speculative motives. Later Keynes (1937) added the finance motive which was seen to be spurred by the accumulation of liquid balances for the purpose of spending on new investment. Of course one could argue, that these lists are not exhaustive, suffice to say, however, that it seems a safe bet, to presume that economic agents in monetary economies will wish to hold onto money and that this urge has an anti-cyclical element as well.

What are the consequences of money being not merely a unit of account and a medium of circulation but also a means of holding wealth? Here we can turn to Locke, who from very early on understood, that money fuels the thirst for wealth on the one hand and allows and indefinite accumulation of said wealth (Screpanti & Zamagni, 2005, p. 47). The main problem being, of course, that money accumulated need not be spent. Or in the words of Pasinetti (1993, p. 86): 'The relations of debt and credit... insert so to speak a wedge, they open up a gap, between the inflows of incomes and the actual outflows of expenditure (or vice versa), for each single individual.' In modern economies where money is not commodity money, but credit money instead, the same still holds true. Individuals can accumulate claims of purchasing power *ad infinitum* without spending them, as long as it is believed, that these claims will be honored in the future. A more general point should be made here, namely that money is first and foremost an idea, and as such it can traverse time unaffected by its passing with respect to itself, of course. This is not true for other goods – a machine kept in storage for ten years will very likely be of little use once brought out of storage. As the world around it morphs, money remains virtually the same. Not in real terms of course, as money will command, at any given point in time, a different assortment of commodities, both in quality and quantity. Saving, which is to say, the accumulation of claims on future consumption, therefore, is inherently a monetary and not a real phenomenon, because there is no real saving. Indeed even assuming, realistically we might add, that there exists in the economy a large number of durable commodities, these commodities will, if we are pedantic, change with the passage of time, even if ever so minutely¹³. The numbers in the bank account, however, will remain the same, barring, of course, a haircut of some sorts or the banking system as a whole going under.

¹³ Imagine a given stock of machinery which is not augmented and imagine a given amount of claims upon this stock, as time passes on, the claims will remain the same, yet the stock itself will have eventually become useless, even were it not to be used for productive purposes at all, but merely due to the passage of time.

It is these features, I believe, which make money, be it credit money, or gold, particularly relevant to capitalist dynamics. First of all, since in modern monetary economies money is not a producible commodity by itself, one can only acquire money by in fact producing and successfully selling commodities on the market. Capitalism has been able to harness this motive which is perhaps best captured in the simple M-C-M' schema from Marx. Commodities are produced with the single aim of acquiring M' which is greater than the original M, the difference between the two constituting profits for the capitalist. This simple motive could very well be at the heart – in some microfoundational fashion – of what is an uniquely capitalist phenomenon: growth. The other quality of money, namely it being impervious to the passage of time and the fact that it can therefore be accumulated to apparently no end, means that capitalism will be prone to crises of demand. The very fact that money is such an unnatural occurrence in the economic system is probably what creates growth on the one hand – through the channel that was mentioned at the beginning of the paragraph – and what creates deficiencies in demand, which would otherwise have not occurred in a setting of a barter economy, albeit it at a higher level of economic activity, something which the proponents of capitalism never fail to mention.

3.2 Capitalism as a demand-constrained system

Curiously enough, when we look to an explanation why capitalism might find periods when demand is found lacking, we can in fact turn to Ricardo, perhaps the most prominent of all classical economists, and one thought of as generally adhering to Say's law where supply creates its own demand:

'If any man wishes to increase his capital he produces that which he has good reason to think he can sell at a remunerating price. It is with money he is to pay labour, and it is money which he seeks to obtain' Ricardo (1951, Vol. VIII, p. 235)

This is Ricardo using the famous Marxian formula M-C-M', before Marx himself. More importantly however, note that in order for supply to occur, if we are allowed to use such a clumsy phrase, entrepreneurs need to expect demand to be forthcoming, and not only that, it needs to be forthcoming at prices which are above the average cost it takes to produce a unit of output. It is true, of course, that were we to discuss the Ricardian system in light of Sraffa's (1963) interpretation of the classical system, this would not be the case, but that is because, this specific problem is not meant to be tackled in the Sraffian system. The latter gives a logical and coherent answer the following question: what determines the values at which various commodities are exchanged in a given market on a given instant (Sraffa papers, D3/12/7, as cited in Garegnani, 2005, p. 471-2)? It is only in this latter sense that we can ignore supply when classical economics is concerned, because once dynamics of capitalism enter the picture, we have effectively changed the underlying investigation and demand once again becomes an important factor. Having done this, however, we have unwittingly returned to a monetary economy, since money is the link that connects different time periods; itself being an abstract idea we have fashioned as a society to manage production processes that take time.

In a theoretical world, where money is not a medium for holding wealth and in a world where past obligations do not matter – which is to say in a world with no future and no past – it is easily

conceivable, that the only shocks to the economy would either be exogenous in nature, as per the real business cycle approach, or a faulty monetary and fiscal policy by the state. While there is no *a priori* reason to dismiss these claims, they do not, to my mind, constitute a systematic explanation of the trade cycle and the long run movements of capitalism and it is these systematic features that we will try to analyse in the system which will be presented in this chapter.

For Marx general crisis of overproduction were a common feature of capitalism, and indeed, he saw them as being imminent in the money form, since he believed the only reason authors like Ricardo could (seemingly, as we saw) maintain, that demand-constraints do not pose a problem for capitalism, is because they had, much like Hayek, abstracted from money, and therefore from the problem itself (Sardoni, 1987, p. 26):

'The only circumstance which could prevent overproduction in all industries simultaneously is... the fact that commodity exchanges against commodity – i.e. recourse is taken to the supposed conditions of barter. But this loophole is blocked by the very fact that trade (under capitalist conditions) is not barter, and that therefore the seller of a commodity is not necessarily at the same time the buyer of another. This whole subterfuge then rests on abstracting from money and from the fact that we are not concerned with the exchange of products, but with the circulation of commodities, an essential part of which is the separation of purchase and sale.' Marx (1968, p. 532-3)

Marx goes further and explains that in a barter economy the acts of selling and purchasing are simultaneous, and this is true for all goods which are brought to the market. In Marx's own words 'no one can be a seller without being a buyer or a buyer without being a seller' (Marx, 1968, p. 509). In this case, we would expect Say's law to hold good and the neoclassical parable would make much more sense, since the systems rotations would most likely really be influenced by exogenous factors (such as a bad harvest, natural disasters etc.). Note again, that in this system, there would be no permanent overproduction (Sardoni, 1987, p. 26). Sardoni (1987, p. 27) also notes, as we have mentioned previously, that if money were merely a means of circulation, there is nothing from stopping such a simple monetary economy to operate exactly in the same way as a barter economy would. However, as noted by Sraffa, it is very unlikely to imagine money not being a form of holding wealth and, more importantly, it is completely irrelevant in any analysis of capitalism.

We can give an example of a classical Marxist crisis. Marx (1968, p. 494) argues that should market prices of commodities fall below their costs, capitalists will start to curtail investment. While to my mind the question as to what drove the system to this state of affairs is quite irrelevant, competition between capitals seems like a safe assumption. In this atmosphere, with their animal spirits quelled, capitalists start hoarding money:

'Surplus-value amassed in the form of money (gold or notes) could only be transformed into capital at a loss. It therefore lies idle as a hoard in the banks or in the form of credit money... Purchase and sale get bogged down and unemployed capital appears in the form of money.' Marx (1968, p. 494)

He goes on to say:

'the supply of all commodities can be greater than the demand for all commodities, since the demand for the general commodity, money, exchange-value, is greater than the demand for all particular commodities, in other words the motive to turn the commodity into money, to realise its exchange-value, prevails over the motive to transform the commodity again into use-value.' Marx (1968, p. 505)

Here I believe an explanation *a la* Graziani (1998) of the situation Marx describes might be in helpful. Essentially, during a crisis, when we see the curtailment of investments, capitalists wish to close production circuits, that is to say, sell their existing commodities as fast as possible in order to get hold of money. Additionally, new production circuits are not started until prospects for a recovery, in form a of a positive profit rate, materialize for some reason or another. Another thing to note in this situation is that once output starts falling and commodities are no longer sold with profit on the market, existing debt obligations cannot be honored, which creates an extra pressure on the system. Indeed Sraffa (Deleplace, 2014) actually considers this to be a hallmark of any monetary economy, where I would agree with him, that money, being the general equivalent, will impose certain restrictions on the system as a whole, while also, obviously, changing the system in various, what most of us would probably consider to be positive, ways¹⁴:

'It is impossible to avoid prefacing a discussion of neutral money, without analysing however briefly what is the essential feature which distinguishes any monetary economy from [what] may be called a non monetary economy. This I should describe as the existence of 'monetary constants'. They may be debts or any other legal obligations, habits or fixed decisions of individuals of the kind predilected by H.[ayek]' (Sraffa (D3/9/49) as cited in Deleplace, 2014)

In other words, the present is saddled with the past not only in 'real' terms, with a given knowledge and means of production, but also with monetary obligations, which represent personal relations between economic agents made in the past. This is another important difference between the general equilibrium approach of neoclassical economics and the framework proposed here, and one which can be associated with various heterodox schools. Patnaik (2009, p. 26) points out this difference between the Walrasian equilibrium, which recognizes only the legacy of past endowments, but fails to take into account the legacy of past commitments. Patnaik (2009, p. 26) goes on to make the difference between commitments and endowments even more explicit:

'The legacy of payment commitments, however, is an altogether different entity from the legacy of endowments. If some agents are supposed to make available predetermined nominal sums to others, then the latter's demand for commodities depends upon the extent of the former's honoring these commitments. And since this extent in turn depends upon the prices which the former get for the commodities they sell as well as their endowments, it makes the demand of one set of agents dependent inter alia upon the endowments of another set of agents.'

Patnaik seems to echo Sraffa's view that a monetary economy is necessarily one of certain constants, when he says that 'agents are supposed to make available predetermined nominal sums'. The nature of money as being immutable in nominal terms, would also seem to be one of its crucial characteristics. However, from this comes another feature that is required for stability of monetary

¹⁴ Here one might be tempted to point out, that nothing comes without a cost, there is no free lunch.

economies: a relatively stable price level. To be sure, if money were used up immediately and not be used as a store of value then rising prices would not pose a problem, but once this is no longer the case, the maintenance of a stable price level becomes an important feature for wealth holders. Any currency that wishes to maintain its role as a store of value will therefore be required to produce an aura of stability in that sense. The question then becomes, how does one stabilise the price level in capitalism?

3.2.1 Demand constraints and unemployment

It is a commonly observed feature, or stylized fact, if you will, that capitalism as a system has never been able to maintain, for any reasonable period of time, what could be considered to be a situation of full employment. In neoclassical theory this would traditionally be attributed to stickiness and it is furthermore believed that if all prices were completely flexible, the wage rate being perhaps the chief amongst them, there would be no unemployment. This seems a rather roundabout way of analysing the phenomenon of unemployment, where one first posits that the unrealistic assumptions of the model are what reality should aspire to, but due to the overwhelming empirical evidence on the contrary, stickiness is admitted and reality is berated for its imperfections. Additionally one now hears that the next phase in this field of analysis is to discover the origin of said stickiness, presumably with the aim of curing the underlying social reality of this unwanted feature – an attempt of high theory at plastic surgery, if you will. In the classical sense, however, unemployment is seen through a very different prism¹⁵.

If we take a classical Sraffian system not much is said about unemployment directly, partly because the *Production of Commodities by Means of Commodities* is a book written by an Italian but with the economic expediency that is usually attributed to the pragmatic philosophy found across the Atlantic. The only way we could sneak the issue in the Sraffian representation of classical theory is if we were to posit that unemployment somehow changes one of the distributional parameters, either the profit or the real wage rate. The system only explains the workings of capitalism and we could therefore imagine that the reserve army of unemployed, while putting pressure on the wage rate, would not be part of the capitalist system anymore, it would exist in a precapitalist setting. In a very plastic fashion, we could imagine that a worker got laid off, left the city and returned to work on a plot of land somewhere, thereby being outside of capitalism proper. Indeed, this seems to be the gist of Michael Perelman's (2013) book, where he maintains, in a somewhat Lacanian fashion, that not taking into account petty production and primitive accumulation are the key omissions in the theoretical programme of classical political economy. This is not to say that a Sraffian system is irrelevant or logically unsound, but merely that the issue of unemployment is not considered. Ricardo (1951, Vol. I, ch. I) himself dealt with the issue of technological unemployment, but not much is then said of what happens to the unemployed – unemployment is not seen as a disturbance or an imperfection of the system, but as a (rather unimportant and

¹⁵ It should also be remembered, that a monetary economy has certain constants, as was pointed out in the previous section, and that these are hallmarks of a monetary economy, meaning that stickiness is not a problem, but a normal feature of monetary economies. And even if it were a problem, it is a problem that cannot be nullified as long as we are in a monetary world.

unfortunate) feature of the economic system¹⁶. Furthermore, nothing is said about what happens to the unemployed. It stands to reason, that if the workers left the capitalist system, they either perished or returned to a pre-capitalist mode of production. In practice, however, emigration, coupled with imperialism (Patnaik, 2011), meant that the instability of 19th century capitalism could easily be cloaked and exported into, what were soon to become (mainly) peripheral regions of the world economic system.

There are certain similarities between the original classical notion of unemployment and the Keynesian one, that I feel can explain why we usually think of classical economists as adhering to Say's law. Namely in both these two traditions one can easily reach a situation where markets for all commodities except clear and there still exists unemployment. This is what I was alluding to in the previous paragraph when referring to the Sraffian system. All goods that are produced are also sold in the context of a Sraffian economy, but that does not mean that the Sraffian economy represents the whole economic system – merely its capitalist part – and furthermore, there is no guarantee that enough production circuits are open for every member of the society to be employed in the Sraffian capitalist economy. Indeed a great many might not be. The connection between classical and Keynesian unemployment is neatly summed up by Patnaik (2009, p. 138) and it shows the fundamental difference between the neoclassical notion of all markets being cleared to the classical and Keynesian examples of market clearing, where nothing is said about the 'labour market' clearing:

'For example, »classical unemployment« as expounded by classical writers refers to a situation where the real wage is given. Its downward inflexibility is the cause of unemployment. But the entire output produced at this real wage is exactly what is demanded¹⁷, that is, there is no rationing of buyers. Likewise, »Keynesian unemployment« according to Keynes refers to a situation where product markets clear but the labor market does not.'

If we were to imagine a simple economy, where a certain amount of goods are produced and in order to produce those goods, and given the price level, the appropriate amount of income is distributed to economic agents involved in the production of said goods (even if only in their role as owners of the means of production, for example). Even if all their incomes are spent on the goods that were produced, this does not by itself guarantee, that the level of activity in said society would be such as to ensure, that every member of the society will be somehow employed in the production process. The capitalist production system itself might very well prove to be stable and Say's law might very well prove to hold in general, but nothing is said about that part of the society which does not partake in the production process, does not receive any income from the production process and therefore has no access to the commodities produced within this production process, barring the occasional act of charity.

¹⁶ Obviously this would not hold for classical political economy as a whole, but it is definitely true in the Ricardian sense and *pari passu* in the Sraffian interpretation.

¹⁷ Thus giving credence to Sraffa's interpretation of the classical system. It should be noted that in a world with a relatively large precapitalist sector, this sort of analysis made perfect sense. The capitalist system worked in a Say-like fashion, but that is only because there existed a precapitalist sector which produced the output for all those not employed in capitalist production – which at the time must have still been a sizeable proportion of the population, albeit dwindling rapidly.

Supply in this sense does create its own demand, but the problem Keynes (2003) tried to explain was that the demand which is naturally forthcoming in capitalism is by no means certain to employ the whole productive powers of a given society. Keynes (2003) ridicules Say's law from the perspective of employment, but this was not the perspective considered in the classical apparatus, not because it could not handle it theoretically, but most likely because most liberal authors at the time did not seem to find the issue pressing enough – or because they found it so pressing that they had decided to omit it from their analysis. The simple, and rather vulgar Keynesian solution in this case would obviously be some sort of state-led demand management scheme which would employ all those who do not find work in the spontaneous operation of capitalism. This, however, has its limits, some of which were brought to the fore by Kalecki (1943) and some of which have again to do with the fact, that capitalism is a monetary economy.

3.2.2 Money and the issue of unemployment

It is not apparent at first glance, what could money possibly have to do with the issue of unemployment. Here we again find ourselves in a situation, which has been mentioned throughout this chapter, that the moment money becomes a form of holding wealth, certain complications arise for the productive side of the economic system. In the previous subsection the issue discussed was a lack of demand as the reason for unemployment in capitalism. What we have to ask ourselves then is why this issue cannot be remedied, since, in practice, it is quite obvious that there has never been a protracted period of full employment in capitalism¹⁸. This merits further investigation.

In the 17th chapter of his *General Theory* Keynes concerns himself with the interrelationship between unemployment and money. However in true Keynesian fashion he makes some confusing remarks that can lead one to very different conclusions. Firstly he states that money has very negligible elasticities of both production and substitution:

'The significance of the money rate of interest arises, therefore, out of the combination of the characteristics that, through the working of the liquidity-motive, this rate of interest may be somewhat unresponsive to a change in the proportion which the quantity of money bears to other forms of wealth measured in money, and that money has (or may have) zero (or negligible) elasticities both of production and substitution' Keynes (1949, p. 234)

The fact that money lacks substitutes should not come as a surprise, it is the 'general equivalent' meaning it is universally accepted as a means of payment. During a crisis this feature becomes even more important than usual and money becomes the 'sink of purchasing power' (Keynes, 1949, p. 231). Keynes also seems to be stating that, since the elasticity of production is practically zero, money itself is not a producible commodity. It is this last feature, that according to Keynes (1949, p. 236) made gold ideal as a standard of value, but it was also this very same characteristic which made gold problematic *vis-a-vis* the level of employment:

¹⁸ Although it has to be admitted, that the era of Keynesian demand management after the second world war was a very valiant, and for a time at least, also very successful attempt.

'It is interesting to note that the characteristic which has been traditionally supposed to render gold especially suitable for use as the standard of value, namely its inelasticity of supply, turns out to be precisely the characteristic which is at the bottom of the trouble'

Gold is scarce and no matter how humanity might apply its faculties to this problem, the supply will nevertheless remain limited by objective natural factors. As such one can see why it has appeal as a standard of value and why this feature is now being replicated by various peer-to-peer digital currencies¹⁹. It seems curious, however, that man would use the latest in technology to replicate such an archaic device; it is almost as if we were looking for new ways to limit ourselves. Keynes (1949, p. 235) goes further to bemoan this feature of gold, but provides us with a solution to the conundrum as well:

'Unemployment develops... because people want the moon; men cannot be employed when the object of their desire (that is, money) is something which cannot be produced and the demand for which cannot be readily choked off. There is no remedy but to persuade the public that green cheese is practically the same thing and to have a green cheese factory (that is, a central bank) under public control.'

As long as money is not a producible good, there can be no price adjustment that would make employment disappear. In other words, flexibility of prices and wages becomes irrelevant in this setting. Since money is not producible, the only way to get your hands on it is to produce commodities and sell them on the market in order to acquire a larger share of the overall stock of money. Or as Patnaik (2009, p. 141) puts it:

'It is obvious that involuntary unemployment, as defined by Keynes, arises because at full employment there is an excess supply of producible commodities, and a corresponding excess demand for some nonproducible commodities, which cannot be eliminated through variations in the relative prices between the two.'

The system then reaches equilibrium when:

'...employment, output and hence income fall below full employment, the excess supply of producible commodities, and hence, by implication, the excess demand for money, begins to disappear until at some equilibrium level of employment it falls to zero.' Patnaik (2009, p.141)

What becomes apparent is the following: unemployment is imminent in the existence of money if money is not itself a commodity producible by labour since in that case changes in the quantity supplied will not greatly augment the level of employment. Now obviously gold has to be dug up, which increases employment, but once all the ore has been dug up at a certain location, the

¹⁹ This feature, which could be labeled as exogeneity, becomes quickly irrelevant when there exists a banking system in the economy. Arestis and Howell (2002) have argued that money has been endogenous to some degree for well over four hundred years. Once you have a banking system, you cannot help but have endogeneity, since the essential features of banking have remained the same over the years (Niehans, 1983, p. 538).

elasticity of production again returns to zero and we have a similar problem than before. Going back to the previous quote from Keynes, he offers a solution to the conundrum by means of a public authority which issues 'green cheese', which is to say, by having a central bank which will 'produce' enough money, to make the problem go away. But how does a central bank, or the banking system, produce money in the first place?

Keynes (1949, p. 94) proposed a very opportune way of alleviating unemployment by first filling empty bottles with money, leasing the land and then having people dig the money up. Curiously enough this simple example gives a very interesting insight into the workings of *laissez-faire*, since a private entity, presumably a firm, will get control of the 'money mine' and then that firm will employ workers who will dig the money up, even though one could easily imagine workers being perfectly capable of achieving that by themselves. This, however, is a secondary point. Even if the example of bottles (or Friedman's helicopter liquidity delivery service, at your service) were feasible, it is clearly not the way in which money enters the economy, especially not one with an advanced banking system (and ironically, those are the only economic systems with helicopters in the first place), where, as we have seen in previous chapters, money is an endogenously determined residual which comes into circulation by means of loan extensions.

In an advanced credit system, it then suddenly becomes conceivable, as indeed Keynes had argued (albeit, through somewhat different channels than those in the General Theory and perhaps closer to those found in the Treatise on Money), that an economy would no longer be bound by scarce commodity money such as gold, but would instead be free to finance any level of investment it saw fit, thus effectively getting rid of Keynesian involuntary unemployment. If we were to imagine a simple credit money economy *a la* Graziani (1998), I think it would stand to reason, that full employment is indeed attainable, if there is no limit to credit extensions and if capitalists are willing to open enough production circuits. However, should this not be the case, as indeed, it usually is not, then the gap in investment required in order to attain full employment can be bridged by state investment programmes. The only potential problem here would in effect be that under conditions of full employment the bargaining power of workers is increased, meaning that the wage rate is liable to increase. This, however, should not be problematic in a simplistic interpretation of circuit theory, but it would, on the other hand, be problematic for capitalism, where money is also a store of value.

Let us stay for a little bit longer in the economic reality of circuit theory and our previous example, where we should note that this will be a very simplistic version of said theory, without including the latest developments, such as the inclusion of shadow banking (Michell, 2015). If we imagine, as indeed is explained by Graziani (1998) in his Marxist Theory of Money, that all production is financed by the advancement of money capital from the banks to the firm sector, then all the previously mentioned limits imposed by commodity money, namely the fact that it is not producible, disappear in this credit money world. Graziani posits that there are two sets of actors essentially: the capitalists who have access to finance and workers whose only means of acquiring income is by selling their labour to the capitalist. The key characteristic of money in this process is its ability to procure commodities which are then used in production of new commodities. When

one capitalist buys commodities from another this just shifts profits and expenses between the capitalist class²⁰, whereas when money is used to procure labour power for the capitalist, money takes on a different role and we can speak of 'inter-class' exchange, if you will. Or as Graziani (1998) explains:

'The only exchange relation that involves money therefore is that between money and labor, and the only price that is formed is the wage rate. The problem of the value of money is therefore reduced to the problem of determining wages.'

In a monetary economy one needs money to start production, but money at this stage can only be credit money (Graziani, 1998); because the commodity equivalent hasn't been produced yet and therefore doesn't exist. Essentially at this stage money is a promise of payment, which is the definition of credit money. At the beginning of the circuit workers are *de facto* crediting the capitalists by creating the commodities that they themselves will get at the end of the production circuit; commodities which aren't even produced yet, but the payment of which has been promised. In other words, from the point of view of the capitalist class as a whole, the workers pay for themselves, so to speak. What do I mean by this? Well consider that the composition of goods at the end of the circuit consists of essentially three types of goods: luxury goods²¹ (or perhaps we should call them profit goods, seeing as how luxury is not a well defined concept), investment goods and wage goods. Now what the capitalists pay the workers in real terms are wage goods and what they receive in return are new investment and luxury goods. Even if we were to make this decomposition more detailed, the crux of the argument would remain the same; workers get paid – completely irrespective of the money side of things – in wage goods, for which the capitalists get remunerated, since the workers spend what they earn (Kalecki, 1971, pg. 12), whereas the capitalists get to keep the rest of the product which contains the following: most of the luxury goods (depending on the bargaining power of the workers, about which more will be said later) and investment goods. Of course firms and wage earners enjoy widely differing purchasing power over commodities, whereas the expenditure of the former is strictly limited by the budget constraint, the position of firms is totally different (Graziani, 2009, pg. 98). More importantly, perhaps, the nominal wage does not really matter since the composition of output is determined by the firms themselves, which, coupled with the control over pricing policy, basically means that in real terms workers should never be able to, at least not for protracted periods of time, increase their real wages. In other words, producers, by dint of controlling the composition of production, also determine the final output distribution, where changes in money wages will only influence the price level of wage goods, but not their amount. Bellofiore (2014, p. 233) makes the following observation with regards to this question, giving a Sraffian interpretation along similar lines to our own conclusion:

'As Graziani (1996, p. 296-7) wrote, Sraffa, in contrast with Hayek, asserted that if producers succeed in producing a given set of commodities, this is an 'order with no return': in a monetary

²⁰ Expenses for one capitalist are the profits of the other, it is essentially a zero sum game looking from the point of view of the whole class.

²¹ In reality not everything that capitalists consume is luxury consumption, of course. This three-fold composition could be further expanded or further simplified, into just the wage goods and the surplus, for example.

market economy capitalist producers command monetary flows and can dispose of productive resources; they are then powerful enough to determine the quantities produced of each commodity, beyond any alleged consumers' sovereignty²².

This brings us to a serious dilemma as soon as we enter an approximation of a modern economy with an advanced financial sector and credit money instead of commodity money, with respect to the analysis of the interconnectedness between money and unemployment as presented by Keynes, Marx, and most recently Professor Patnaik. For it becomes clear, that in the circuit approach there are practically no limits to the extension of credit, and therefore there should be no limits to real production as well. And since it is assumed workers do not have access to finance and therefore *pari passu*, have no control over the production process, then their claims remain in the sphere of nominal. Obviously even in this framework, prolonged periods of full employment could change the system in ways we cannot imagine – new institutions could spring up which would change the existing set of relationships – in which case, one could still argue that in order for the existing set of social relationships to continue unchanged, some unemployment could still be useful as the proverbial 'invisible' and 'self-regulating' stick. From a purely technical perspective, however, at least at first glance, we see no reason why the problems of commodity money should persist in this sort of economic reality.

It is a safe assumption that wage claims in any given economy will be to some extent dependent on the level of employment, the higher the level of employment and the more likely it seems that this level is stable through time, the higher we would expect the wage claims to become. Now as we have said in the simple Graziani circuitist economic universe this does not spillover into real wage claims, but that is not the point we are trying to make here. Note that in order for nominal wage claims to become irrelevant, this must mean, that firms have the power to add a mark-up over their costs (primarily over wages, since, as we have noted, the costs inferred by one capitalist are the profits of another capitalist). If this is so, then there must exist a level of employment at which, wage claims would start increasing and this would lead the firms to simultaneously increase the prices of the commodities as well. In other words we assume that wage claims are a function of employment and the resulting change that happens to nominal wages will also have an effect on the rate of inflation and, logically following this proposition, the general price level.

Again, this by itself should not be problematic if we imagine capitalism as a system where production is exclusively financed by credit money, which is then all used up and none of which is saved either in form of deposits or other financial claims upon real wealth. However, once we abandon this simple reality, I would argue that the same logic does not apply anymore. For while in terms of flows during a given production period the simple circuit approach presented above might very well make sense, the same does not hold anymore once we realistically imagine that economic agents will accumulate purchasing power from a given period of production with the aim of holding it in the future and, most likely, augmenting it in the following period as well. This

²² Strictly speaking, this is an exaggerated statement, but it is true, that the amount of wage goods produced is not determined by the consumers and that therefore, the level of consumption is given, whereas it is obviously true, that once in the store, consumers are free to choose commodities at will. Determining how and to what amount the store is stocked, now that is a wholly different matter altogether, as we have seen.

is when money gets the role ascribed to it by Keynes (2003, p. 184) as the link between present and future and this is where the Sraffian (Sraffa, 1932, p. 43) notion of a monetary economy is one where at any given point in time there exist some 'monetary constants', which, however, have a very real impact on the economy at said point in time.

Now it is not my intent to argue whether or not the accumulation of financial assets is *primum movens* of capitalism, a force behind the notion of accumulation proper, but the fact of the matter is that it exists and has existed throughout the history of capitalism and if anything, one could argue that during the era of financialization this impulse has become even more pronounced. If in the simple example from above all that was required from firms to maintain their real profits was for the inflation rate (the increase in prices) to successfully keep up with the rate of change in nominal wage claims, it should become obvious that in a world with financial assets, this becomes untenable, if these assets are to maintain their command over commodities for more than one period – which, seeing as how their *raison d'etre* is to constitute a storage of purchasing power, becomes rather important, lest they face a personality crisis. Therefore while it might have seemed as if credit money provides the solution to our conundrum, I would argue that this is not the case. In the credit money example the price level is irrelevant because it does not change the relations between capitalists and workers, but this would also have to mean that none of these two groups have a positive savings rate. In other words it would be a somewhat more realistic barter economy. Curiously Sraffa (Sraffa Papers, D3/12/13/16 as cited in Martins, 2014) actually envisioned the highest stage of capitalism as being closer to a barter than a money economy in one of his obscure notes:

'what really happens in the last stage, when units of money lose completely their identity, is that money has ceased to »exist«, i.e. to have a separate existence: we have pure barter – which thus is the highest stage in development, while it is attributed to the lowest (cf. Marx on the isolated individual).'

While one can see the reasoning behind this note in a world of bank-money, it would seem that we are not yet in that stage of capitalism and indeed, with the recent developments of shadow banking (Michell, 2015) it would seem that the current trends do not bode well for Sraffa's prediction. Going back to the issue at hand, however, we see that the moment money becomes a medium for holding wealth and the moment we have a system of financial assets which are meant to transfer purchasing power across time, it is no longer the case that only changes in prices matter, instead it is the overall price level which becomes relevant. If prices rise too much from one period to the next, then money effectively loses its value *vis-a-vis* the world of commodities, and not only that, but all the financial assets which are measured in money lose an equiproportional amount of command over commodities due to the rise in the price level. Should the inflationary trend persist it could completely erode the value of these accumulated claims within a few periods. So while it could still very well be true, that wages by themselves would remain stagnant in real terms, their nominal appreciation would prove to be detrimental to the value of money. We have come full circle from a commodity money world to a credit money world where the same problem emerges, that if money is to maintain its value *vis-a-vis* the world of commodities, which it must if it is to

be a store of value, wealth holders need to believe that the general price level will remain relatively stable.

The question then obviously becomes, how is this achieved in practice within a normal capitalist society. Perhaps we should first ask ourselves what are the factors most likely to endanger the smooth transition of the price level across different periods of production. Following from the previous analysis within the rudimentary Marxist interpretation of circuit theory, it is easy to spot the most likely culprit of price increases: the money wage rate. If the money wage rate goes up, as we have shown, this does not necessarily mean, that real profits in the given period will take a hit, because we assume that firms have control over pricing policy. What does happen, however, is that purchasing power stored in financial instruments²³ from previous periods gets eroded. If capitalism only had the productive aspect to it and if there was no impulse to hoard money and other financial instruments, then the price level itself would become irrelevant, however, seeing as how capitalism obviously does have a rentier aspect to it, the price level clearly becomes relevant. Kalecki (1943) noted as much when he said that price increases would make rentiers 'boom-tired'.

We find, therefore, that the increase in the price level is intimately related to the money wage rate. If we are to understand the dynamics of the price level, it would seem that an inquiry into the determination of the money wage rate would be a good place to start. While there are many insitutional determinants that we are perhaps neglecting at this point in time, it should be clear that the main determinant of wage claims in capitalism has got to be the level of unemployment. Wage claims will at least to some degree have to move opposite to the levels of unemployment in a given economy: the higher the level of unemployment, the lower the wage claims and the lower the money wage rate. Obviously, we are not saying that institutional arrangements do not matter here, for example, if we look at the current monetary infrastructure of the European union, coupled with the Maastricht criteria, it is obvious, that wage increases are *a priori* hard to achieve, due to the mercantilist nature of the institutional arrangement. So we are not discrediting the role of institutional factors, we are merely dividing them according to the influence on the levels of employment that they allow; the post-war Keynesian demand management regime, for example, constituted an institutional constellation which allowed states to augment levels of employment through investment programmes. Whatever the institutional arrangement, however, the main principle remains the same: the price level will sooner or later increase if money wage rates rise. Additionally, the usual way how capitalism spontaneously deals with the problem of increasing money wage rates is through unemployment.

There are of course, other ways to clamp down on wage claims. One way, mentioned by Kalecki (1943), is within a system such as fascism, where workers are disciplined by other means, so that even at full employment the money wage rates remain relatively stable. Obviously, however, since there is no guarantee that capitalism would, without state intervention, lead to full employment, one could argue that in an idealistic *laissez-faire* setting, the money wages would have no tendency to rapidly increase, because there would always be enough unemployment forthcoming, to ensure

²³ They are denominated in money terms, of course, and money could also be considered chief amongst them.

ex-ante that there would be no wage claims from the workers. Patnaik (2009, p. xvi) makes a further interesting observation, namely that there exists in the periphery, a pauperized mass so large and sociologically distant from both workers in those countries and especially from workers in the center, which represents another buffer in maintaining the bargaining power of labour low. Now one could argue that this was not always so, but on the other hand, we should not neglect the role of imperialism with respect to the issue at hand which essentially becomes one of the value of money in terms of commodities, which we could simply define as the inverse of the price level.

What we find is that in order for money to maintain its value, this presupposes either the existence of an autocratic regime or unemployment coupled with large labour reserves in the periphery of the economic system. In other words, the stability of the value of money – and inasmuch as we understand money to also represent wealth, then the same holds for wealth as well – comes, essentially, from the existence of unemployment, and unemployment begets poverty. Monetary wealth, and real wealth, since money has command over all other commodities, requires the coexistence of poverty. A gold coin, a paper bill or money in a bank account all maintain its value *vis-a-vis* the world of commodities because there exists unemployment – the latter therefore cannot be described as a special feature that perhaps has something to do with price stickiness or the like, no, in fact it is a normal component of capitalism.

A final point has to be made here. Inasmuch as money is also a store of value, there does not seem to be any meaningful difference between a commodity money world and a fiat money world, something which has already been shown to be true by Patnaik (2009, p. 207), but something which I have aimed to confirm in the above example of a monetary circuit *a la* Graziani (1998), where money is endogenous and there exists a banking system which can, for all intents and purposes, create as much liquidity as the system needs. Because in both these worlds, the price level will have to appreciate only very slowly, so as to not destroy purchasing power claims from yesteryear. The form of money is therefore irrelevant, as long as its function is the same, so too will be its consequences for the economic system – which is reassuring, because were it not so, the logical validity of the analysis which is to follow, would have to be put under question. We have thus re-affirmed the Keynes and Marx in their views as to why unemployment develops in a monetary economy, by showing that the same holds in a world of credit money. Unfortunately, however, it also becomes obvious, that Keynes' (2003, p. 149) solution to the problem, namely by introducing a central bank under public control that is allowed to 'print' money, would not in fact constitute a stable solution insofar as money is also a store of wealth.

These issues will be further analyzed at the end of chapter four in a more rigorous fashion. The issue of money being a store of value and its implications for the economic system is obviously not a new one; Marx, Keynes and Sraffa were definitely aware of it. In his book, *The Value of Money*, Professor Patnaik (2009) is acutely aware of the role that money has on unemployment if it is a form of holding wealth, and one of the ways he shows the problem is in a classical Sraffian system. He finds that in a system where money is habitually held as a form of wealth, there exists the following contradiction: if money wages go up, prices cannot go up to the same extent, for if they do, then the role of money as a store of wealth is diminished. My aim with the circuit theory

example above was to show something similar in an endogenous money world, where production is financed with credit. There is a slight difference, however, since Patnaik (2009) assumes that prices would not rise in order for the role of money as a store of value to be preserved, which means that the profit rate has to fall and that any rise in the money wage rate would imply a fall in real profitability. In my example the profit rate and the real wage rate remain the same, as we assume, following Graziani (1998), that capitalists will always increase prices so as to keep their real profitability at the same level. Yet this is where the contradiction of the system comes in, for if capitalists keep increasing prices in order to maintain their profitability, then the price level will keep rising and the the store of value function of money becomes meaningless. Two things follow from this. First the stability of the system requires that money wage claims do not run rampant and are instead stable in any given period of production. But this amounts to saying that the exchange ratio of labour with respect to money has to be fixed in a given period and is not allowed to run rampant across different time periods. Out of this comes the second conclusion, namely that since even in a fiat money world there needs to be a fixed ratio between money and some other commodity (labour in our case), that means that as long as money is a medium of holding wealth we are effectively in a commodity money world.

There are interesting implications for different theories that follow this discovery. One has to question the preoccupation of neoclassical economics with stickyness, since following the logic from the previous paragraph a fixed exchange rate between money and labour is not an imperfection (that leads to unemployment) but a requirement for stability in any system where money is also a form of wealth. The fixity of money wages in Keynes is not due to stickyness and 'more realistic' assumptions, therefore constituting merely a special case of neoclassical theory, but a logical conclusion that follows once we allow for money to be a store of value (Patnaik, 2009, p. 137). While my reasoning was developed on the basis of the circuit money approach, the conclusion is nevertheless unchanged. This implies that even in a fully developed credit economy, where money is endogenously determined, the same fixity in the exchange rate between labour and money has to exist, meaning that we are still stuck in a commodity money world. This has implications not just for the theory of endogenous money, but also for some of the full employment policies which are sometimes perscribed by its supporters. And it is this latter fact that I have tried to develop in my example and which will be further developed in the next chapter. Whereas professor Patnaik reached his conclusion for a given level of output, I have tried to show that the same logical contradiction exists in a credit money world that moves through different periods of production and is situated theoretically within the scope of circuit theory, effectively creating a synthesis between these two strands of thought, which suggests a somewhat different reading of the circuit theory.

Additionally, a rather interesting point is perhaps the following: money itself, even when we are concerned with a credit money economy is not, strictly speaking, a producible commodity – at least if it is to have any meaning whatsoever. In modern monetary economies credit money gets created *ex nihilo* and simultaneously as somebody goes into debt (Lavoie, 1992, p. 153; Graziani, 2009, p. 25). However, much to their dismay, banks are not allowed to create money in this fashion for themselves, so without there being a firm or an individual who is willing to take a loan (which

is to say, without an economic agent willing to spend), money, as the residual of said loan, will never have been created in the first place. Loans need to be created in order for money to come into existence and the public then supplies a part of that purchasing power back to the banking system in form of deposits. This is a well known procedure, hence the rather short explanation of the money circuit. Note the following, however, unlike any other commodity, such as corn, or a car, for example one does not simply get money by producing more money. We all demand money, our demand for money as the general equivalent, constituting wealth '*par excellence*', is infinite, as indeed Keynes (2003, p. 148) had noted, but even though our demand is infinite, supply cannot adapt, if money is to maintain its value, which is to say, if money is to be considered as wealth. Now if there is an excess demand for cars, more cars will eventually be built and somewhat akin to an equilibrium, if we think in these very clumsy terms, will occur on the car market. The same logic does not apply to money, we all want more of it, but we can only ever get it by selling commodities on the market (or by either counterfeiting or theft). Hence Locke's (Screpanti & Zamagni, 2005, p. 47) observation that money fuels accumulation, because at its root it is an institutional manifestation of our greed, of our want to differentiate and be better than our peers, and it is because money plays to these very base instincts of man, that it has proven itself to be such a good vehicle for accumulation. Since we all wish to become rich, we will therefore wish to produce as much as possible, but every once in a while, due to various reasons, economic agents will start hoarding money, closing production circuits, not opening new ones etc. and it is then when a downturn occurs. In the next section we will proceed with explaining the difference between the accumulation of claims upon wealth and the accumulation of physical means of production.

3.2.3 Accumulation of private wealth

A famous divergence between classical and Keynesian theory exists with respect to the causality between investments and savings. I believe, that once we account for the peculiarities of a monetary economy both strands can be at least partially reconciled and I will try to do this within the scope of the model through a synthesis of classicals, Keynes and Marx. In a way this section is a logical continuation of the analysis of money in general, which was carried out in the last section.

In a very basic Ricardian corn model, where the only good produced is also used as a means of production for the following period, one can very clearly see why saving, as it were, would determine investment (i.e. the expansion of the means of production) and, obviously following from this fact, output as well. The greater the amount of seeds saved in the previous period obviously means that the investment and potential output in the following period increase *ceteris paribus*. However, whether or not the same can still be claimed once we have a more complex economy, with heterogenous capital goods is another matter altogether. An important assumption which underlies this canonical Ricardian corn model is that all the seed saved will also be invested in the following period. There are some additional assumptions regarding this saving, which are usually employed in modern interpretations of classical theory. We assume the existence of three classes, where two of those, rentiers and workers, consume all their income; workers because their

wages are so low that they cannot afford to save and rentiers because it is generally assumed that they tend to enjoy the good life. It stands to reason, therefore, that saving in this economic reality can only come from the one remaining group, namely capitalists. If we employ modern terminology, we can say that in the Ricardian universe the investment function then simply becomes one where investments in the current period depend on profits from the previous period $Investment_t = f(Profits_{t-1})$. In this economic universe Sraffa's (Martins, 2014) obscure note where he claims that capitalists were a progressive force in the 19th century makes complete sense, because they were the class that made sure real capital formation occurred. Since at any moment in time the amount of corn seed is given, if more has to be allotted for wages, due to either higher wage claims or due to an autonomous increase in the soft-heartedness of capitalists, less can go into new 'capital formation'²⁴, which is to say, less of seed would be planted, thus negatively affecting future output.

The Keynesian universe is obviously different with respect to the causality above, especially once we introduce a modern banking system, where loans create deposits, the above interpretation becomes irrelevant. However, it has to be admitted to the classicals, that in purely real terms, there has to be a connection between past allocations of real resources and future outcomes. The key then becomes how do we reconcile the monetary system with what goes on in the background, in the physical realm, or in the realm of the so called real economy, if such an entity can be said to exist separate from its monetary, or, perhaps more often, the financial counterpart.

The problem is very much interconnected with issues mentioned in the previous section. If we connect it to the classical example from above, what essentially happens is the following: the investment function, if we may be permitted to use modern terminology in the interpretation of classical political economy, becomes more complicated in a monetary economy. Economic agents in a monetary economy do not have to invest what they have saved, money and other financial instruments drive a wedge between savings and investment, so to speak. This means that, in money terms, only part of the savings will now go into the accumulation of capital equipment, whereas the rest will go into the accumulation of financial assets²⁵ of some sort. This feature of monetary economies, already touched upon in the previous section, is obviously very important with respect to accumulation of capital equipment and as such, to the economy as a whole. The same logic which worked in the Ricardian universe is not true anymore, because saving does not automatically equal investment and, therefore, higher profits will not automatically lead to higher investments as well.

In his article titled Accumulation of capital Pasinetti (1983) deals with a similar dichotomy between the accumulation of capital and the accumulation of purchasing power. He notes that whereas there has always been accumulation of precious articles which conferred and stored purchasing power, the same cannot be said for the accumulation of means of production, which

²⁴ Strictly speaking it is a bit silly to talk of capital formation when corn is concerned. Certainly it is vital for the reproduction of the economy, but it lacks all other features of accumulation, such as increases in productivity and the like, since those can only be associated with machinery and the expansion of human knowledge.

²⁵ Or we could also imagine that part of the purchasing power would go into land, more will be said about this later on and in the next chapter.

represents a relatively novel phenomenon. He correctly asks himself whether there is any difference when it comes to the accumulation of these two categories, and if there is, what could it be? In the simple system he proposes there are only two commodities produced: gold and corn. Whereas corn is also a means of production, gold, apart from creating employment, has no direct consequence to the economic system – or to be more precise, its accumulation has no direct consequence on the workings of the economic system, its annual production obviously does, having, if nothing else, an effect on employment. The key difference for Pasinetti (1983) when it comes to the accumulation of purchasing power as opposed to the accumulation of means of production is essentially the same as in Ricardo: corn is needed as seed in the following period, whereas gold is not, hence the accumulation of the latter is not relevant to the production system whereas the accumulation of the former is. While slightly modified, this is still a Ricardian world, only some features of which I wish to replicate in the model I propose in chapter four.

Whereas Pasinetti (1983) imagined a world where articles which confer purchasing power are actually produced by labour, this is not necessarily so if we imagine a modern capitalist economy with an existing banking system. To be sure, the financial system, much like goldmines, will employ a sizeable labour force, but that is beside the point. The sheer act of saving by an economic agent is an effortless act (as opposed to earning the income in the first place) in which purchasing power is stored and kept away from the productive circuit of the real economy. Whereas if the same amount is spent on consumption or investment goods, it circulates back into the lifeblood of the economy. At this point we should also mention an implicit assumption that has been employed in our reasoning, namely that all loans extended to firms for accumulation of means of production. Obviously this is an unrealistic assumption as in reality households take out mortgages and consumer loans, whereas firms can also take out loans to buy financial assets. Reasoning from existing funds and their future use is a consequence of the Ricardian logic which was employed at the beginning of the chapter. The addition of money in the Ricardian universe already gives us a qualitatively different result from the original non-monetary interpretation. That being said, our own implicit assumptions in this matter are far from being completely realistic, loans advanced from banks are taken out with the sole aim of augmenting the real capital stock. Loans which are used for the acquisition of financial and non-reproducible assets are considered at the end of the next chapter.

Returning to our example, all other things the same, if economic agents decide to hoard their purchasing power, this is analogous, in the Ricardian universe, to economic agents hoarding corn. Of course, with corn, this cannot be done *ad infinitum* and without cost, whereas with money, time is not an obstacle. What is essentially being done by hoarding, then, is to take purchasing power out of circulation, meaning that *ceteris paribus* less commodities are produced and less labour is employed. From a social standpoint the latter is obviously very important, and we can already make some very basic connections with respect to the findings in the previous section and the analysis of money and unemployment. It is especially with respect to the accumulation of real capital (perhaps not the best term, but one so widely accepted that it will be used in this treatise as well), and as such also with respect to the level of employment, that our analysis in this chapter will be concerned.

Essentially the purchasing power so removed, can, as will be shown in chapters four and six, change expectations about future accumulation and it is also very much prone to self-fulfilling prophecies. We can imagine a situation where, for whatever reasons, the savings rate increases, thus increasing the amount of money which will flow into financial assets, as opposed to those same funds being used in production of investment and consumption goods. In the latter case money would circulate back into the economy, whereas in the former, if we continue the analogy, it represents, using a medical metaphore, a clog from the point of view of the productive system, but not with respect to the accumulation of private wealth. Now, to be sure, the opposite is also possible, namely, the purchasing power thus stored can return back to the system via different routes. For example, higher stock prices can be used as collateral for more productive loans that are used for investments and the like. The dichotomy has been understood for some time outside the neoclassical tradition. In the latter, however, there exists a tendency, which seems to be bent on equating the two, so as to try and show, that even accumulation of financial claims is productive in real terms, for the economic system as a whole – there is no doubt that accumulating claims on purchasing power can be favourable to individuals, in fact, one could say that this has long been one of the most profitable ventures known to man. If the latter can be somehow shown to be similar to the accumulation of capital proper, then we are back in the Ricardian universe, where it is obvious that savings will determine investments and will, as such, be the *primum movens* of the system in general. However as Samir Amin (2015) makes very clear, reasoning along these lines would constitute a category mistake in conflating together two wholly different concepts:

'I subsequently sharpened that observation by calling attention at least to the distinction between two sorts of markets: the market for real investment goods (production and purchase of new machines) and the market for titles to the ownership of capital (such as equities).

There exists no generalized market allowing someone to confound the two, unless it be a someone by whom money would be deemed nonexistent. Financialization is an imminent characteristic of capitalism.'

The model that will be presented in the following chapter makes explicit the difference between these two markets. In fact, I believe that this is one of its main virtues, that it establishes, albeit in a very simplistic manner, the differentiation between two types of accumulation. In the following chapter I intend to look at how the productive side of the economy is affected by the fact that past savings can go into the accumulation of either investment goods or titles of ownership, whereas in chapter six I intend to look more specifically how the market for the titles of ownership (specifically for stocks and land) reacts to an increase or decrease of this latter sort of accumulation. Conflating these two types of accumulation, where the word should perhaps not even apply to the amassing of claims on future wealth, is problematic mainly due to the fact that they have such different consequences for the economic system as such, which can be seen in both the analysis and, unsurprisingly, the conclusions of Monsieur Piketty's *Capital in the 21st Century*.

As noted by Rowthorn (2014), among others, Piketty uses the terms 'capital' and 'wealth' interchangeably to denote the total monetary value of shares, housing and other assets. It should be obvious, however, from a purely logical standpoint, that if a given amount of money flows into

land, that the only thing which can happen, *ceteris paribus*, is an increase in land prices²⁶. If the same amount of dollars went into the production of new capital equipment, there would be a change in employment, an augmentation at first, but due to the technological changes in production that could be nullified over a longer period of time, one could imagine that such investment could lead to increased productivity, structural changes in the composition of output and everything that is generally regarded as progress, but which should probably be characterized, to use a more neutral expression, simply as change. On the other hand, when a plot of land changes hands from one person to another this hardly constitutes any of the above, at least not in any meaningful direct way. In Piketty, however, capital is seen as wealth in general, there is no distinction between the stock of wealth in money terms (a homogenous entity once it is viewed through the lense of money) and the stock of capital goods.

Because of this category mistake, conflating the role of, for example housing and machinery, Piketty then argues that the higher income share of capitalists is a direct result of an increase in the capital-output ratio, which is itself a consequence of a higher rate of accumulation (Rowthorn, 2014). What happens once wealth, which can only ever be captured in money terms, is conflated with means of production is that an increase in prices of financial assets and housing can lead to an increase in the capital-output ratio, but this does not mean that there has in fact been an expansion of investment goods in the same proportions (Rowthorn, 2014). In fact, it is quite probable that instead of there having been too much investment over the last decades, as Mr Piketty's analysis would have us believe, that exactly the opposite has been the case, namely that accumulation of investment goods (capital proper), has in fact been lagging, due to there being a shift in the system to the accumulation of financial assets, housing and the like (Rowthorn, 2014). As I will try to argue in the next chapter it is the accumulation of capital goods that is crucial in determining the level of employment (for empirical confirmation see Stockhammer (2011)) and it is the level of employment which, in the final instance, determines wage claims of the workers. It should therefore come as no surprise that if accumulation of capital goods is lacking, there will be a shift in income distribution towards capitalists and rentiers. And it should futhermore be noted, that inasmuch wealth represents a ranking, both of these groups will, as a whole and over longer periods of time, most likely always oppose policies aimed at increasing accumulation to such a degree, so as to reach the full employment potential of a given economic system.

I feel the main difference between the accumulation of what Amin (2015) calls titles of ownership and the accumulation of investment or capital goods – although perhaps the best expression would be means of production, so as to make sure there is no confusion in the matter – is with regards to whether or not these titles or goods are producible or not. This goes back somewhat to the previous sections about money, but I think it has more to do with wealth in general, namely that even though the demand for it is infinite, wealth as such is not producible, which is how I read the passage from Keynes (1949, p. 236) where he talks about the moon. Obviously there is demand for wealth, but there can be no production of wealth, not directly anyway, since wealth has to be, at least to some degree understood as a ranking of economic agents. Perhaps a very apt way of distinguishing

²⁶ This is not to say there would be no indirect consequences, such as the fact that higher land prices would mean that banks could feel as if there is more collateral 'to go around', meaning more loans could potentially be granted and this would lead to an increase in employment.

between wealth as it is usually understood outside the discipline of economics and wealth as the productive capacity of humanity, can be found in a passage from Keynes' 1930 essay on the Economic possibilities of our grandchildren:

'Now it is true that the needs of human beings may seem to be insatiable. But they fall into two classes --those needs which are absolute in the sense that we feel them whatever the situation of our fellow human beings may be, and those which are relative in the sense that we feel them only if their satisfaction lifts us above, makes us feel superior to, our fellows. Needs of the second class, those which satisfy the desire for superiority, may indeed be insatiable; for the higher the general level, the higher still are they. But this is not so true of the absolute needs-a point may soon be reached, much sooner perhaps than we are all of us aware of, when these needs are satisfied in the sense that we prefer to devote our further energies to non-economic purposes.'

In other words, wealth resides in this second class of needs and is as such impervious to the general level of wellbeing, or worse yet, it may be even found damaging to it, inasmuch as real capital accumulation is affected by the impulses of this second class of needs. Whatever the case may be, defined in such a manner, wealth is not producible *per se*. It would be like saying that there is demand for love and if this demand exists, supply should eventually follow, but there is no reason why this should be so. The problem in general, I feel, has something to do with the fact that there are things in life, I am not sure we should call them goods, which are not producible, yet we still wish to have them. Money in a modern economy, or even more complicated financial instruments (titles of ownership), would fall in this category. These goods obviously have a supply schedule, but as noted by Patnaik (2009, p. 143), we should not take supply to be synonymous with production (by labour):

'Now, there is a problem in doing so. If money is a produced good, that is, is a product of labour, then an increase in its supply causes ipso facto an increase in employment. On the other hand, if money is not a produced good, then an increase in its supply, through the actions of a central bank under public control does not cause any direct increase in employment. True, it may cause an indirect increase in employment, since the typical mode of increasing money supply by banks, through the purchase of securities, entails indirectly an increase in the demand for producible commodities...All this however is indirect and hence of limited effectiveness. Banks have certain limits in countering the 'bearishness of the public', which Keynes himself underscores through his reference to the bottomless sink for purchasing power'

It is obvious that even in a world of fiat money, where banks create credit and money represents a residual, there are still people employed in the process of, shall we say, money creation. The problem then is not that there are no people employed in this process, for they obviously are, the problem is, that if the demand for their product increases, the banks will be able to meet this new demand without having to employ more labour. Additionally, in an inside money world, money itself is merely a residual, meaning that there can be no excess demand for money without there previously being an increase in production of some commodities, which lead to the creation of additional income in the first place, none of which would require more hands in the 'production' of money itself however. The other channel for an increase in the creation of money could obviously come from an increase in the savings rate, this again, however, does not augment

employment in the banking sector. In fact, as Moore (1997) points out, it is perhaps better not to think of there being both a supply and demand for money²⁷. The point being, that the most liquid of all financial instruments is not a producible good, meaning an excess demand for it will not lead banks to hire more workers. Obviously this is problematic in an economic system where the means to acquire purchasing power is usually in the form of an employment, so if commodities exist which can easily be supplied without there being any need to increase employment, then unemployment is a logical consequence. Inequality is simply the result of this process, since unemployment will bring with it a change in the bargaining position between different groups as well; inequality is therefore merely a symptom. Much in the same way as one cannot will oneself to wealth directly, one also cannot get rid of inequality by battling inequality itself. The key lies in the production process, more precisely in the accumulation regime that rules the roost at any given point in time.

The dichotomy between the investment in real capital formation and investment in titles of ownership will be one of the main features in the model presented in the next section. As was already hinted, there are key differences to the economic system between these two types of accumulation, some of which we can already intuitively guess and most of which have already been identified in one form or another within the post-Keynesian tradition. The main difference between a Ricardian world and the post-Keynesian and Marxist one is that in the latter paradigms there is a difference between saving money, with the aim of investing it in the productive system and between saving money and not investing it anywhere but storing it either in money form, or most likely in the form of various financial instruments, money proper and land.

The question then becomes whether the system can serve two masters, or whether it is more likely that one of the two regimes will prevail at any given point in time. The post-Keynesian tradition is usually very frank in support of policies which augment employment, seeing as how this can only be done by increasing the amount of capital, it follows that they will support policies of investment programmes. In traditional economics, this is not a question which would even be asked, because economic agents simply look at the prospects of real accumulation or an increase in their holdings of financial claims. This distinction was very obvious to Pasinetti (1983) who notes the difference between accumulation of means of production and ownership of precious metals²⁸:

'Traditional economics has always tended to gloss over the differences. One must remember that orthodox economics has always stressed the merits of the market mechanism and individual initiative. And one must admit that, on the market, the single individual will notice no difference between the purchase and sale of, let us say, gold, and the purchase and sale of, let us say, machines and equipment. It can be no surprise, therefore, if orthodox economics has simply taken it for granted that there is no difference between the two types of accumulation.'

²⁷ In fact, according to the analysis of the labour market done by (Fleetwood, 2014), that market too, could hardly be described as one where there are well behaved supply and demand curves. Indeed, as pointed out by Stockhammer (2011), accumulation might be the determinant of the labour market, with the labour employed being some sort of a residual market, which adapts itself to the level of accumulation.

²⁸ Here we should again note, that even gold was essentially fiat, meaning that its acceptance by the community as the general equivalent was what gave it its glint, so to speak.

Enough has already been said about what some of the effects between these two types of accumulation are, but I feel another thing which should be noted is that, firstly, the two types have a hard time co-existing for any meaningful period of time in a *laissez-faire* system and that very small changes in the profit rate or expectations about the future, will start a path-dependent process leading the system further and further away from what was at one point a stable state, by which we mean a stable regime of accumulation. Indeed, without there being some exogenous forces to keep everything in check, one could even imagine a scenario where no steady state would ever come about, at least not in the orthodox understanding of the term. In fact, savvy investors know this, and they know that expectations create periods of extended disequilibrium (Soros, 2009, pp. 50-75).

For Keynes (1947) it was obvious that if the system follows one set of goals, the other are denied to it. For example, if we are in a system similar to the gold standard or the Eurozone –which could be seen as an institutional arrangement with similar features to that of the original gold standard, in that it limits the capacity of the state to augment in a meaningful way the accumulation of means of production – then an economy has to maintain a stable balance of payments and a favourable interest rate, which is regulated by international financial markets. It is quite obvious that attaining stable full employment is impossible in this system for all countries, only those that export their unemployment, which is to say the most productive countries, will attain anything close to full employment²⁹. Keynes (2003, p. 181) chastises this institutional arrangement in the following passage:

'Under the influence of this faulty theory the City of London gradually devised the most dangerous technique for the maintenance of equilibrium which can possibly be imagined, namely, the technique of bank rate coupled with a rigid parity of the foreign exchanges. For this meant that the objective of maintaining a domestic rate of interest consistent with full employment was wholly ruled out. Since, in practice, it is impossible to neglect the balance of payments, a means of controlling it was evolved which, instead of protecting the domestic rate of interest, sacrificed it to the operation of blind forces. Recently, practical bankers in London have learnt much, and one can almost hope that in Great Britain the technique of bank rate will never be used again to protect the foreign balance in conditions in which it is likely to cause unemployment at home.'

While there was in fact a period in human history when the so called 'technique of the bank rate' was seen as obsolete, it did not last long. One could go and find various explanations as to why the post-war institutional arrangement had eventually been dismantled, but the fact of the matter is that human societies will always evolve their institutions (or revolve them). These different institutional arrangements seem to meander around, and it is safe to assume that eventually even the post-war near full employment regime was bound to come under pressure sooner or later. That being said, it is obvious, however, that different interest groups will favour different institutional arrangements and once one of these arrangements prevails it is likely to last some time, decades

²⁹ Perhaps the opposite also holds true, especially if we imagine that nothing can be done about 'excessive' wage claims under the regime of full employment. In that setting, the rentier would eventually really tire from the boom (Kalecki, 1943) leading to Keynes' (2003, p. 230) scenario of rentier euthanasia.

perhaps, if it is supported by the majority of the most powerful economies of the world³⁰. From the point of view of political economy there will always be different arguments in favour and against these different states of the world.

Wealth is an elusive concept. On the one hand, there is the concept of the Smithian wealth, which is linked to the human capacity to learn and enhance our productive powers. Yet accumulation of private claims upon wealth is said to be behind this expansion of productive capability. And while it is true that in capitalism titles of ownership fuel accumulation, there exists a real danger that once too many claims on current output exist the monetary ghosts of yesteryear will smother the economic possibilities of tomorrow. Wealth in form of titles of ownership can hinder an economy and its potential for creating new wealth. It is more than a fair bit ironic, therefore, that modern *laissez-faire* economists chastise mercantilists for worshipping the golden idol, when, by conflating real accumulation and the amassment of financial claims, they are in effect doing the same.

3.3 Concluding observations

The preceding chapter was not so much aimed at giving the basic assumptions of the model which follows in chapter four, as it was to show what I think are some of the main problems in theory and praxis which need to be tackled. Firstly there is the issue of distribution which will lean back essentially on the Sraffian reading of classical political economy, where there is great attention paid to the relation between technical conditions, the level and composition of output and where, which is perhaps the crucial distinction between the surplus approach of the classicals as opposed to the marginalist approach of the neoclassicals, the real wage or the general rate of profits are given (Panico, 1988, p. 4). From the point of view of distribution, the system is open-ended, which would seem to make sense, seeing as how competition in capitalism is not isolated to the product markets themselves (Garegnani, 1990), it resolves itself also in the wider political arena, where different groups pursue different interests with the aim of ensuring for themselves a larger share of the output. Or as Ricardo very openly admitted: 'Wages do not depend upon the quantity of a commodity which a day's labour will produce' (Ricardo to Malthus, 8 May 1815, in Sraffa, 1951-73, vol. VI, p. 226, cited in Barba & de Vivo, 2012). It is my aim, however, to at least partially endogenize distribution, by taking into account technical innovation, competition between capitals and the effect that increasing returns on financial assets might have on accumulation of means of production, where, however, some variables, such as the interest rate, will remain exogenous.

The classical paradigm, at least if understood within the more narrow confines of the original authors, can only take us so far however. Capitalism is a monetary economy and as such cannot be analysed but through the lense of money in its various roles. This is why various heterodox schools, be they Radicals, neo-Ricardians (Lavoie, 1992, p. 149) or post-Keynesians usually start their macroeconomic analysis at the money end, so to speak. In fact, doing otherwise would mean that we are dealing with a real exchange economy and money would therefore only take the role

³⁰ A worker revolution in a third world country constitutes a shift in the power structure between interest groups in that country, but if the same thing does not happen on the global level, that country will likely be facing severe poverty or will find itself on the receiving end of a democratic counter-revolution.

of medium of circulation and unit of account. As I have tried to argue and as mentioned by both Keynes (1973, p. 77) and Sraffa (Deleplace, 2014), this is essentially assuming away the problems that money brings in any economy with its role as a general equivalent and wealth *par excellence* (Graziani, 1998), meaning it is also used as a store of value by the wealth holders. The model tries to reconcile the fact that money in modern economies is endogenously determined, which is to say that it is in effect the residue in the process of credit creation, and can in effect be expanded almost *ad infinitum*, yet it is not a producible commodity in the sense that higher rates of production will not require the employment of more labour (Patnaik, 2009, p. 143). In reality we seem to be stuck in purgatory between modern monetary theory which sees no limits to money creation (and hence, full employment) and the old notions of commodity money.

Another point which is not unrelated to issues concerning money as a store of value is the issue of other financial assets (and of land, which has some analogous features, at least with respect to the issues of employment), which, while less liquid, perform a similar role, namely acting as vehicles for storing purchasing power through time. In the proposed economic system I intend to capture this dichotomy between investments in capital goods and investments in financial assets. I feel this issue is very pertinent in the current reincarnation of capitalist accumulation, dubbed as the era of financialization (Hein, 2012, p. 38). In fact, there exist numerous papers providing empirical evidence for the claim that financialization causes lower rates of real capital formation, see for example Stockhammer (2004), van Treck (2008), Orhangazi (2008) and Onaran et al. (2011). Essentially the issue then becomes one of identifying the causal relationships, which is to say the channels through which the change in the types of accumulation takes place, and to then see how distribution, growth and expectations are immediately affected and how the new state of affairs will perpetuate itself in the following periods of production.

For Sraffa, the opposition between the classical and neoclassical paradigm lies in their respective metaphysics, he argues that they are trying to solve different problems (Bellofiore, 2014, p. 207). Classicals start from a macrosocial point of view (Bellofiore, 2014, p. 207), whereas the neoclassical paradigm is inherently atomistic and micro-oriented. I believe that the macrosocial aspect, where the whole is more than just the simple sum of its parts, although obviously dependent on them as well, can be found in classical political economy, Marx and later on Keynes as well. This by itself is not very novel, because post-Keynesianism in the wider sense, has been able to absorb all three of these traditions in various ways and as I have argued in this chapter, there are definitely common features that can be combined together in one theoretical system of a pure capitalist economy. For the sake of simplicity the role of the state is neglected in the proposed theoretical system because the focus of the analysis is not aimed, at least not directly, at state policies. We can imagine, however, that the role of the state is captured, albeit to a very limited extent, through some such parameters as the interest rate, or by putting a lower limit on the wage rate etc. In some sense we can imagine the state being the vehicle where struggle between different groups gets resolved, where the consequences, however, are then similar to our simplified examples in which no such explicit vehicle or entity for class struggle exists. Obviously, however, if it was our intent to go beyond pure logic and into the field of empirical inquiry, then this omission would not make much sense. In our case, I believe it does, because the model remains simple and

the main logical conclusions should not be affected by the aforementioned omission. Additionally, I believe that even from the conclusions in this model, there will be a possibility to glimpse policy conclusions that would make the economic system serve the people who toil under it and not the other way around, one with less inequality, more opportunity and freedom from the economic problem (Keynes, 1930).

4. A GROWING CAPITALIST ECONOMIC SYSTEM WITH ENDOGENOUS SUPPLY OF CREDIT AND PROFIT EXPECTATIONS

In this chapter it is my aim to present a model of a growing monetary economy broadly based on theoretical foundations of classical (in the Sraffian sense), Keynesian and Marxist economic traditions. The basic idea is to capture the objective, physical elements that govern economic growth and distribution (Sraffian aspect), together with characteristics of monetary economies that were discussed in the previous chapter. The system dynamics will therefore be influenced by purely technological factors, as well as by issues of income distribution between different social groups and by profit expectations. Forging together these different features represents the main aim of the chapter, leaving detailed analytical implications for another time. However, the second part of the chapter will feature a thorough discussion on the formation of the price level and distribution of income in the economic system. Finally, the theoretical system was constructed with the aim of capturing the difference between accumulation of private wealth and means of production. This dichotomy, which I find to be of crucial importance in understanding capitalism and its dynamics, will be discussed at length at the end of the chapter.

4.1 The system

4.1.1 National output, investments and loan creation

As much of the last chapter was devoted to the explanation of the central motives of the proposed theoretical economic system below, we are now free to go directly to the heart of the matter. In a very traditional approach, we suppose a closed³¹ and dynamic economic system. Whereas in the third chapter we dealt more with the issues of distribution itself, here the intention is to augment that analysis in a growing economic system, where it is also my aim to make more precise the channels through which changes in distribution occur. The wealth in term of producible commodities in the economic system at any given point in time depends on the aggregate supply defined by relation (1):

$$\begin{aligned} X_t &= \pi L_t & (1) \\ Y_t &= pX_t = p\pi L_t & (1a) \end{aligned}$$

While, strictly speaking, this relationship is taken from Graziani (2009), we could just as easily have claimed that this is some sort of neo-Smithian 'production function', if we may be allowed to use the modern term. For Smith national income, or the wealth of a nation, if you will, was determined by essentially the same two factors: average labour productivity, π in our notation, and the amount of labour employed in capitalist production, L (Roncaglia, 2005, p. 127). Obviously for Smith the two were in fact interconnected, the more labour way employed in a given economy,

³¹ It is perhaps worth noting at this point, that even though we do not have any foreign trade in the model, this does not mean that the model cannot be used to explain some trends which have been going on in the global economy, such as the global breakdown of trade barriers and their effect on wages, or the free flow of financial capital and the existence of tax haven's, both of which we can imagine would have an effect on the rates of accumulation of means of production on the one hand and financial assets on the other.

the greater would be the division of labour, which would then have a positive feedback loop with average labour productivity. It was in this sense that Smith had imagined a virtuous circle of growth in capitalism³², through the interaction between productively employed labour and the growth in productivity which would be a direct consequence of this labour so employed. While the process itself is probably best described as a black-box, we can already see in Smith the seeds of cumulative causation and such ideas as learning-by-doing, which are perhaps much less revolutionary than they seem at first glance. Obviously, we should note, Smith did not use mathematical notation in his *magnus opum*, and what we have described is a modern interpretation of Smithian theory.

In light of the neoclassical production function, one might be forgiven to ask, where is capital, K , in this whole story? Resisting the urge to flog a dead horse, while it is true that modern economies obviously do employ means of production, these commodities are there essentially to augment the productivity of labour. This is why it makes much more sense to depict an economy simply through the lense of labour and its productivity. The latter will, of course depend on various factors such as the amount of labour employed, the means of production employed etc. As we will see later on, the amount of, and the quality of the means of production will play a role in determining the level of employment, so that there is, in fact, an indirect connection between means of production, or capital goods, and the above relation (1) of aggregate supply.

Perhaps the issue can be explained in another way. Productivity at any point in time depends on past developments in the economic system, as such, it is given for every time period and it is a consequence of various historical factors which cannot be captured by simple relations. The amount of labour employed, as was already hinted, will be determined by other factors, both physical and social in nature – which is something that I have really strived to achieve in the model, to see the interplay between objective physical and between social limitations imposed on the economic system. Now this state of things will then inform future states of the system, but at the current point in time it will always be given and immutable. A worker two hundred years ago could not produce as much and as complicated commodities as the ones which are produced today, this is merely stating an objective fact, meaning that the quantity of aggregate supply was smaller, the per capita amount of goods produced was smaller, due to the lower productivity of labour and the quality of goods was different. Now with respect to the latter, this model will have very little to say, since the change is qualitative, but with respect to changes in quantity, I believe the approach is fundamentally sound. We could say that this approach is essentially neo-Ricardian in nature, where we know that neo-Ricardians take technological limitations very seriously (Lavoie, 1992, p. 10), which has always seemed to me, to be a strong point of their, very objective approach. It is also in line with the basic tenets of post-Keynesianism, because past decisions inform, irrevocably and immutably, the current state of things.

More generally, however, the idea was to have an economy along the lines presented by Sraffa (1963) in his *Production of Commodities by means of Commodities*, which he makes clear in one

³² Where we have to note, that this is a reductionist view which views capitalism as a closed and self-sustained system, whereas if we look throughout its history this might very well not be the case.

of his notes, where he says that commodities are produced *by labour* out of commodities (D1/91/16 as cited in Bellofiore, 2014). Obviously we can then distinguish between commodities which are intended as investment goods and those which are labeled as consumption goods, but in reality, both of these are necessary for the production process, meaning that the distinction is a lot more vague, than we might imagine it to be³³. The very name of Sraffa's (1963) book can most likely be attributed to the following passage found in T.A. Jackson's 'Dialectics. The logic of Marxism', which Sraffa had marked in his copy of the book (Bellofiore, 2014, p. 215):

'Marx begins with the most central fact in capitalist economy in its most general aspect: the Commodity. A commodity is something produced. But not all things produced at all times are commodities. They are commodities only so far as they are exchanged; and in their developed form exchanged for money. They are capitalistically produced when the labour of production is that of wage-labourers, hired, (i.e.:bought) in a relatively 'open' or 'free' market. Capitalist production is therefore a system of producing commodities from commodities (the labour power of wage labourers). This universalisation of the commodity and all that it implies is the distinguishing fact of the capitalist economy.'

A few things are worth noting about the above passage. Firstly, production in capitalism is inherently aiming at value in exchange, thus even though relation (1) represents aggregate supply, this supply will have been a consequence of consideration in demand and the expectations of future demand (and, crucially, profit). The twain never can part, so to speak. Additionally, the theoretical system here constructed does not deal with pre-capitalist modes of production, which is to say that the aggregate supply here mentioned does not contain all the goods produced in the wider economic system (capitalist and pre-capitalist taken together), it only represents the production of goods which are also commodities and which are produced exclusively with the aim of making a profit. In Ricardo's time the pre-capitalist sector was still relatively quite large compared to capitalist production, which meant that it could produce a lot of goods for those who did not have the monetary means that would allow them sufficient command over commodities produced in the capitalist mode. Unemployment was far less of an issue for the employers back then. For various reasons, the same does not hold today. The pre-capitalist sector is smaller, the urban population has grown rapidly and the discrepancy between the quality (and quantity) of commodities produced in the capitalist sector *vis-a-vis* those produced in the pre-capitalist modes has grown to such a degree, that traditional modes simply do not have the capacity to keep up anymore, something which would have been far less true in a simple Ricardian corn economy, for example. However, more on this topic later in chapter six.

Finally, the monetary expression of aggregate supply captured by relation (1) is the national income, or Y_t , explicitly defined in relation (1a). We obtain the monetary value of aggregate

³³ While perhaps a pedantic point, it is still worth noting Cartelier's (2014) example of a cabinet maker, who, in the production process of a cabinet, will also drink Burgundy wine and amuse himself by going to see a play. Cartelier (2014) argues, to my mind rightfully so, that Burgundy and the play are just as vital to the production process of a cabinet as are the tools used in its fashioning. This is doubly more true if we look at the qualitative features of said cabinet, which will most likely have been inspired by the cabinet makers luscious appetite for life, creating a commodity which otherwise would not have been (quite the same).

supply only once commodities have reached the market, which means that we need the relation of aggregate demand to be present as well, before we can say anything more on the matter of the price level.

$$I_t = \Delta Loans_t + \alpha P_{t-1} + xS_{t-1} \quad (2)$$

Next we turn to investments, in means of production, it should be noted, captured here by equation (2). As was previously pointed out, investments in capitalism will only be undertaken with the aim of making a profit, equation (2) then gives us the sources of finance for said investments. However, I feel that a point of clarification is in order before we proceed further. Note that investments are essentially fully defined by the sources of funds for said investments, where there is no separation between the demand and supply for investments made in this framework. The amount of investments will be determined by the amount of purchasing power which goes into them and the amount of latter, will essentially depend on expectations about the future³⁴. Demand for investments governs their supply, so to speak, and demand for investments is governed by the aforementioned expectations of the entrepreneurial class, meaning that we are in a Keynesian scenario of effective demand (Roncaglia, 2005, p. 401), where employment in the system is determined by investments and investments are governed by expectations. This is not to say, obviously, that there are no physical limitations in production, but merely, that from a social standpoint, the main limit to the expansion of investment goods (to use the traditional term, although they are in fact commodities) is with respect to how much purchasing power gets funneled into their production and this is just another way of saying that the amount investment goods produced depends on the amount of these goods ordered.

The model supposes that investments have three sources of finance. The first comes in the form of an expansion in the stock of loans, the latter can be granted *ad infinitum* if the proposed investment projects are deemed profitable by the banks. Seeing as how investment demand will also constitute profits, one could argue that there is a certain amount of 'thinking makes it so', but as Joan Robinson (2013, p. 243) had remarked, one cannot will oneself into profits, the whole class, however, can, or in her own words: 'The level of profit is a case of thinking makes it so, but no one alone can think himself into profits.' It is interesting to note how closely the changes in expansion of industrial loans are correlated with the movements of investment demand; and changes in both represent a good indicator of recessions (the shaded areas in figure 1):

³⁴ The amount of real investments obviously depends on the price level as well and not just on the sources of funds.

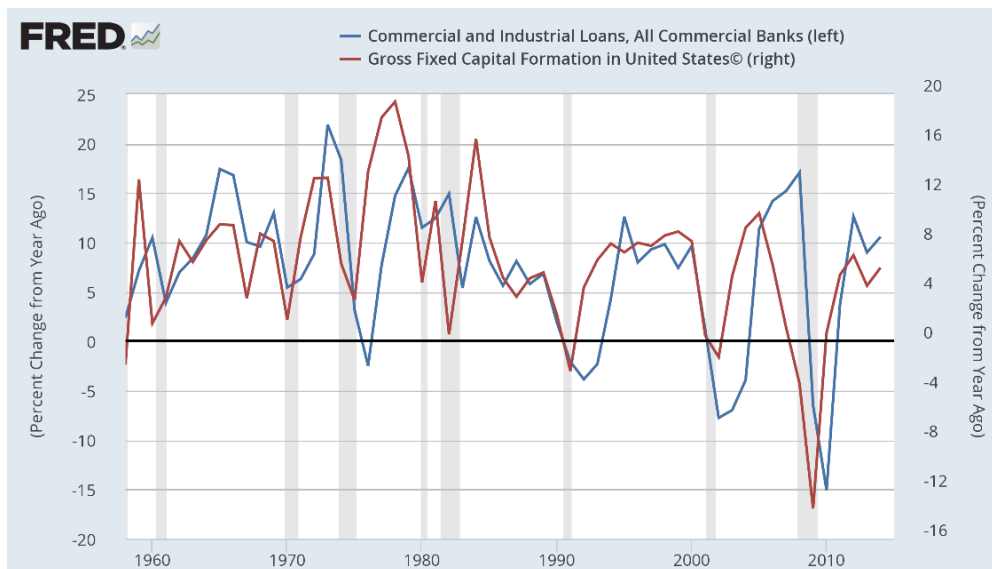


Figure 1: St. Louis Fed data on changes in commercial loan expansion and gross capital formation, US 1958-2014

Loans as a source of finance will be complemented by a part of profits that were realized in the previous period of production. Out of the whole volume of profits realized in the previous period only a part, α , will be used to finance production of means of production, the rest will either be saved in form of various titles of ownership or spent on consumption goods. The respective proportions will depend on various factors, but with respect to the choice between titles of ownership and investment goods, we can imagine that the expected return (i.e. the profit rate) will determine the relative amounts of profits that go in either of those two markets. The same considerations will likely not apply to the propensity to consume out of profits, which is likely to be governed by custom and habit, however, it is beyond the scope of this analysis to find out the underlying motives.

Another source of finance for new investment projects can come from the existing stock of accumulated wealth, which, measured in value terms, will of course be homogenous. What we mean when we say the stock of wealth, denoted by S in the relation above, are financial assets such as stocks, we could also imagine the ownership over land or money and deposits. I believe we are not making a category mistake by fusing all of these together, because their heterogeneity becomes irrelevant once we are only concerned with money values. Often these assets will have been accumulated merely because economic agents think that other economic agents think that these assets will appreciate, and if this turns out to be true, then more purchasing power gets diverted into these assets, making them appreciate in money terms, creating a positive profit rate for the holders of these assets at their original prices. While we will not go into microeconomics here, more on the actual process in the next chapter, the fact of the matter is that economic agents can sell their financial and land holdings, or empty their bank accounts, which is to say they can use part (or all) of their previously accumulated wealth to finance the production of investment goods. Again, how large a part of the community's existing wealth will go into the production of investment goods will depend mainly on the prospects, at least from the point of view of the investors, of these business ventures. We would expect, however, that a part of wealth-holders will always see some opportunities in starting new investment projects, which they will deem to have a higher expected return, then, say the stock market, meaning that they will sell a part of their

financial holdings (or simply drain their bank accounts) in order to finance the accumulation of investment goods. For the whole economy that part of the stock of wealth which will at any given period in time be sold and used for investment purposes, is labeled x , where we again expect x to be governed by the relative difference in the expected profit rates between the investment goods sector and the titles of ownership sector of the economy.

$$Loans_t = (1 + AS_t)Loans_{t-1} \quad (3)$$

$$P_t^e = \frac{P_{t-1}P_{t-1}}{P_{t-2}} \quad (4)$$

$$AS_t = AS(P_t^e, r, \frac{L}{S}, \varphi) \quad (5)$$

Relations (3) to (5) represent the nexus of credit creation and expectations. I think it is natural that the two should be interconnected, because credit systems are established in the first place, to bridge a gap between the beginning and the end of the production process – what happens in between is prone to fundamental uncertainty. In Chapter 21 on the theory of prices, Keynes (2003, p. 158) makes a similar observation of the basic characteristics of money and, *ipso facto*, monetary economies:

'Or, perhaps, we might make our line of division between the theory of stationary equilibrium and the theory of shifting equilibrium-meaning by the latter the theory of a system in which changing views about the future are capable of influencing the present situation. For the importance of money essentially flows from its being a link between the present and the future... Money in its significant attributes is, above all, a subtle device for linking the present to the future; and we cannot even begin to discuss the effect of changing expectations on current activities except in monetary terms. We cannot get rid of money even by abolishing gold and silver and legal tender instruments. So long as there exists any durable asset, it is capable of possessing monetary attributes and, therefore, of giving rise to the characteristic problems of a monetary economy.'

A monetary economy has a peculiar feature which might not be as pronounced in a non-monetary one: the existence of expectations and their influence on current activities. The problem can, I suppose, be stated in very simple terms. In a monetary economy economic agents will start production, sell their labour all with the aim of, eventually, acquiring money. Doubtlessly that money will be spent as well, but the main motivation behind economic activity is simple, to acquire money. Imagine the difference, therefore, between the capitalist mode of production and production within a family setting. In the latter setting, if something needs to get done (let us assume we are talking about a feasible project, like fixing the porch, preparing a meal etc.), it will get done for its use value; it will get done because it needs to get done and there are no ulterior motives as is the case in a monetary economy, where commodities are produced seemingly with the aim of creating use values, even though the main idea is always to get value in exchange or in normal parlance: money. The problem is that every economic agent is, at least on some level, aware of what game is being played and there is no certainty, therefore, that what is peddled will also get sold. In fact, gargantuan efforts go into trying to sell commodities, which should come as

no surprise, because if the game is to accumulate money, then the devious human mind will come up with an insane amount of more or less useful goods with the hope of commoditising them. This is why Nitzan and Bichler (2009, p. 182) say that in capitalism the nominal becomes real; capitalization is not 'connected' to reality, it becomes reality itself, and even if it binds itself to some notions of what we would call the real economic system, this is not on some rigorously scientific basis, instead, the connection is rather conventional in nature³⁵.

Back to the nexus of relations (3) to (5). Equation (3) is a simple equation to describe the growth in loans, similar to the one found in Binswanger (2009) where, however, the rate of growth of credit creation was completely exogenous. To be sure, seeing as how the process of loan creation is dependent on so many contingencies, this might very well be the best way to model it on a macro level, however, I believe that we are not far off from the truth if we say that the extension of loans will be in some way related to expectations about future profitability of the economic system. One could actually argue that the credit-worthiness of both firms and banks depend on their ability to earn profits, meaning that a fall in profitability should have an effect on credit creation, and on output. In our system the rate of growth of loans is endogenous to some degree and it depends on the variable animal spirits, AS_t . To be more precise, the variable AS_t is itself the rate of growth of the stock of loans. Animal spirits, where I mean the variable AS_t , will themselves depend on expected future profits (captured in equation (4)), the profit rate and the ratio between the stock of loans and the stock of wealth.

While profitability could be seen as an objective factor determining loan extension, it is also true that expectations themselves can affect this same process, irrespective of past results. It is therefore possible to argue that not only do past profits influence future decisions (and therefore future profits as well), but as noted by Robinson (2013), expectations of profits can create actual profits as well, due to a general increase in investment activity. In other words, subjective valuations have actual effects on economic reality and these valuations themselves are not always in a simple linear relation with the actual goings on in the economy. For one thing, people interpret the same events in different ways – imagine a scenario where economic agents perscribe to different economic schools of thought, for example. We can also never be completely sure how strong the response to a certain event will be. In other words, while it seems natural to assume a relation between profitability and loan creation, it seems just as natural to assume that there will be, for lack of a better word, exogenous factors which will also influence the extension of new loans. These factors would generally fall in the category of events posited by Keynes (1937) to be fundamentally unpredictable. In fact, one could actually argue that these 'irrational' valuations are in fact what constitutes animal spirits proper as opposed to profit expectations based on past experience etc. Therefore the fourth element determining AS will be these exogenous elements, which cannot be captured by any simple mathematical relation and are therefore captured by the exogenous parameter φ . As it should be obvious, we cannot be sure how this exogenous element will affect the creation of new loans, exactly because it is exogenous and not linked in any direct fashion to the theoretical system in question. In some historical circumstances it could be that its effect will

³⁵ Think of financial instruments and how they are grounded to the rest of the economic system, supposedly through 'market fundamentals', which the instruments ought to reflect.

be to counter the business cycle or the very opposite might occur, the fact of the matter is there is no *ex ante* reason to suppose the second or the first. Nor can we be sure, without a thorough empirical analysis, whether the influence of animal spirits proper on loan creation will be generally stronger than the effect of other variables or whether it will be subdued by signals that come from the endogenous variables of the economic system. That being said a very strong case can be made for adding an exogenous element to the variable AS , which governs loan creation in our system.

Firstly, the extension of credit depends on two parties, the lender and the borrower and (3) should be understood as such, as representing the results, on the level of the whole economic system, of the interplay between these two groups and not as a process wholly under the domain of the banking system. Even if banks are willing to lend, you still need firms who are willing to borrow and vice versa. One can easily imagine a scenario, where firms, perhaps due to a prior crisis or a prolonged period of stagnation or simply due to a change in their expectations, will not be willing to go further into debt to finance new investments. In fact they might use the proceeds from their existing holdings in order to repay their previous loans³⁶. This way they remain credit worthy in the eyes of the banking system and should they spot an opportunity at some future date, they will be able to get hold of the necessary finance which might otherwise have not been forthcoming. As has been argued in post-Keynesian literature (Robinson, 1952, p. 29; Moore, 1988, p. 24; Kaldor, 1981, p. 15; Lavoie, 1985, p. 845; Arestis and Eichner, 1988, p. 1010; Minsky, 1986, p. 229 etc.) the main role of the banks is to be able to tell whether a borrower is or is not credit worthy and whether a particular business venture will or will not be profitable so that the loan and interest on the loan get repaid. The interest rate plays a trivial role in this whole matter as Joan Robinson (1952, p. 83) explains: 'It is of no use to try to attract finance by offering a rate of interest that no one believes the borrower will be able to honour.' Expectations about the future states of the economy are at the heart of this process. One can never be sure if a venture will be profitable and what is worse, when more and more ventures start turning to be less than profitable, even the collateral might start to disappear as investors will eventually react to the discrepancy between the prices of financial assets, such as stocks, and the underlying profit rate of the companies in question. The whole process is pro-cyclical because during the phase of expansion the stock of wealth will also appreciate and this will make it seem as if everybody is 'good for it'.

With adaptive expectations in equation (4) we have a link between the past and the future, judged from the viewpoint of the present. One could opt for different algorithms with regards to expectations, but seeing as how the gist of them being there is to link past experience to decisions made today, which will change the economic reality of tomorrow, this simple algorithm does what it is meant to do. Since capitalism is a system where production circuits are opened with the aim of making a profit, it makes sense to fuse together the process of money capital extension with profit expectations. It is to be expected that where profits go, there goes the extension of new loans, at least to some degree and perhaps with a time lag. The logic behind equation (4) is then very simple, both the bankers and firms will look at past profitability as their best bet at discerning future profitability. During an up-swing profits will go up from one period to the next and more

³⁶ This makes perfect sense for the firm sector even in our model, where AS_t depends, partially, on the ratio between the stock of loans and the stock of wealth, which can be interpreted as collateral.

production circuits will get started. However, once there will be consecutive periods of falling profits, then we can expect the system to slow down, firms will ask for less loans and the firms asking for loans will likely have a harder time getting them. Again, note how the whole capitalist *zeitgeist* of either optimism or pessimism has a direct influence on real accumulation of capital goods. Ideally banks would actually grant more loans once profits started falling, with the aim of expanding aggregate demand and hopefully increasing profits, which would then funnel into equation (4) and eventually make investors more optimistic about future prospects³⁷. However, it is very unlikely that this would happen spontaneously within a system of unfettered *laissez-faire*.

In a purely technical sense AS_t , animal spirits, effectively a combination of Keynesian and Marxist expectations, will, in our simple dynamic system, depend on three variables, where we can go further than that and posit some mechanical relationships between these variables and the expected reaction of the AS_t function. It is safe to assume that a positive change in expected profits (as a result of positive profits in the previous periods, we might add), will have a positive effect on AS_t , meaning that the partial derivative of AS_t with respect to expected profits will be positive, $\frac{\partial AS_t}{\partial P_t^e} > 0$. We expect pretty much the same to hold with respect to a partial derivative of AS_t with respect to the profit rate, $\frac{\partial AS_t}{\partial r} > 0$, meaning that an increase in the global profit rate of the economic system should have a positive effect on the general willingness of banks to grant loans and the willingness of firms to go into debt and open new production circuits. Finally, we expect the opposite to hold true with respect to the ratio of loans to stock, where the greater this ratio, the more we expect firms and banks to be wary of granting new loans and going further into debt. In terms of partial derivatives this would mean that an increase in the ratio should have a negative effect on animal spirits, $\frac{\partial AS_t}{\partial \frac{Loans}{S}} < 0$. Of course, that being said, the opposite can also hold true and if the stock of wealth should suddenly appreciate in money terms, for whatever reason (financial bubbles, for example), this could lead to more loan creation. However, a very important feature of our model has to be mentioned here, namely that loans are only used for productive investments in capital equipment and not to (at least directly) buy financial assets. Strictly speaking, this would add an extra layer of realism, because a very slight appreciation of the stock of wealth could then lead to the process of unproductive loan creation, which would lead to a bubble. While this is an important feature of the real world, I have decided not to emphasise this aspect of the financial system. However, as we will see, adding this feature would mainly just make some of the conclusions regarding stability even more pertinent meaning this analysis, with only productive loans being granted, would hold *a fortiori*.

Finally, before moving on, I would like to add, that even though the assumptions regarding the behaviour of animal spirits in connection with profitability and financial stability of the system seem to be well warranted, relation (5) nevertheless represents the reduction of the original Keynesian concept. Strictly speaking, we should, perhaps consider adding an exogenous element

³⁷ In fact, if the banking sector were to act like one big bank and expand loans in lock-step (Lavoie, 1992, p. 192), credit expansion would be virtually limitless.

in our analysis, which would, however be completely random and we cannot be sure what its overall impact would be, or how it would change through time.

4.1.2 Capital accumulation and employment

$$K_t = (1 - \delta)K_{t-1} + \frac{I_t}{p} \quad (6a)$$

I have always thought that a very beautiful feature of the Sraffian system was how it brings together the social aspect of production, namely the division between profits and wages, together with objective (Kurz, 2013; Garegnani, 2013) factors that determine a production process of a given commodity. The economic system is an interplay between the social and the technical aspect, where the influence must run both ways, which is something that will be, at least to some degree, a feature of our model. Sraffa (Martins, 2014) explains his views on the matter of distribution and production in one of his notes on marginalism:

'When reduced to its simplest elements, the errors of the 'marginal' theory of distribution consists in saying that the 'shares' (i.e. the level of wages and profits) depends {sic} upon, is governed by, the methods of production (including proportions of factors). Whereas the opposite is the case, the methods adopted depend upon the shares. It is clear that this gives rise to confusion (causa essendi, causa cognoscendi). (Sraffa Papers, D3/12/42/26 as cited in Martins, 2014)

While distribution is very likely to influence the methods, in Sraffian parlance, in our model we expect it to shift the accumulation regime and with it the methods as well. I believe that Sraffa's interpretation of the matter is logically sound, but what we are dealing with is a moving, dynamical system, where causality has to be allowed to run both ways. Let me explain. While we have already discussed that the profit rate and expected profits will influence investment decisions, this would seem to put the matter at rest and confirm Sraffa's intuition on the matter, but this is not the whole story. Once new investments are made, older vintages of capital might no longer be able to compete with the new ones, meaning old vintages will get scrapped. It is also very likely that certain firms will go under, since it seems like a safe assumption that the distribution of different vintages will not be uniform across all firm. The effect of a new, technologically superior vintage of capital is an increase in unemployment in the next period of production, all other things being equal. This is due to two effects, firstly the new vintage might require less labour in the first place, and secondly, some firm will be driven out of business therefore increasing unemployment further. As we will see later on, this shifts the distribution between capital and labour in favour of the former, since higher unemployment results in depressed wage claims by the latter. Also note that while the impulse for investments comes from the social realm and is motivated by expected profits, the outcome of this process is a new vintage of capital goods. These bring with them a new set of technical coefficients, which will also impose (or lessen) certain restrictions in the system of production. But that is not all, through the effect that technology has on employment, new vintages of capital will not just change the system of production, but will themselves prove to at least partially determine the distribution between labour and capital in society. We have come full

circle, while the motivation to invest comes from the social realm, it nevertheless has consequences for the system of production, and it is these consequences originating from the purely technological realm, that, through the changes in distribution, once again resonate back to the social sphere, which provided the initial impetus for investment. It is therefore true, that shares and expected shares will determine the method of production, as Sraffa claimed (Martins, 2014), but once the genie of technology is out of the bottle, the shares themselves are prone to change.

The dynamics of the expansion of the means of production, or capital goods, is described by relation (6). The time path of capital goods expansion is rather simple and should be familiar to most anyone within the discipline; the quality and quantity of capital goods is given for every single period, changing from one period to another, but not within a given period. As mentioned, the dynamics are well known: capital gets augmented by real investment, $\frac{I_t}{p}$, and it gets scrapped to the amount of δK_{t-1} , where we do not, however, assume a constant delta. While it would require more empirical work to determine the exact factors which will influence scrapping of physical capital, some obvious influences can be posited, such as the influence of new investments on old vintages, the default rate³⁸ etc. We can realistically imagine that scrapping would also occur due to wear and tear, where no clear-cut connection can be *a priori* established *vis-a-vis* the trade cycle. It might seem at first that this radioactive-like natural decay would be pro-cyclical, but I am not so sure this will always be the case, because even though the means of production will be used to produce more commodities during the upswing, it is also true, that firms will have the necessary funds to keep their equipment in working order, whereas the same will not be true during the downswing. As such I have decided to leave the naturally occurring wear and tear rate of capital goods scrapping, labeled δ_n in relation (6b), as independent of the trade cycle and given exogenously.

$$\delta = \delta(I_t, def) + \delta_n \quad (6b)$$

However, as mentioned in the previous paragraph, the rate at which capital equipment gets scrapped, as captured by relation (6b), will depend on at least two other variables: new, more productive investments and the default rate of companies. While we cannot be sure how new capital vintages will affect old ones, and while these effects are likely to be less felt during the boom as opposed to the bust, when the profit rate is expected to be lower in general, we can still safely assume that new investments will be generally undertaken with the aim of making production cheaper or with the aim of qualitatively changing the outputs and in the process making certain final products obsolete. If this is indeed the case, and again, it would seem to be a safe assumption in capitalism, where different capitals compete with each other, then an increase in investments should increase the scrapping rate of capital equipment. In mathematical terms this would mean that the partial derivative of δ with respect to I_t is expected to be positive, $\frac{\partial \delta}{\partial I_t} > 0$.

³⁸ Note, however, that the default rate is only indirectly connected with the physical sphere of production, only inasmuch as the titles of ownership over the means of production are concerned. Within the model this means that it is connected with S , the stock of wealth, and the influence comes from the sphere of ownership, so to speak, to the realm of the 'real', where we might then again be forgiven to ask ourselves whether the nominal is not in fact what is considered real within the capitalist mode of production.

This could potentially lead to a perverse effect in net capital formation, because the new gross investment could potentially, if the effect on δ were to be really strong, by increasing δ , negate itself in net terms, meaning that the new vintages could potentially make so many old vintages obsolete, that new investment would in fact decrease net capital formation. While this does not seem a plausible scenario in capitalism proper, it does seem a possibility *vis-a-vis* pre-capitalist, petty production, where history has shown that new technological developments have made many production techniques obsolete.

Another effect which we would expect to have an influence on how much capital equipment gets employed in the production process is the default rate, *def*. As stated previously, the default rate has to do with the social aspect of production, but it will influence the physical reality of capital accumulation. In simple terms, we expect that if more firms go under, for whatever reason, more capital equipment will not be used, which is the same as saying that more capital equipment will get scrapped. To be sure, in reality we can very well imagine that some of that equipment might be bought later by other firms and be returned to the fold of productive employment in the economic system, but the net effect is still likely to be negative, indeed, if for no other reason than due to the fact that, at least for a while, a part of the means of production will not be looked up after properly, as the firms who were in charges of this equipment have gone under. In terms of partial derivatives we have a positive influence on the scrapping rate if the default rate goes up, $\frac{\partial \delta}{\partial def} > 0$. Note the interaction between the purely physical and the social spheres, obligations between men will influence the physical reality which will in turn have an effect on the level of employment, that is to say the causation will reverse itself, which will in turn again change the relations between men and so on.

An additional and very important influence on the economic system which is a direct consequence of capital accumulation will be felt via its influence on the productivity of labour, where, however, its influence will be found to be both direct, the implication being that the capital stock itself influences the level of activity, and indirect, by means of determining the amount of labour employed in the economic system. This latter effect is captured in the following relation:

$$L_t = \beta K_{t-1} \quad (7)$$

In the Keynesian world, employment is a consequence of effective demand and effective demand itself is a reflection of the judgements, expectations and animal spirits of the entrepreneurial class (Roncaglia, 2005, p. 401). Stockhammer and Klär (2011), find much the same to be true at the empirical level for OECD countries, where employment seems to be accumulation driven and it is therefore the goods markets which determine the level of employment. This can be glimpsed if we look at the US data from 1955 onwards, where the labour participation rate is predicted relatively well by gross capital formation:

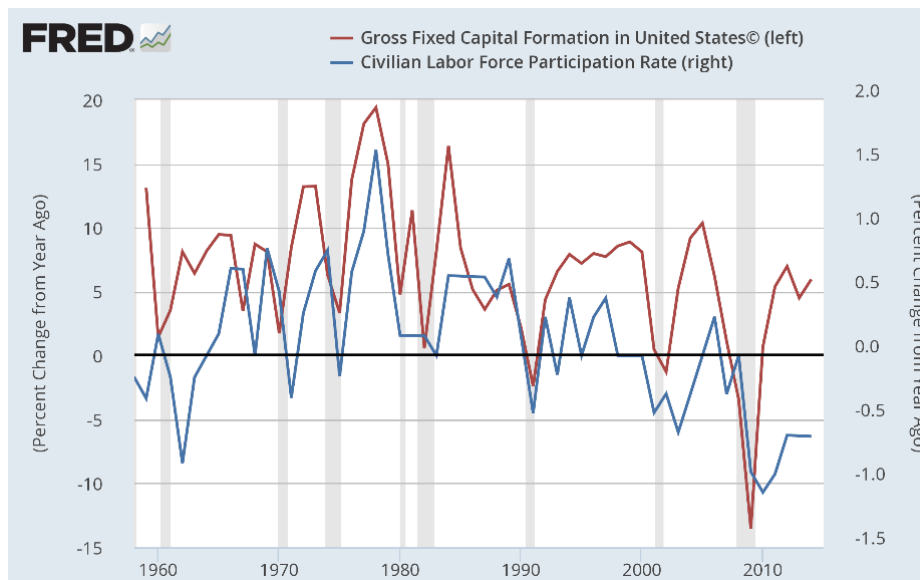


Figure 2: St. Louis FED data on gross capital formation and civilian labour force participation rate in the US, 1955-2014

The connection between capital accumulation and the job market becomes even more clear if we look at the movements of gross fixed capital formation and total private job openings in the US between 2000 and 2014:

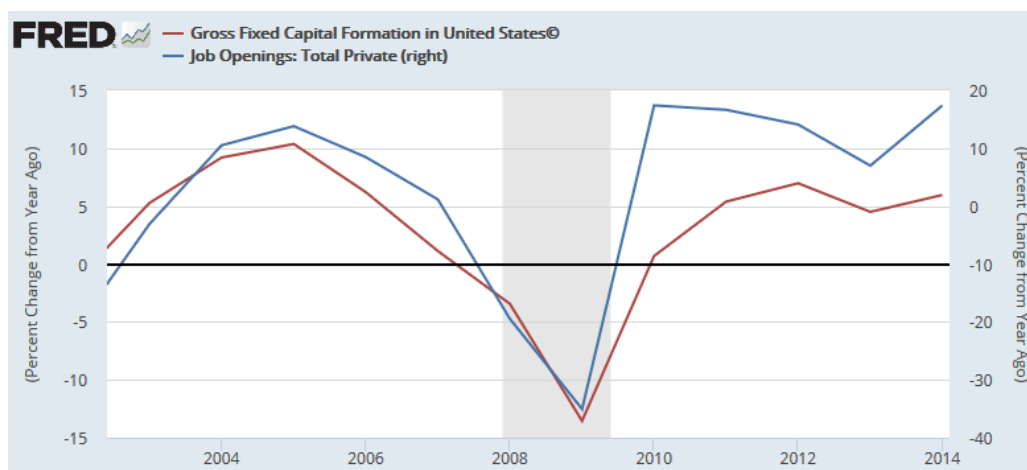


Figure 3: St. Louis FED data on gross capital formation and total job openings in United States between 2000-14

Returning back to equation (7), we see that the amount of labour employed at any given point in time is simply equal to beta times the capital stock in the previous period – not much would be altered if we imagined that investments take place at the beginning of the production period meaning that no time lag would exist. Labour demand is therefore a function of capital accumulation and capital accumulation is itself subject to criteria of finance and production in capitalism, meaning that it is governed by expectations, whims and fears of entrepreneurs, with employment being the residual in the whole process. In some sense, if we were to go back to the dichotomy of nature and society (although strictly speaking, society is part of nature meaning the dichotomy might not be so well grounded), we could say that, after the capitalist has chosen a specific production technique, there is only so much leeway when it comes to how many men need to be employed given that technique. While we can very well imagine there being *ex-ante* more techniques available to the capitalist, that each have different labour requirements, this is no longer true *ex-post* where certain fixed coefficients exist between the means of production on the one hand and

labour on the other. The coefficient beta, β , therefore represents, on the level of the economic system as a whole, the relation between the means of production on the whole and the amount of labour required to man these means, given their quantity and quality. Since the means of production are diverse, there can be, generally speaking, no fixed, linear growth paths of β , or rather, there is no reason to presume that they should exist. However, it should also be obvious, that there is even less reason to believe that beta should be constant through time. In fact, even if no net capital formation were to occur and if only the quality of the means of production were to change, it seems much more likely that beta would no longer be the same, as opposed to the assumption of keeping beta constant through time. Due to the nature of competition in capitalism, which goes on at the level of competing capitals as well as at the level of different classes, we expect there to be a certain relationship between beta on the one hand and new investments and the existing capital stock on the other. This is captured in relation (7a):

$$\beta = \beta(I_t, K_{t-1}) \quad (7a)$$

Accumulation of means of production can potentially have a perverse effect on employment through the channel of the capital-labour ratio, β . While in the model no claims are made with regards to technological advancements *per se* – how would one 'measure' technology and development in the first place? – the effects of technological change are viewed through the prism of their effects on the level of employment, similar to Pasinetti's (1993) treatment of the subject in his Structural Economic Dynamics. In the foreword Pasinetti (1993) explains that the aim of his analysis is to conduct a theoretical investigation on the influence of human learning on development, albeit it a pure labour economy. While this is not the aim of my model, I found his analysis helpful because of the very careful construction of the tools with which to analyze the problem at hand and because he resisted the urge to quantify that which is essentially not quantifiable – human development. One can, however, quite clearly see the effects of new technologies on the amount of labour that a certain process requires at different points in time.

The problem of qualitative changes, that is changes in technology and, *pari passu*, in the production process itself, is actually quite simple once put in terms of employment. New capital equipment can change the amount of labour required for a given production process. Now this might happen in markets for existing commodities, or the process might be Schumpeterian, meaning that new, fundamentally different commodities will make old ones outdated. We do not go into the finer details here, because what we are interested in is the final result which can be measured in terms of employment, which is an objective factor and one which can actually be analyzed empirically as well. In capitalist economies we can expect that competing capitals will strive to find production techniques which will require as little labour as possible, thus allowing their owners to increase their profits by increasing their market share by being profitable at lower prices (or with the introduction of new commodities). A falling beta need not imply a higher level of unemployment, since an increase in capital accumulation could very well negate these effects. It seems unlikely, however, that this result should come about spontaneously within the capitalist system, without the aid of the state demand. Indeed, for Pasinetti (1983) and many in the Keynesian

tradition, this seems to be the solution to perhaps the biggest problem in capitalism: unemployment.

While I realize that this might be seen as perhaps being too deterministic in some sense, but we will assume that beta will behave in a somewhat Marxist fashion, namely that investments and previous accumulation will have a diminishing effect on beta, β . The logic behind this was already mentioned, in capitalism firms compete to lower costs and in general this will mean that firms will wish to decrease especially the amount of labour employed. Secondly, we could imagine channels, which would perhaps be more connected more to the stock of means of production and less to the flow of investment goods, such as learning by doing that would have a similar overall effect – decreasing the capital-labour ratio. Formally this means that the partial derivatives of investments and past accumulation are both expected to be negative – $\frac{\partial \beta}{\partial I_t} < 0$ and $\frac{\partial \beta}{\partial K_{t-1}} < 0$ – that is an increase in investments and a larger stock are expected to decrease beta, through the aforementioned channels. The overall effect on employment of accumulation is therefore *a priori* uncertain. Marx (1972 [1891]) describes this process thus:

'Machinery brings about the same results on a much greater scale, by replacing skilled workers by unskilled, men by women, adults by children. It brings about the same results, where it is newly introduced, by throwing the hand workers on to the streets in masses, and, where it is developed, improved and replaced by more productive machinery, by discharging workers in smaller batches. We have portrayed above, in a hasty sketch, the industrial war of the capitalists among themselves; this war has the peculiarity that its battles are won less by recruiting than by discharging the army of labour. The generals, the capitalists, compete with one another as to who can discharge most soldiers of industry.'

Within the labour theory of value Marx saw this process as clearly self-defeating, since an increase in the organic composition in capital would imply that there is less value created. In the setting of the model at hand, the self-defeating process should be seen in a different light. Should a new revolutionary invention come along which would drastically reduce the need for labour in the economic process, the result would be, of course, lower costs of production for capitalists because of two effects: less labour employed and the reduced bargaining power of the employed workers, which would most likely reduce wages or at least reduce wage claims. While this might seem a panacea for capital in reality it could very well happen that, in the normal functioning of the system, due to inventions driven with the aim of cost minimization, a crisis of either overproduction or underconsumption could occur, where I take both to mean the same thing, namely both having to do with the problem of demand, but from different points of view. In other words, due to there being less people employed, the sector of consumption goods would produce less and expand at a slower pace thus decreasing the rate of capital accumulation, which would accentuate the problems of the system even further.

In the simple economic system here discussed, we therefore have a labour market which is not, strictly speaking a normal market, but a residual market which depends on the rate of capital accumulation and technological change. Again we are in a nexus of social categories, which are

interlinked with what seem to be objective technological considerations within a given point in time. Since the growth of the whole system is determined by the amount of labour employed and the productivity of said labour, and since both of these are at least partially determined by considerations regarding accumulation of means of production, a fundamental truth about the economic system in question emerges: they who control investment indirectly control employment, output and the distribution of wealth in society; in short they control the potential for progress of said society.

$$N_t = (1 + n)N_{t-1} \quad (8)$$

$$E_t = \frac{L_t}{N_t} \quad (9)$$

Equation (8) shows the growth of the population, which is given exogenously and grows at a constant rate, n . The exogeneity of the rate of growth is there for the sake of simplicity, since it is not the aim of the analysis to go into the finer details of the causes behind fluctuations in population growth. In general, however, it seems safe to assume that economic progress will also affect the rate of growth of the population. Having that in mind, without a very detailed study of the causes behind such shifts, which would take us outside the scope of this investigation, it is perhaps best to leave it exogenous for the sake of simplicity and clarity.

Perhaps more pertinent for our analysis is equation (9), which defines the level of employment in the economic system. In any given production period, the level of employment, E_t , is defined as the ratio between the amount of labour employed, L_t , which was already previously defined, and between the population as a whole, N_t . Remember that the amount of labour employed is linked to accumulation of means of production. This means that, if the capital-labour ratio, β , were to remain constant through time, the only way to keep unemployment in check would be to have the rate of accumulation of capital goods equal to the rate of growth of the population. This is a similar rule to that of Pasinetti (1983), who argues that accumulation has to follow the rate of growth of the population as a whole, if it is faster, there is the possibility of inflation, if it is slower the economic system suffers unemployment.

The equations above give us a simple tool to analyse changes in the growth rate of the population and the relation that this has to the level of employment. Additionally, coupled with the previous analysis of employment itself, we can check for dynamic conditions of different policies on the level of employment, E_t , in the system.

4.1.3 Consumption

$$Cc_t = (1 - \gamma)PB_t + (1 - \alpha - \varepsilon)P_{t-1} \quad (10)$$

$$Cw_t = WB_t \quad (11)$$

Next we turn our attention to matters of consumption. We have, with equations (10) and (11), the consumption functions of capitalists, both industrial and financial alike, and workers respectively.

For workers the classical assumption of the iron law of wages, which was put so nicely by Kalecki (1971, p. 14), namely that they spend what they earn, continues to hold within our model. Workers' consumption in period t is therefore simply equal to (and determined by) their wage bill, WB_t , in the same period. While it was shown by Pasinetti (1962) that the system effectively remains the same if profit sharing with the workers exists and if they, therefore, save instead of the capitalists, this is strictly speaking, only true in very limited, technical terms. For example, what emerged in the second half of the 20th century was a middle class of rentiers, who found themselves in that position due to progressive policies of the left, but who in order to maintain their newly acquired wealth, generally supported anti-inflationary and anti-expansionary fiscal policies, which might actually prove harmful to the working class as a whole. In fact, Palley (2015) bemoans the supposedly progressive aim of the center-left, which is at least nominally aimed at the resurgence of the middle class in developed countries. That being said, equation (11) is clearly a simplification, but again, it is a simplification because the core of the analysis is not aimed at finding the determining factors behind worker consumption.

Capitalist's consumption function is determined by bank profits of the current period and firm profits of the previous production period. Now, seeing as how capitalists, both industrial and rentier alike, are frugal and in tune with their Protestant selves, they do not spend all of what they earn. Financial capitalists will save a portion, γ to be exact, of their income, that is bank profits, PB_t , and spend the rest on consumption goods. The γ -th part will go to the stock of wealth, where this could mean that they simply have it in form of cash or deposits, or, perhaps more likely, in a diversified portfolio of equities, land, other financial instruments and money. For industrial capitalists the choice is not just between consumption and investment in titles of ownership, they might want to use a part of their income to finance their own production. Alpha, α , represents that part of profits which is re-invested back into production of capital goods, ε^{39} , is the part of profits that goes into accumulation of titles of ownership, where we can again assume, that, for the class as a whole at least, these holdings will be disbursed between different financial and other assets, with the aim of conferring purchasing power through time. As the reader might have noticed, we disregard loans for consumption expenditure in the model, which obviously constitutes a simplification. This is not to say, however, that consumer loans are not an important feature of actual economies, but merely that the focus of this chapter revolves more around investment expenditures and the respective loan circuit. In a Keynesian fashion investments are the category which drives the system and consumption adapts to the income formed by past accumulation.

Consumption, in general, is governed by custom, this holds for both groups. We will not go into the finer details that have to do with composition and distribution, which are all very important, but do not constitute the heart of our analysis. Consumption might very well be the final motivation of economic agents, but in order to gain purchasing power in the first place, economic agents have to either own the means of production or work for their income. Even if the sphere of consumption does represent the final outlet of the economic system, it is determined by the sphere of production,

³⁹ Both α and ε will to some extent depend on the profit rates in both sectors of accumulation. More on this will be said once we derive both rates of profit later on.

both in a very physical sense of goods needing to be produced in order to be consumed, as in the the social sense which has to do with income creation and income distribution.

4.1.4 Wages

$$WB_t = wL_t \tag{12}$$

$$w = w(E_t) \tag{12a}$$

Next we come to the determination of the wage bill, WB_t . The wage bill as a whole depends on the wage rate, w , and the amount of labour employed, where, as we will see, both of these are at least somewhat related as well. The wage rate itself is a reflection of the level of employment in the economy, since wage claims that are made by the workers will depend on their bargaining power, which is inversely related to the level of unemployment. Therefore, if the level of employment increases, the wage rate should, eventually, increase as well. The partial derivative of the wage rate with respect to the level of employment is therefore thought to be positive, $\frac{\partial w}{\partial E_t} > 0$. At this point it is worth remembering that the stock of labour employed is determined in this model by the amount of capital, meaning that in dynamic terms, capital accumulation should not just determine the stock of labour employed, but indirectly, following from (12a), also its remuneration. If we look at the data for US from 1958 to 2014, we do see that changes in capital formation are a good indicator of future hourly compensations in the nonfinancial sector:

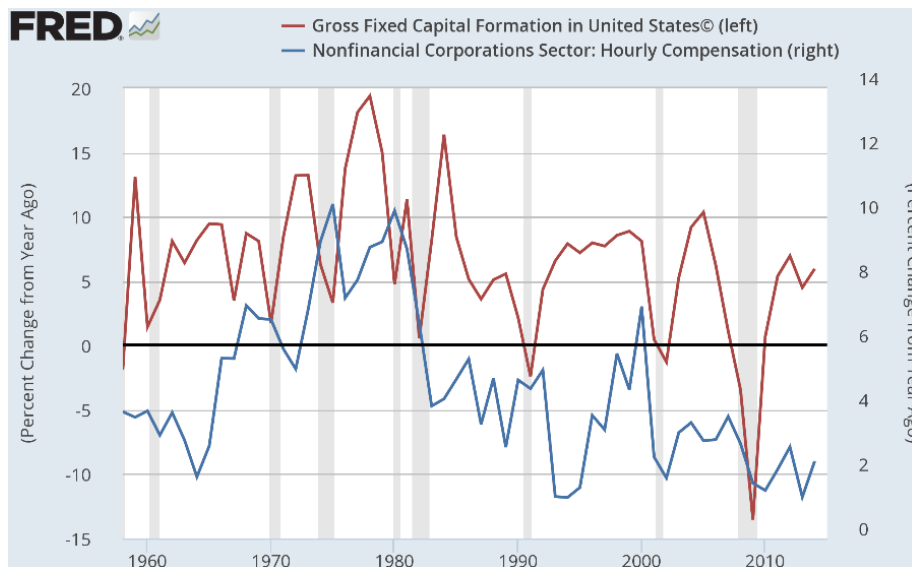


Figure 4: St. Louis FED data on gross capital formation and hourly compensation in the nonfinancial sector, 1958-2014

Additionally we see that capital formation is an almost perfect empirical instrument to predict future movements in unemployment. In Figure 5 we see the relationship between the changes in accumulation of fixed capital and the changes in unemployment between 1956-2014 in the US, and one can clearly see, that throughout different periods, the changes in capital accumulation are a good indicator of the changes in the rate of unemployment:

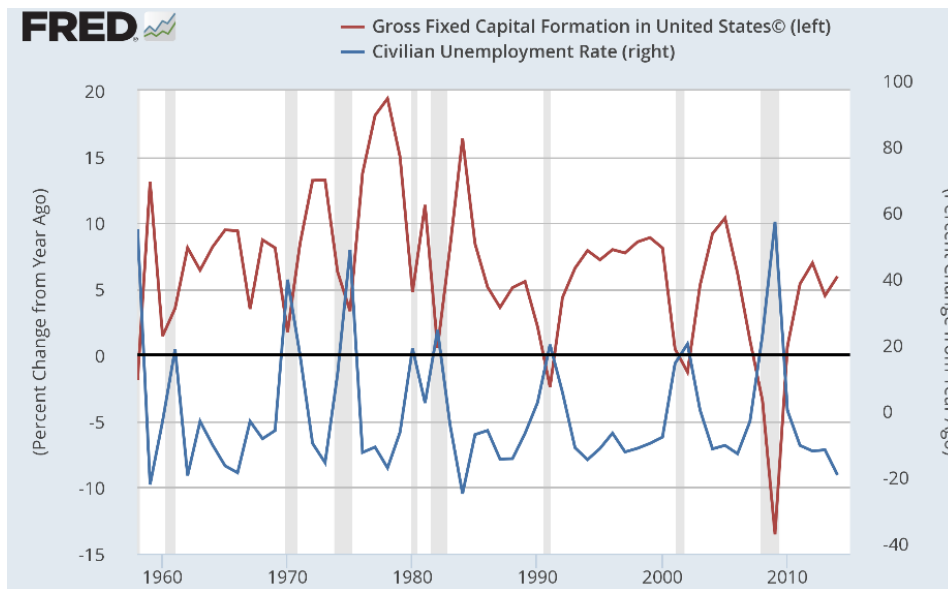


Figure 5: St. Louis FED data on gross capital formation and the rate of unemployment in the US, 1958-2014

While the above relationship is not in anyway controversial, in fact one could argue that it is the hallmark of classical and Marxist traditions, it is, however, simplified somewhat. Generally, we expect that changes in the rate of employment which bring with them a sense of continuity, should conform to the above partial derivative. That being said, not every change in the level of employment in the real world, will immediately reflect upon the general wage rate through either an increased or decreased wage bargaining position. In fact there might be various institutional arrangements in specific historical conditions, where either a comparatively low or high rate of employment will seemingly have no effect on the economic system of a certain country. Especially some mercantilist countries have been able to export their unemployment abroad, with stagnant wage claims and high levels of employment at home, with demand for their commodities coming from abroad. Hein (2012, p. 131) has argued that this sort of economic development in some countries, necessitates a debt-led consumption boom in importing countries, thus leading to an unstable international arrangement, where instead of commodities being purchased with higher wages, they are purchased with consumer loans. At first glance, and looking only at the national level, some export-led economies have been successful at keeping the wage rate at bay in spite of the relatively high levels of employment. What needs to be taken into account, however, is that production nowadays is global and can easily be shifted from one country to another, which means that unemployment in country B can affect the wage bargaining position in country A. Or to put it differently, the above inverse relation between employment and the wage rate should hold on a global level, even though it might not be applicable at the empirical level of specific countries. That being said, the reader need only imagine a world where every global economy has near full employment and wonder what that would mean for the bargaining power of workers.

At the beginning of 21st century, the first world is experiencing a rise in precarious work with which the the third world has long since been acquainted. What has often been called the era of globalization, has therefore led to a certain degree of homogeneity. I think the situation is very telling in that it shows how the global meta rules, the rules of the game according to which national economies have to play, have an important influence on rates of accumulation and, consequently,

on the levels of employment. If the system continuously fails to provide enough jobs for the populace as a whole, the institutions of the labour market, such as organized labour, can enter either into long-term decline, as is currently the case, or they can experience a long-term increase in their power *vis-a-vis* the interests of capital. As such, I feel that the game is one of decades and not one of tactics, but one of long-term strategy. Furthermore, a large part of how the system functions is decided on the international level by means of supranational institutions and by other, more direct geopolitical means. The beauty of the simple economic system at hand is that these effects will be captured in the distributive variables, the wage rate being one of the most important ones, something which I have always found to be a strong-point of classical political economy in light of Sraffa's (1963) interpretation and in post-Keynesian models of growth and distribution.

4.1.5 Bank profits

$$PB_t = r_L Loans_{t-1} \quad (13)$$

Equation (13) explains the formation of bank profits, PB_t , which are a function exclusively of the rate of interest on loans, r_L , and the stock of said loans in the previous period of production. To be sure, this is a very simple way of seeing the operations of the banking sector, since there are no wages for bank employees and the banks make all their money through loan extension. These characteristics, together with a positive interest rate on deposits are seen as secondary to the main thrust of the analysis and are therefore left out. Additionally, since banks would most likely profit as well from the management of the stock of wealth, S , this means, that strictly speaking, portfolio management fees would most likely constitute positive net profits for the banking sector as well. While some of these issues, such as the issue of the positive rate of interest on deposits, for example, were taken into account in the model in chapter three, I have decided, for clarity of exposition, to leave them out in the current system. As with most other realistic features of real economies that are left out in this simple system, this is due to the fact that in order for the model to be useful, some degree of simplification is necessary. This, however, is far too often an excuse for unrealistic assumptions, which I do not believe to be the case here. In fact, most of the realistic assumptions left out in my model are due to the fact, that I believe they would only make the same case *a fortiori*.

Another point to discuss is the lack of wages in the banking sector. This is how I would explain it: wages (and even more so, salaries) in the financial system come out of the fund that is found in what we have dubbed bank profits, PB_t . Strictly speaking, therefore, if the reader finds it too far fetched to have a banking system with no workers, only capitalists, then the reader can imagine that the profits above represent gross income (this is in fact the case) of the banking sector, which is then be distributed amongst capitalist owners in form of dividends, the management in form of salaries, various bonuses etc., and between workers. To be sure, this would mean that the total income of banks so distributed might very well be spent in a different fashion than in our consumption functions (perhaps more of it would be spent due to the lower propensity to save amongst people with lower incomes), but the fund from whence this purchasing power came, the well if you will, would still be the same well captured by relation (13). In fact, I suppose that in

this system banks are seen as financial rentiers and all their income accrued is understood to be rentier income, even though some of that income would, in the real world, accrue to the workers in those banking companies and not simply constitute profits of the banking sector. But we imagine, for simplicity's sake, that the fund itself would be more or less the same and would depend on the power of the banks *vis-a-vis* industrial capital⁴⁰ – this latter relationship being captured by r_L , the interest rate on money capital. And since it is this meta relationship between the banking sector and the 'real' sector which we are interested in, and not the finer details of this relationship, we take the gross income of the banks to also constitute their net income. This does not mean that the finer details are unimportant, but I feel they are not crucial in the analysis at hand, hence they were left out.

4.1.6 Profits and the surplus

$$P_t = pX_t - WB_t - PB_t = Y_t - WB_t - PB_t \quad (14)$$

Profits in the current production period, labeled as P_t , represent the residual in the system. If we take the national product, pX_t , then a part of the national product will go to wages and another part will go to banks in form of bank profits, PB_t with the rest accruing to firms in form of profits. Both the wage bill, WB_t , and bank profits have already been defined, the latter depend on the stock of loanable money capital and the interest rate on said money capital, whereas the wage bill depends on the amount of labour employed and the wage rate at which this labour is remunerated. We have posited a very simple relationship to determine the wage rate, linking it to the amount of employment in the economic system. Strictly speaking, there exists also a customary (and a purely physiological as well) minimum below which the wage rate cannot go, but other than that, we posit that it depends on the bargaining power of labour which moves with the rate of employment. Therefore we have already previously defined the shares of labour and financial capital in terms of command over producible commodities in a given period of production. What remains, we may even be forgiven for calling it a surplus of sorts, are profits of firms, P_t , which we get once we deduct the previous categories, that is, the wage bill, WB_t , and bank profits, PB_t , from the aggregate supply multiplied by the price level, i.e. the national product, Y_t . It might be helpful to re-write the relation in the following fashion:

$$P_t = pL_t(\pi - w) - PB_t \quad (14a)$$

The first thing to note, whether we look at the original relation or the re-written version directly above is that there is an inverse relationship between firm profits, which is to say capitalist profits proper, and between both the wage bill and bank profits. That is to say, everything else being equal if either of those two categories goes up, profits of firms go down. In post-Keynesian models of the Kaleckian persuasion this very often is not the case, because unused capacity is assumed,

⁴⁰ Truthfully, an increased bargaining power of workers in the banking sector would most likely mean that the rest of the economy would see more of the money paid to banks in form of interest payments and fees ending up back in their pockets, as opposed to the situation where these workers are poorly paid and the bigger slice of the pie goes to senior management and towards dividend payments to the owners.

meaning that the inverse relationship does not exist, at least not between the wage bill and profits, since up to the point of full utilization, if wages grow profits do not necessarily fall. Now while it is true, that capitalist economies usually tend to operate below full capacity and while, all other things being the same, an increase in employment up to the point of full utilization might benefit everyone, it is Kalecki (1943) who gives us reasons why this could very well not be the case. What good are higher profits for a short period of time, if labour gains strength, in various forms, it need not be only in form of higher wages, one can also imagine workers wishing to become owners of companies etc, in the long run. Also, from what we know, the motives behind having spare utilization is to stop market entry and not to actually run at full capacity for extended periods of time. This is not to say that as a society we would not benefit, in a strict material sense at least, if firms were to run closer to full capacity most of the time. However, this is empirically not the case and I think that there are also plentiful theoretical reasons, mainstream and heterodox alike, to dismiss the issue of using full capacity utilization as an argument for more employment and higher wages – economic reality, for better or for worse, seems to be closer to Sraffa and Marx, meaning that higher wages will lead to lower profits, all other things being equal. Where we should note, that the wage rate in the system is in money terms and not in real terms, giving at least some credence to the aims of trade unions for higher money wages, which are often dismissed by neoclassicals, but which were already understood as being sensible by Keynes (2003 [1936], p. 25), when he spoke of workers instinctively resisting lower money wages (whereas not resisting a fall in real wages).

Another point that is worth noting, with respect to relation (14a) is its similarity to the analysis carried out in the stock flow model in chapter three. Note that what was effectively achieved there was the distribution of the surplus amongst industrial and financial capitalists, replicating the Marxian schematic of $M-C-M'-M''$, where industrial profits are smaller than the surplus, due to the fact that industrial capitalists need to pay interest to their financiers. Note that here we are dealing with a similar process. The surplus is defined as the difference between the wage bill and the national income. If there were no financial sector in the model, then the surplus would also equal industrial profits, as things stand, firms lose a portion of their profits in order to repay interest on loans. Note however, that while these two groups of capitalists are seemingly at odds with one another, they both profit if the surplus is bigger. Since the surplus is effectively the difference between the productivity of labour and its rewards, both groups will wish this difference to be as large as possible, because it increases the productivity of both banks and firms. Obviously the surplus can either increase if labour productivity goes up or if wages go down (or if both of these things happen). Whatever the case may be, we can see that even in a dynamic context the findings from chapter three are still valid, namely that both groups of capitalists stand to gain if the surplus increases and that there are effectively two channels that can both be used simultaneously in order to achieve this.

If we look more closely at the relationship between bank profits, representing in the economic system the classical category of rents in some sense, we find that they depend on the amount of loanable money capital (to be precise, the amount in question is in fact from the previous period of production) and the interest rate on said loans. We can imagine, as indeed seems to be

empirically the case in capitalist economies, that if the amount of loans starts to outgrow the productivity of the economic system, or to be more precise, productivity employment and the price level, since they all determine the national income, then profits will eventually start falling due to an increased share of rents in the system. While they do not directly enter our system, one can already see why then, unproductive loans would be especially problematic in the real world – even if the interest rates remain low, the growth of the loan stock in general can be enough to limit potential growth of profits. Obviously the other channel could be the interest rate itself, where we can imagine that if the interest rate goes up for any number of reasons, in the post-Keynesian literature it would most likely have to do with a shift in the power relations between financial and industrial capital, then profits will similarly take a hit. Another feature of this relationship seems to be particularly troublesome, namely that, if for whatever reason, the rents in the system start increasing faster than the other two categories, and especially, once they start eating away at profits, then we can almost surely expect that the interest rate on loanable money capital will increase as well, dealing a double blow to a potential recovery. It is easy to imagine why this would be so, once the markets feel that the system is not stable, and with defaults in the system increasing, it would seem only natural that the rate of interest on loanable money capital would increase as well, stymying even further future growth of profits, and making real capital accumulation even less profitable.

Another variable which will, *ceteris paribus*, negatively affect profits is the wage rate; as it goes up, profits are reduced. Of course the problem here is a bit more complicated, because both the wage rate and the productivity of labour depend on the amount of labour employed, and both are assumed to be positively affected by a higher level of employment. In mathematical terms, this would mean that as long as the partial derivative of productivity with respect to labour will prove to be larger than the partial derivative of wages with respect to labour, then profits will grow faster than wages, due to the higher growth in productivity. Formally, therefore, as long as $\frac{\partial \pi}{\partial L_t} > \frac{\partial w}{\partial L_t}$ holds, then capitalists will find it profitable to increase employment. Obviously, however, this relationship is not under the direct control of the capitalist class since, as remarked by Kalecki (1971, p. 16), while capitalists might do a number of things in unison, investment is not one of those things and seeing as how investment, at the end of the day, determines employment, the above relationship between these two partial derivatives will move about freely, sometimes holding and sometimes reversing itself with wages outpacing productivity – in other words it is a relationship endogenous to the system, which means that profits will remain, as mentioned previously, the residual of the economic system, sometimes being in the black and sometimes in the red, depending on the constellation of various aforementioned variables.

Another interesting feature of profits is their relationship to the price level. Now this is something which has been noted by Graziani (2009, p. 103), Keynes and something which I feel has been used as an argument by many economists of very different methodological orientations⁴¹ for increased economic activity in Europe during the post-2008 slowdown; namely the positive relationship between profits and the price level. Profits in the current period production are

⁴¹ However, I suppose ideologically most would be found left of center.

augmented by an increased price level and since the price level itself is formed on the market, between aggregate demand and aggregate supply, as will be shown later, then more demand is something that, *ceteris paribus*, capitalists as a class should welcome. And as Graziani (2009, p. 108) has shown, even in a model with a state which decides to increase demand by raising taxes, profits are again found to be increased. So why then are capitalists so weary of Keynesian demand management? For one thing, there is the issue of unemployment as the long run stabilizer of the system to consider – capitalism is in fact a self-regulating system as described by Adam Smith, but a large part of this self-regulation is due to the social role played by unemployment. Another point has to do with the stability in the value of money claims *vis-a-vis* the world of producible commodities.

4.1.7 Accumulation of private wealth

$$S_t = (1 - x - \text{def})S_{t-1} + \varepsilon P_{t-1} + \gamma PB_t \quad (15)$$

Accumulation of the stock of wealth, S_t , is governed by relation (15) and is augmented in every period of production with flows from firm profits and bank profits. What is the stock of wealth? It is the monetary expression of the value of titles of ownership in the economic system in a given period of production. That is to say, it is the quantity of titles of ownership multiplied by their respective prices, where we are only interested in the aggregate value of this stock. When we speak of capital goods, there is a serious problem if we equate different physical things by means of a general equivalent such as money, the same does not apply when we speak of titles of ownership. They cannot exist but in form of money or some other general equivalent even though each of them grants its owner the command over a completely different set of commodities – one can own a firm and all its assets, or a beautiful island, both these things will have a price tag; and inasmuch they have this price tag, they are comparable in the realm of money. The only real difference between these different titles of ownership is in their liquidity; wealth stored in a bank account is more easily accessible than wealth held in form of equities, which are themselves much more liquid than real estate. At the sake of repetition, while these instruments of ownership represent command over qualitatively different 'things' in the real world⁴², among each other they are, inasmuch as they are of the same category (equities of different firms, for example), comparable in terms of money and can be viewed as a homogenous category, whereas the same cannot be said for the underlying 'things' themselves. The problem of Cambridge Capital Controversies was essentially the mixing up of this real aspect with the aspect of ownership, where one side was obviously looking to conflate the two in order to show that the owners of capital were indeed productive, since, means of production are needed in the production process and they happen to be the ones who own them.

Theoretically the stock of wealth is a tool that helps us differentiate between investments in new capital goods, or accumulation proper, and the appreciation of existing titles of ownership, on

⁴² Strictly speaking in the world of finance it is not uncommon to have claims upon the original claims, meaning that there exist financial instruments that have no direct connection to the 'real' but which only exist in relation to other titles of ownership.

capital (and other) goods that have already been produced in previous periods of production. The reason why one would want to do this is simple, there is a fundamental difference for society if new capital goods are produced or if existing wealth changes hands. In the case of mergers and acquisitions, to give but one example, stock prices will go up, thereby increasing the aggregate S_t as well, even though the underlying physical reality will have undergone no change whatsoever. Money will change hands, wealth will be transferred between individuals or groups, but on the societal level no new real wealth (in non-monetary terms), will have been created. There is, therefore, a difference in accumulation, as already noted by Pasinetti (1983), from the point of view of individuals and from the point of view of societies. An individual will find her or his wealth augmented as long as the price at which the stock was bought goes up. Not only can such increases directly divert investment from capital goods to the accumulation of titles of ownership, there is also the question of opportunity costs. After all, time and resources spent investing in titles of ownership and anticipating the movement of the markets means that new technologies are not implemented in the production process and that the overall productivity of the system is potentially lower. Finally, such a shift will most likely have adverse effects on employment as well – due to a decrease in capital accumulation – which will in turn change the distribution of income between capital and labour.

Now to relation (15) itself. The time path of wealth accumulation is governed mainly by inflows from profits of firms and banks. For industrial capitalists, the question becomes the following: after having spent a part of the profits on consumer goods, where we can safely assume that decisions regarding consumption have more to do with habits and norms and less with rational calculation on the part of the capitalist, what to do with the rest? All industrial capitalists, or a sufficient number anyway, will have to answer this same question. In this economic system they have two options, either they use their profits and re-invest immediately, as was envisioned by the classical school, or they can use those profits and buy titles of ownership, or simply hold on to them in money form – both of which constitute an increase in the stock of wealth. Their decision will depend on various factors: some of them might be more savvy when it comes to playing the market, others might be more conservative and prefer to just stick to their business, but at the end of the day, they will weigh the expected profitability of investing into capital goods or titles of ownership. To the individual what matters is the profitability between these two outlets for investment, whereas society obviously benefits more if its real capital stock is augmented. A real danger, as we will see in chapter seven, the fact that financial instruments have such low carrying costs, speculation and self-fulfilling prophecies become the norm.

Industrial capitalists will therefore decide, in every period of production, whether to invest their profits on the stock market⁴³, to simplify it somewhat, or to invest them in their 'core' business by buying new capital equipment. Before we continue, let us define the general profit rate of S_t . Simply put the profit rate on stock, wealth, purchasing power, however you wish to call it, r_S , is $\frac{\Delta S}{S_{t-1}}$. Obviously there will be a myriad of underlying profit rates on different financial instruments

⁴³ Since we allow heterogeneity in the wealth stock, they could just leave a part of their profits in their bank accounts as well.

etc., but the point being, the increase in the stock of wealth as a whole, divided by the stock of wealth in the previous period will constitute its appreciation (where we again disregard the changes in, say the issue of new stock, or the appreciation of existing equity, because, inasmuch as neither of the two end up back in the production of commodities, they are essentially one and the same). If the reader is baffled by this approach, the micro-determinants will be added in chapter seven, where we will bring prices dynamics into the analysis, for now, however, I would urge the reader to imagine a situation of owning one stock worth 1000 \$ and a thousand stocks worth 1 \$ - the quantity of money obtainable on the market in both situations, not counting any transaction costs, is the same, which means that the quantity of titles of ownership can be neglected for our present purposes. Having the profit rate of stock, the entrepreneur can now compare it with the profit rate of the firm sector, r , which will be derived later. Having these two rates to compare, we can expect that, given simple adaptive expectations, if one of the two profit rates increases, a greater part (than in the previous period) of the profits will go into that market as opposed to the other. We expect the following basic relationship to hold, partial derivative of ε with respect to the quotient between the profit rate of the capital goods sector and the profit rate of the titles of ownership sector is expected to be negative, $\frac{\partial \varepsilon}{\partial (r/r_S)} < 0$, meaning that if the profitability of firms increases *vis-a-vis* the profit rate of the stock of wealth, ε will decrease with respect to the previous period and vice versa⁴⁴.

The bankers face an easier choice, because for them the profit rate is given in the form of the interest rate on money capital, r_L , and they are assumed to not be interested, at least not directly, in using their profits for investments in means of production. Representing the true, old-fashioned rentiers, they have but one choice, how much of their income do they spend and how much of it do they save and this will depend on factors which have very little to do with any comparison between the profit rates, or anything similar. The biggest determinants will therefore be cultural, namely their consumption habits, and their number. The optimisation of the rentier is in fact the closest to the optimisation procedure found in neoclassical growth models with intertemporal optimisation, where one's preferences determine the ratio between consumption today and consumption in the future. Note, however, that should the income of the rentiers as a class fall low enough, it is a safe assumption that their saving, captured by γ , would in fact fall down to zero unless their habits were to change. This would be, as Sraffa (D3/12/42/34 as cited in Martins, 2014) called it, the 'subsistence level of capitalists' (rentiers in our example). This is why, Sraffa claims, a positive rate of interest has to exist – note the irony, a positive rate of interest would therefore seem to have to exist not because capitalists are willing to wait, but because a positive interest rate guarantees them the necessary funds to finance their consumption.

We could posit many institutional real-world channels of how profits would end up in S . One way would be by means of dividend payments, or other payments on existing financial assets, where

⁴⁴ A very practical example of firms investing more in financial assets than in capital formation would be during this last downturn, where one can see successful firms using their profits to buy up their own stock to keep the shareholders happy instead of investing the money. There is the Keynesian element of uncertainty to consider here as well, if one buys one's own stocks they will go up and the company appreciates as if by magic, whereas if one builds a new factory and if the results are not immediately obvious, the stock might actually fall.

we could imagine previously mentioned parameters being influenced, for example, by changes in the dynamics between management and owners (Stockhammer, 2006). We can also imagine, as was mentioned already, that a part of profits is re-invested into the company itself in order to boost stock prices. This sort of policy is again one which favours the existing owners of company stock (which is to say, the rentiers). Finally, a similar effect would be achieved by means of mergers and acquisitions. Should the propensity for any of these and similar activities increases, we can imagine that the value of S would also start to appreciate faster and the accumulation of wealth, for lack of a better word, could start outpacing the accumulation of capital goods.

There are two variables that represent the outflow of value from the stock of wealth, labeled x and def . Let us proceed with explaining the logic behind these two categories of outflows, which are fundamentally different from one another. If we start with x , it basically tells us how much of the purchasing power from the previous period of production will be used to finance new investment goods, which is to say, how much previously accumulated wealth will go into accumulation of capital goods. It is surely a reasonable proposition that in every period of production a certain amount of capitalists will find it profitable to employ their hoarded capital in some new venture which will not have to do just with selling one set of stocks and buying another, but will perhaps entail something like starting a new business, or using the previously acquired purchasing power to start new production circuits within existing firms etc. The changes in x itself will reflect the capitalists expectations about the profitability of one sector, compared to another, in other words: is it more profitable to keep the money in stocks, or land or in one's mattress, or is it more profitable to employ it in production. In general we expect x to grow if the ratio between the profit rate in the real sector and the profit rate in the market for titles of ownership increases. In formal terms the derivative of x with respect to this ratio is expected to be greater than zero, $\frac{\partial x}{\partial (r/r_S)} > 0$. Again, we make no claims with regards to expectations and the stability of these expectations, nor how correct they might be. Here we posit a simple relationship that should hold in a profit driven system, even though it is most definitely not the sole determinant of the system in an inherently uncertain world.

$$x = x(r/r_S) \quad (16)$$

$$def = def(r^L/r, I_t, r_S) \quad (17)$$

Another form of outflows is represented by the variable def , representing the rate of default (measured as a percentage of the stock of wealth). If a company goes bankrupt, financial value gets deflated, even though the means of production may still be useful and bought up by other firms, the value of these assets generally depreciates and the titles of ownership, such as stocks, lose their value, thus shrinking the overall stock of wealth. The default rate itself is determined by three different factors in our system, even though one could posit many more influences, such as the change in lending behaviour by the banks, increased competition between capitals due to a recession etc. On the aggregate level, an important determinant will be the rate of profit of firms and the rate of profit on loanable money capital. We posit, therefore, that the derivative of the default rate, def and the ratio between the interest rate on loanable money capital and the profit

rate of firms to be positive, $\frac{\partial def}{\partial(\bar{r}_L/r)} > 0$, meaning that if the rate on loans appreciates with respect to the profit rate, some firms will not be able to honour their obligations and will consequently have to go under.

When it comes to costs and competitiveness between different capitals, new investments are assumed to be the main driver of defaults. The more productive investments made, the higher is the chance that some of those investments make old capital goods obsolete and certain capitals get destroyed altogether. In arithmetical terms this means that the derivative of the default rate with respect to new investments is positive, $\frac{\partial def}{\partial I_t} > 0$, the default rate increasing with more investments, creating a paradox of sorts, as new wealth gets created and the productivity of humankind gets augmented, the financial wealth of the community can in fact decrease.

Finally we consider the effects of an increase in the financialization of the economy on the default rate. The idea is simple, in an accumulation regime where finance dominates all other concerns, financial rentiers will find themselves in a position to extract larger rents through various channels, such as increased dividend payments, share buybacks etc. We take the rate of growth of stock, r_S , as a proxy of increased financialization. The effects that would follow from such a scenario, from the standpoint of firms, would be very similar to an increase in the interest rates on loans. What can happen is the following: as stocks soar, for example, dividend expectations and expectations regarding the price of stocks become the main guiding principle of management, meaning that more and more resources (read: profits) need to be diverted towards fulfilling this task. But while this might represent a sound strategy for some firms, it also means that for the economic system as a whole purchasing power gets sucked out of circulation. This produces demand effects, meaning that fewer investments take place and fewer commodities get produced which itself starts its own negative feedback loop on expectations. Additionally, if the rate of capital accumulation slows down considerably, this could lead to an increase in unemployment, which leading to falling wages. The main problem resides in the nexus of fixed obligations from the past, coupled with falling demand in the present. Formally, we arrive to a situation where the derivative of the default rate with respect to the rate of private wealth accumulation is expected to be at least somewhat positive, $\frac{\partial def}{\partial r_S} > 0$. Again, we should note that the rate of private wealth accumulation is here taken as a proxy of sorts, for increased financialization and a potential change in the leading accumulation regime.

Admittedly one could argue that our depiction of the default rate as explained in the paragraphs above is somewhat simplistic, but it is an important feature of the business cycle that I feel has to be present in the model. That being said I do admit that there are different ways one could go about incorporating the default rate in the model. The most simple, but very unhelpful solution due to the cyclical nature of the variable, would be to simply view it as an atheoretical parameter. Another way of handling it would be to simply link it to the business cycle in some fashion, which, it could be argued, is what I aimed to do by linking it with the profit rate. The reader should also remember, that inasmuch as the default rate is linked to S , which is itself linked to AS , an increase in the default rate can exacerbate the business cycle through an indirect influence on new credit

formation (by changing the ratio between S and L). I would also be completely open to the idea of linking, directly, the rate of defaults with the stock of loans, as firms that go under are unable to repay their past loans. Another avenue which would be worth pursuing is the connection between the banks' credit policy and the default rate of firms, especially if we envision the former to be exogenous and therefore unpredictable. In other words it is very likely, that the default rate is also a function of autonomous changes in the behaviour of the banking sector. For example one can easily imagine that an initial change in credit creation would increase defaults and that the increase in defaults would then further hamper new creation of credit thus creating a downturn in economic activity. Within the logic of our economic system this sort of shock could be attributed to what I have called animal spirits proper, the exogenous parameter φ which is one of the determinants of the growth rate of the stock of loans. In reality, however, the issue of defaults is much more complex than we have imagined it to be in this model where the aim was to make it endogenous at least to some degree, as one would imagine that the default rate is at least somewhat connected to the fluctuations of the economic system.

4.1.8 Determination of productivity

$$\pi = \pi(L, K, I) \quad (18)$$

Finally and somewhat fittingly, we end with our final relation, productivity of labour and its determinants within our economic system. In our simplified economic reality we will make three simple assumptions regarding the influences on productivity of labour that come from within the system itself. There is something to be said for leaving the changes in labour productivity as exogenous, simply because the determinants of productivity are likely to be much more complex than is envisioned within the scope of our investigation. Furthermore, leaving the rate of growth of productivity as exogenous would perhaps help the clarity of exposition. Finally, we have to admit that we know very little of what determines the accumulation of knowledge in society. It seems to be a process fraught with outliers. At the individual level we see companies who have invested heavily into new technologies fail, because some other technologies make the whole industry obsolete or some such matter. That being said, it is obviously not our aim to focus on the micro determinants of labour productivity, but to look within the system to find variables that at least partially govern its evolution.

Looking to the Smithian tradition we expect there to be a positive relationship between the amount of labour employed (in capitalist production) and the level of labour productivity. In the original sense the productivity of labour would be seen to increase by means of specialization, as in the famous example of the needle factory given by Smith. Whatever the case may be in empirical practice, by having more labour employed there is a higher probability, for the development of new technologies. This can mean that existing processes become more efficient or that new commodities get produced. In the first case, we can imagine that through what may seem as a repetitive process, small time-saving inventions will be part of the production process; inventions which cannot be done but within the production process itself. Much in the same way as in biology, when life is more abundant, more mutations are likely to occur, thus

bringing about evolution, the same process could be said to be going on at the level of production, irrespective of the mode of production. This is the logic behind the assumed positive relationship between the stock of labour employed in producing commodities and the positive feedback the size of this stock has on labour productivity. Again, if we were to put this in mathematical language, the partial derivative of labour productivity with respect to the amount of labour employed is positive, $\frac{\partial \pi}{\partial L} > 0$. Ideally, therefore, as was already argued by Smith, as many people as possible should be employed in the capitalist mode of production in order to boost the productivity of the economic system.

It should therefore not come as a surprise that Smith had argued for an expansion of markets, since that would lead to an increase in demand for commodities, which would lead entrepreneurs to employ more labour (Roncaglia, 2005, p. 128). One could actually argue that Keynesian policies, inasmuch as they are aimed at increasing employment, are in fact within the original Smithian tradition. Therefore one could make a Smithian argument for Keynesian state-led demand management as long as it employs more people, since this ought to have positive effects on labour productivity, which was seen as the main determinant for growth by Smith (Roncaglia, 2005, p. 128). Unemployment, however, seems to be a constant companion of capitalism and seems to provide not only a constant available labour pool, but also a Kaleckian invisible hand of social discipline.

Another stock magnitude where we can assume a positive impact on labour productivity, π is the stock of capital goods. As mentioned previously, the economic system here envisioned is a simple system of pure capitalism where commodities are produced by commodities. One distinct commodity is labour and its role with regards to its own productivity has already been dealt with in the previous paragraph. But this labour will obviously need to employ tools in order to produce even more tools and all the other commodities. At any given point in time, the whole existing stock of commodities will inform the production process in the following period of production, meaning that every commodity might have some intangible influence on the system of production and its future states – this goes back to the problem that we simply do not know how knowledge and ideas are formed, we have vague clues, but that is more or less it. While we make no claims to understand the microeconomic relationship between the means of production and the productivity of labour, it seems nevertheless a rather safe assumption that the material reality around us, which we alone have helped to create, will in turn influence our thoughts, give rise to new ideas and help us further expand our productive forces. Capital accumulation has a two-fold effect on labour productivity: on the one hand it increases the employment of labour thus having an indirect effect on labour productivity through the labour market as discussed in the previous paragraph and it has a direct effect on labour productivity, since the existence of more and different tools will also augment labour productivity. This final effect can be captured by the positive partial derivative of labour productivity with respect to the existing stock of the means of production, $\frac{\partial \pi}{\partial K} > 0$.

Accumulation of capital has at least one more effect on labour productivity. The flow of new investment goods from the most recent period of production is likely to have a more pronounced

effect on labour productivity as opposed to the older vintages of capital goods. As with the stock variables, here too we expect the direct effects of new investment goods to have a positive direct effect on labour productivity – the reason being simple, new investment goods bring with them the latest technology which should, at least in theory, provide labour with better means for production as opposed to the older vintages of capital goods. The partial derivative of labour productivity with respect to the flow of new investment is therefore positive, $\frac{\partial \pi}{\partial I} > 0$. However, the net effect of investment on labour productivity and on aggregate supply in general, might not be so straightforward.

At this point we must remember that accumulation itself is motivated by profit and aimed at competing with other capitals. This means that new capital goods can in fact have a destructive effect on old capital goods, thus leading to the destruction of some capitals, which can lead to a situation where the society is left with less capital goods than at the start and with a lower level of employment. Potentially this could mean that the increase of labour productivity due to the employment of new capital goods will be at least partially negated by the fall in labour productivity due to higher unemployment and a smaller capital stock. Another possible transmission mechanism could be the capital-labour ratio, β . Even if new investment does not make old investment outdated, it could decrease beta, thus leading to less labour being employed in spite of new investments in capital goods. In the long run, this seems to be a channel that at least some economists (Skidelsky, 2013) and other futurists (Rifkin, 2004) are anticipating to become ever more pronounced, namely, that for a given stock of means of production, one will physically need less labour with every passing period of production. As mentioned previously, there are obviously other, perhaps even more important determinants of labour productivity, but they will not be dealt with in our investigation. With the system complete we now turn our attention to the formation of money prices and issues concerning distribution of income.

4.2 The price level and the distribution of income

Following the completion of the system it is now time to turn to some of its implications, where we will begin with the formation of the price level, because without it, we cannot say much about the distribution of income in modern monetary capitalist economies. The price level gets resolved once the commodities produced in the economic system are sold on the market, which in practical terms means that we equate aggregate supply with aggregate demand. This is perhaps an important distinction, one already found in Graziani (2009, p. 101), between the Kaleckian, and consequently post-Keynesian mark-up approach and the route that we have taken here, where the price level is not a simple mark-up over costs of production, but is in fact resolved on the market. It might very well be true that the production side of the economy is where we should start our analysis, but whatever commodities get produced, the surplus – to use the language of Marx and the classicals – only gets realized once those commodities are sold. In other words, the circuit of production closes with the sale of said commodities, which means that at the end of the day, capitalism is a demand-constrained system, where, unsurprisingly, investments will vary much more with the trade cycle than any other category. As Graziani (2009, p. 103) notes, Bernard Schmitt (1984, pp. 134-5), one of the founders of the circulation approach held a similar view about the realization of

profits, namely that: 'Profits are born in the commodities market.' But before we can go to issues of distribution, we need to first know the price level, so that we may obtain the so called real magnitudes behind the monetary ones.

The equilibrium price level is obtained by equating aggregate supply, in monetary terms, with aggregate demand, which would in our case mean investment demand, and consumption of both workers and capitalists. Graziani (2009, p. 101) simply assumes that a part of aggregate demand is bought up by firms for the accumulation of capital goods, in my system, income categories which represent purchasing power that allow firms to purchase a certain amount of commodities are explicitly specified, which unfortunately means that the results will not be as neat. To get the price level we equate relation (1a), the national income, or the monetary expression of aggregate supply, with the sum of investment demand, (2), and consumption of capitalists and workers, relations (10) and (11) respectively and we get the following expression:

$$p\pi L_t = WB_t + (1 - \gamma)PB_t + (1 - \varepsilon)P_t + \Delta Loans + xS_{t-1} \quad (19)$$

We can now express the price level by dividing the right-hand side of (19) with πL_t and we get:

$$p = \frac{WB_t + (1 - \gamma)PB_t + (1 - \varepsilon)P_{t-1} + \Delta Loans + xS_{t-1}}{\pi L_t} \quad (20)$$

However, before we decide to delve deeper into what in fact determines the price level of producible commodities in the economic system, relation (20) can be simplified further:

$$p = \frac{w}{\pi} + \frac{(1 - \gamma)r_L Loans_{t-1}}{\pi L_t} + \frac{(1 - \varepsilon)P_{t-1}}{\pi L_t} + \frac{\Delta Loans + xS_{t-1}}{\pi L_t} \quad (21)$$

Finally, if we additionally re-arrange the last three terms on the right-hand side we get the final form:

$$p = \frac{w}{\pi} + \frac{1}{\pi L_t} ((1 - \gamma)r_L Loans_{t-1} + (1 - \varepsilon)P_{t-1} + \Delta Loans + xS_{t-1}) \quad (22)$$

Examining equation (22) some obvious and some less than obvious causal connections between the price level and its determinants on the right-hand side are made clear. Firstly, there is an unambiguous inverse relationship between the productivity of labour, π , and the price level – the higher the productivity of labour, *ceteris paribus*, the lower is the price level. This is not something unexpected, indeed the very same relationship can be found in Graziani (2009, p. 101) or in Atesoglu and Smithin's (2006) paper on inflation targeting, among others. However, this is not the end of the story with respect to productivity, because we have to remember that in this particular

theoretical economic system – and in reality as well – the productivity of labour is not exogenous, it itself is at least partially determined by the productive system. Within the system there are three main determinants which augment labour productivity: the employed labour stock, the stock of means of production and the flow of investment goods. Bearing that in mind the relationship between productivity and the price level becomes somewhat more complicated.

For example, the demand for investment, while partially fueled from past profits is otherwise financed by the numerator of the last term in relation (21), made up of a part of the stock of wealth and the change in loans. So while, on the one hand, productivity will bring prices down, it will, on the other hand need to be fueled by additional income which will flow onto the market for producible commodities outside of it – from the banking system and from the disinvestment in existing assets – thereby also contributing to a rise in the price level. Additionally, one could imagine, that a longer such period of expansion would also influence other parts of the system (the wage rate for example)⁴⁵. As these processes go on, they effect the stock variables. Past accumulation of capital will have some relation to productivity, since tools make labour more or less productive, and the amount of capital goods will also provide some upper limite to the amount of labour that can be employed at any one time. This means that past accumulation of capital will be present in the price level only indirectly, through the effect on productivity, amount of employment and the wage rate. There is no way to presume what the net effects of the capital stock are, especially if we take into consideration a particularly worrying case, where lower accumulation of capital goods will have as its effect the fall in productivity as well⁴⁶. However, in order to finance the expansion of capital goods, one requires finance, and a protracted period of investment activity will also lead to an increase in the stock of loans, which are directly captured in (22). These loans are, if we may be somewhat poetic, sins of the past come visit the future; short of a jubilee nothing can be done about them, meaning that, even if previous accumulation of capital will have had a positive influence on labour productivity, it will also have created a monetary counterpart in the stock of loans, which represent purchasing power of the rentier. We cannot, therefore, be completely sure about the net effects of capital expansion on the general price level.

Perhaps the trickiest of all is the labour stock, which, while having a direct effect on the price level, will also have an indirect one through its influence on its own productivity and on the wage rate. Its own effect is clear, the more labour is employed, given a certain level of labour productivity, the smaller the price level will be. However, as labour is not simply an input, but since those who toil will also wish to spend their hard earned money, the more labour employed, especially *vis-a-vis* the working population as a whole, will mean that the wage rate will increase. More labour employed will also have a positive effect on the productivity of said labour, meaning that the indirect effects remain unknown. Long periods of full employment would most likely reflect in a situation where the wage rate could outpace the expansion of labour productivity, thus raising the

⁴⁵ That being said, however, it could very well happen, that without new investments productivity would remain stagnant and lag behind the expansion of consumption, thereby increasing the price level. In fact this is something Atesoglu and Smithin (2006) find to be true.

⁴⁶ I mention this example, because usually we would expect more capital goods to augment productivity. The overall effect on the price level would then depend on how the given stock of capital would influence the amount of employment and the wage rate.

price level. So labour has its direct and indirect effects on the price level, where the direct effect is straightforward and the indirect ones, through the channels of wages and labour productivity, move in opposite directions and no general statement can be made as to which of the two would prevail – in other words nothing can be said about the net effect of labour on the price level. This would be true at the initial, theoretical stage of the investigation. The second stage of the investigation would therefore have to be directed at specific labour market institutions and past developments in the labour market of a given economy. The system closes, so to speak, once we take into the account these exogenous factors, which are institutional in nature.

Next we come to the second term on the right-hand side of equation (21), the numerator of which basically constitutes that part of bank profits, which is spent on producible commodities. A straightforward relationship between the price level and gamma, γ , the savings rate of rentiers becomes apparent: the higher the savings rate, the lower the price level. Since there are no connections assumed between gamma and any other variable, this is the end of the story within the proposed theoretical system. In reality we do not know how gamma would behave. Intuitively speaking, if a slump were to occur, we can imagine the savings rate of rentiers, inasmuch they are looking to bequeath their wealth to future generations, would also increase – but this is an empirical issue. Gamma would most likely also depend on the number of rentiers and on what sort of lifestyle they have become accustomed to. The stock of loans for any single period of production, is a given datum that cannot be changed, at least not within the theoretical construct here presented and it too will have a straightforward connection to the price level – the bigger the stock of loans, the higher the price level. The variable which can be controlled⁴⁷, however, is the interest rate on the stock of loans, r_L , where its direct effect on the price level is again pretty obvious, the higher it is, the higher the price level will be, since this will mean that rentiers have more available income that they can spend. In a way, this might be a surprising finding, because, mainly, we are led to believe, that higher interest rates, as set by the central banking authority, should slow down inflation – indeed this is what is usually the reason for increases of the interest rate given by central bankers – whereas here we find the opposite to be true, that in fact, a higher interest rate on loans will make more income available to financial capitalist and will in fact end up increasing the price level, and not, as is generally believed, decreasing it.

However, there is an indirect effect that we have not taken into account, which could very well explain why the higher rate of interest on loanable money capital is said to decrease the price level and slow down inflationary tendencies in economies. First of all, remember that the increased rate of interest on loanable money capital will also, *ceteris paribus*, decrease profitability of firms, much in the same way as increased wages would. This by itself might have interesting dynamic effects, such as a decrease of real capital formation, but let us neglect those for now. A decrease in the profitability of firms, that is a decrease in the profit rate, will have its effect on the default rate as well; remember that we in fact posited the default rate to be a function of the quotient between the interest rate on loanable money capital and the profit rate of firms as described by this

⁴⁷ Strictly speaking the volume of loans in real economies can be controlled as well – ancient civilizations already had debt jubilees – but that is more often than not a political decision (Graeber, 2011).

partial derivative: $\frac{\partial def}{\partial (r_L/r)} > 0$. This will mean that even in stationary terms, an increase in the rate on money capital will increase the default rate thus decreasing the stock of wealth, and thus bringing down effective demand through this channel (found in the last term on the right-hand side of (21)). In a more dynamic context, if the increase in the rate on loanable money capital were to persist, say because the initial shock created the expectations of a slump with banks requiring a higher rate of interest on their loans, then this would also slow down accumulation and have an effect on the labour market – less labour would be employed. Seeing as how the population numbers would most likely not move with the trade cycle – that is to say, the suicide rate will most likely not follow the increase of unemployment – it is therefore safe to assume that the pressures of increased unemployment on the money wage rate will eventually bring it down, thereby decreasing effective demand through yet another channel, which would again reduce inflation and keep the price level stagnant or perhaps even decrease it. There is, however, another part to this story that we must not forget to mention, namely that once employment slows down, due to decreased accumulation of means of production, this can potentially increase the price level since the labour stock is found in the denominator of the price level. And not only that, remember also that the productivity of labour is tied up to accumulation in three ways, by means of the category of new investments, and by the stock variables of capital goods and labour. Since all three will either decrease or at least grow slower due to an increase in r_L , all other things being equal, this means that there is no sure guarantee that an increase in the rate of interest will decrease the general price level. In fact the economy might find itself in a perverse situation where it will suffer increased unemployment, falling productivity, falling wages and an increased price level. Of course, this need not be so, in fact if the default rate is high enough and should the rentiers become more stingy during the bust and if new accumulation is halted sufficiently (change in loans slows down) and if eventually the wage rate settles at a lower level, then an increase in the interest rate on loans might very well do its intended trick and lower the general price level. Even then of course, one should ask if the price is worth it, especially in dynamic terms. However, as Atesoglu and Smithin (2006) observe in their model, the perverse scenario is very likely – in our example where labour productivity is somewhat endogenous this is doubly true – namely that while defaults go up, the wage rate declines, effective demand decreases, unemployment shoots up and labour productivity grows at a slower pace or even declines, the exact opposite of the desired effect is reached: the price level increases because the effects of lowered demand by destruction of sources of income for a large part of the population are not sufficient in the wake of lagging productivity and the decrease in the amount of people employed at that level of productivity. Different economies will of course have different responses to an increase in the rate of loans, but the causal mechanisms behind the change in the price level will be the same in all of them and they will mainly operate through the channel of investments, which will be slowed down, and the destruction of the weaker capitals as the default rate increases. That is to say, the price level might – but even this is by no means certain – go down, by immiseration of the general population. A much more humane way is also possible: through increasing the amount of people employed and through increasing their productivity.

Income shares will invariably affect the price level and this will be doubly true in a dynamic context, where the causal mechanism, however, will be accumulation of capital goods, or the lack

of it. We have seen how an increase in the rate on money capital can halt accumulation of means of production, well the same can be true with respect to wages. Again what might happen during periods of extensive capital accumulation which would lead to a permanent fall in unemployment⁴⁸ and therefore to an increased wage rate is that profitability would fall. Of course the increase of the wage rate would also increase the price level, but again, we cannot be sure how strong the effects of increased labour, capital and investments would be with respect to productivity of labour, meaning we cannot say for certain whether or an increase in accumulation will increase or decrease the price level. Increased accumulation will obviously also affect the overall stock of loans and the rate of increase of loans, which will both increase the price level. Even if the overall effect is unknown, we only know the channels, but not which effect would prevail in practice, it is interesting to note, that a trade cycle (and changes in the price level as well) can come also purely from the interactions within the productive part of the economy, with interest rates remaining stable. So that for example, once profitability falls and remains low, we can assume that animal spirits will be affected, thus bringing accumulation to a halt, or slowing it down at least. Once this happens, as we have noted with respect to a slow-down by dint of an increased rate of interest on loans, we again cannot be sure that this will lead to a decreased price level. On the face of it, decreased accumulation should, of course, lower the wage rate and it will mean that less wealth flows into the system of production, as well as slowing down the process of loan formation, all of which will mean that the price level ought to at least remain stagnant if not altogether decrease. On the other hand the perverse situation whereby all of this happens, but falling productivity and the fact that less labour is employed could very well mean that the overall net effect on the price level would be to see it increase instead of decrease, thereby not solving the underlying problem – if the underlying problem is seen to be a high price level – and creating unemployment on top of it as well. Note, however, that this comes through the normal functioning of the system, even if no changes of distribution occur between creditors and debtors, it is a cycle completely endogenous to the profit-driven production process in capitalism. During the upswing capitalists will invest more to out-compete each other, but what will occur – again this is if the capital-labour ratio does not also change, something which might very well be an empirical fact of modern societies – is that they will invest 'too much' from the point of view of profitability, which is to say, wages will increase to the point that they will endanger profitability of the system and the process of accumulation will reverse itself with defaults of existing wealth (and by destruction of titles of ownership, which then leads to the destruction of means of production) and with less production circuits being open, i.e. less loans being taken by firms. The price level is a residual of all these decisions, some of which could be said to be somewhat technical, but most of which are completely social and revolve, at the end of the day, around issues of profitability. Even though equation (21) (or (22)) gives us an idea about causality, we cannot be sure which effects will prevail at the end, which could also explain why inflation is empirically such a diverse phenomenon (Atesoglu & Smithin, 2006).

While we have already mentioned the stock of loans and the increase of the loan stock as determinants of the price level, we only talked about them indirectly, as sources of finance. A

⁴⁸ Here we are keeping the capital-labor ratio constant, meaning beta does not fall or increase with accumulation. Alternatively we can just imagine that the volume of investments will always be such as to augment the labour stock.

similar story to the one above could be told from the point of view of loan expansion. As the reader will remember, the stock of loans in this economic system moves, at the end of the day, with profits; profits, in other words, are the triggers which set off the animal spirits⁴⁹ on either a downward or an upward spiral. In partial derivative parlance this means that the partial derivative of animal spirits with respect to the profit rate and with respect to expected profitability, which is itself a function of current profitability, will both be positive, meaning that the animal spirits move with profits and *pari passu* so does the flow of loans. Unsurprisingly, therefore, should profitability fall, should firms start to go under and should, and should investment demand dwindle, the direct effect of both the stock of loans – presuming the interest rate does not shoot up during this period – and the flow of loans on the price level will obviously be to mitigate any upward trend and perhaps to even lower the general price level. However, in a system where (almost) everything is connected, the indirect effects might well prevail over the direct ones, with the story being the same as in the previous two cases: we can imagine one very probable scenario, where slower accumulation leads to slower labour productivity, which will in the end increase the price level.

While on the subject of profitability, it is worth noting the connection between past profitability of the system and the current price level of producible commodities. The direct effect of past profitability is captured in the third term on the right-hand side of relation (21). Unsurprisingly, as with all other income, there is a positive relationship between past profits and the current price level. Additionally, the higher the savings rate out of profits, or what we could also call the rate of investment into existing assets or titles of ownership, ε , the lower is the price level. Simply put, the higher the share of profits that goes out of the system of production, the lower is the price level. Again, these are the simple and direct effects of profits on the price level. Profitability also determines the amount of capital accumulation, meaning that a system with high profitability is likely to be one where more loans are granted, due to the fact that more investments are undertaken by the firms. Once again, these effects would be very straightforward if it were really the case that new loans would simply create a scenario where more money chases the same amount of goods. However, since we posit a positive relationship between investments and the system of production, through the augmentation of productivity, the stock of employed labour and the tools that that labour uses, then the net effect can go either way.

A final consequence of the price level on the economic system and of the rest of the economic system on the price level is the role of the general price level with respect to previously acquired wealth, S_{t-1} . Before looking at the effects that the transfer of purchasing power has from the system of producible commodities to the hoard and from this store of wealth to the world of producible commodities, I feel one important point has to be made. In whichever manner wealth is stored – we have assumed S to be a mixture of equities, land and money – the point of storing wealth is for it to maintain its value *vis-a-vis* the world of producible commodities. This will mean that, irrespective of how a society will store its wealth, as long as the goal is to store what is

⁴⁹ The magnitude of this reaction, which is to say, how strong animal spirits will react to small increases or decreases in profitability, might depend on some objective genetical factors for all we know, but very likely, a lot will have to do with the institutional infrastructure in place as well. For example, capitalism in the era of financialization has come to be dominated by short-termism, where one quarter of bad results is already seen as a good argument for drastic measures, whereas the same was not true, when financial markets had less sway over management.

essentially exchange value, then the price level will have to traverse time in a relatively stable fashion, lest the medium of holding wealth find itself replaced with another. Wealth holders, in other words, will generally wish that the price level rises as slowly as possible, because this grants their hoard a higher purchasing power over commodities produced within the economic system. Seeing, however, that changes of the price level are far from being a simple, linear affair, this might not always be as straightforward as they themselves might imagine. Note also, that while this discussion leaves out the issue of a price level of, say, stocks or land, that the increase in either of the latter two is often seen, wrongly, as an increase in wealth of a certain economic system, whereas the same increase in the price of commodities is often bemoaned and seen as harming competitiveness etc. The reason should by now be obvious, for if the price level of stock increase it means that the volume of purchasing power increases, and if this is so and if the price level of producible commodities remains the same, then wealth owners have just increased their potential command over producible commodities in comparison with those groups, that do not own said financial instruments or land, for example.

The price level will be directly affected by its interactions with the stock of wealth, S in two ways, firstly a part of purchasing power in any given period of production can be withheld by economic units and stored in the hoard, thereby obviously lowering the potential increase in the price level, while in the second instance exactly the opposite process takes place; wealth-holders decide to bring their wealth back into the system of production by acquiring a certain amount of producible commodities. In this latter case, however, we have limited the options of economic units by not allowing them to fund consumption out of their wealth, but only investments. These two processes are captured by parameters ε and x respectively. The amount of funds flowing into the system of production and the amount of funds flowing out of it depends on the ratio of the profit rates in the two sectors, so that if wealth-holders see a higher profit rate in the real sector as compared to the profit rate on the stock of wealth, we expect x to grow and ε to decrease and vice versa if the profit rate of firms falls *vis-a-vis* the profits to be had on the stock market, or by buying land, for example. In reality one can imagine various scenarios that could play out, for example, a relatively high x does not by itself mean, that the hoard is 'vanishing', far from it, in a general boom the growth rate of the economy could well be such that even as more investments are financed out of past wealth, even more financial wealth is produced. Whereas more hoarding, that is, an increase in parameter ε could mean that economic agents expect tough times ahead and are therefore scrambling to save purchasing power, can bring about the famous paradox of thrift and lead to an actual decrease in the stock of wealth, in spite of the increase in the rate of savings out of profits.

In a straightforward fashion, looking at the direct effects on the price level, the more wealth capitalists decide to store in the sector of non-producible commodities, such as land, equities or money, the lower the general price level will be. Exactly the opposite holds true for their propensity to invest out of accumulated purchasing power, the more purchasing power that flows in the realm of producible commodities, the higher the general price level of said commodities. Again, however, more demand will mean, *ceteris paribus*, that more people are employed, that productivity should eventually increase meaning that there are two indirect effects which will depress the price level if more investments are forthcoming in the economic system. The general

level of prices will again depend on the interplay between these different responses and on how strong each of them is likely to be at any given point in time, where expectations about the longevity of the equilibrium will come into play. Long periods of high employment will make the workers bolder, long periods of low firm profitability is likely to increase the interest rate on loans, as this happens defaults occur, depressing the animal spirits even further, which can lead entrepreneurs to be even more cautious and to save every penny that they can get out of their existing production circuits and halting their decisions to invest until some future date – but the problem is that tomorrow might never come if everybody just keeps delaying their decisions to invest.

4.2.1 Alternative formulation of the price level

There is an alternate way we can formulate the price level. This might prove valuable, but will in no way change the results we have reached and described thus far. In fact we will only need to make a small adjustment to our previous formulation, the aim of which will be to express the percentage of funds allocated to investments in the national income as a determinant of the price level. Following this reasoning we can express the price level by delineating the effects of consumption and investment expenditures:

$$p = \frac{WB_t + (1 - \gamma)PB_t + (1 - \alpha - \varepsilon)P_{t-1}}{\pi L_t} + \frac{\Delta Loans + \alpha P_{t-1} + xS_{t-1}}{\pi L_t} \quad (23)$$

The first term on the right-hand side captures the consumption of workers, rentiers and capitalists and the second term represents the amount of funds allocated to investment. Both terms are, of course, divided by the amount of commodities produced in the economic system in a given period of production. If we imagine that the second term on the right-hand side represents a percentage value of the whole national income, which is of course true, then this can be re-written in two steps thusly:

$$\Delta Loans + \alpha P_{t-1} + xS_{t-1} = bp\pi L_t \quad (24)$$

$$p = \frac{WB_t + (1 - \gamma)PB_t + (1 - \alpha - \varepsilon)P_{t-1}}{\pi L_t} + bp \quad (25)$$

In the first expression we have defined investment funds as part of the whole national income. More explicitly, a b -th part of national income is devoted to investment. This allows us to replace the left-hand side of the first expression and plug it in back to the original formulation of the price level. Once this is done, the πL_t 's cancel each other out and we are left with the second expression. However, we can simplify the final expression somewhat further, by bringing the second term on the right-hand side of the last expression on the left and then dividing the right-hand side, which gives us:

$$p = \frac{1}{1-b} \left(\frac{WB_t + (1-\gamma)PB_t + (1-\alpha-\varepsilon)P_{t-1}}{\pi L_t} \right) \quad (26)$$

$$p = \frac{1}{1-b} \left(\frac{w}{\pi} + \frac{(1-\gamma)r_L Loans_{t-1}}{\pi L_t} + \frac{(1-\alpha-\varepsilon)P_{t-1}}{\pi L_t} \right) \quad (27)$$

The final expression merits some attention, in spite of the fact that, as we have noted, the results do not change, that nevertheless does not mean, we cannot make use of this alternative formulation of the price level, which comes much closer to the original formulation from Graziani (2009). First of all, we can see that there is a clear positive relation between the share of investments, b , and the price level. In fact this share of investments could be interpreted as an investment multiplier as well. Same as before, there is a clear inverse relation between the productivity of labour and the amount of labour employed and the price level. On the other hand, much the same as with wages, all of the incomes that go to the three different social groups, that is to say the already mentioned wages, rents in form of bank profits and industrial profits, have a positive impact on the price level. Unsurprisingly, therefore, the higher the savings rates, where we assume that there is no saving out of wages, the lower the price level. Therefore, inasmuch as any interest group would be in favour of a lower price level, it would also be in favour of policies which increase the savings rate in the system. The savings rate out of bank profits is obviously γ . The same logic does not apply to industrial profits, where a part of those profits are not used for consumption, but they still affect the price level through investment, so that the only true saving out of profits is that, which goes into the stock of wealth, outside the system of production. That is to say, there is a difference between α and ε , because the α -th part of profits re-enters the production process and therefore has a positive influence on the price level, whereas the ε -th part does not, and can as such only have an indirect influence on the price level in the future. However, the overall net effect of invested profits on the price level gets negated since they are already captured in the share of investments in the national income, b , where their effect is positive. Again, nothing changes from the previous section.

As a final part of the re-formulation of the price level, we can form a general savings rate. This is done by capturing the savings rates out of wages, banking profits and firm profits. The savings rates out of wages and bank profits are exogenously given, whereas the savings rate out of profits does depend on entrepreneurs and their animal spirits. However, to somewhat simplify the matter, let us also assume that in a given period of production we already know the latter as well⁵⁰. If this is true, then we can also create a general savings rate out of all the different types of incomes, since we know all the incomes, their shares and all that therefore needs to be done is to calculate the weighted average of the respective savings rates, labeled as is usually the case with the letter s and yielding the final formulation of a typical *Grazianian* price level:

$$p = \frac{1-s}{1-b} \left(\frac{w}{\pi} + \frac{r_L Loans_{t-1}}{\pi L_t} + \frac{P_{t-1}}{\pi L_t} \right) \quad (28)$$

⁵⁰ That is to say, we assume that the analysis is carried out once we already know the decisions of entrepreneurs.

4.3 The profit rate, real profits and the real wage rate

Without the price level not much can be said about distribution of income in the economic system here presented. Having already attained the price level in equilibrium we can now see how it affects the distribution between profits, wages and interest payments to banks. There is no specific order in which this should be done, but I propose we start with defining the rate of firm profits and then move on to define real profits, the real wage rate and the real value of rentier consumption. Again, what is meant here by the real value of a certain income category is its command over commodities produced within this economic system. The price level of financial assets or land, captured in the stock of wealth, represents a different price level, one which is not connected with the price level or producible commodities.

Especially among Marxist economists the profit rate features prominently in determining the movements of capitalism (see Roberts (2012), Shaikh (1992, p. 174)), where it is partially seen as a driver of long waves and partially as a driver of the short term trade cycles as well. Of course, that being said, the profit rate is itself determined within the system, and while we may argue that the profit rate anticipates the movements of capitalism, it is nevertheless not impervious to conditions of demand, something which seems to be often neglected amongst orthodox Marxists. Therefore even if profits and the profit rate represent the *primum movens* of capitalism, they are endogenous to conditions of both supply and demand. It seems clear that in a profit-driven system, the profit rate should have an effect on capital accumulation, or in our case, on the extension of loans to finance new production. Issues of causality and primacy of demand over supply or vice versa are not relevant for our investigation.

We define the profit in the same fashion as Graziani (2009), it represents the difference between what he calls the value of net aggregate product and the monetary costs of production. In our case the latter represents payments to workers and banks. We get the following relation:

$$r = \frac{P_t}{PB_t + WB_t} = \frac{p\pi L_t - r_L Loans_{t-1} - wL_t}{r_L Loans_{t-1} + wL_t} \quad (29)$$

This can be further simplified somewhat, as the second and third terms in the numerator are the same as the denominator yielding:

$$r = \frac{p\pi L_t}{r_L Loans_{t-1} + wL_t} - 1 \quad (30)$$

Following a quick inversion and some further simplifications we get the following expression of the profit rate in the economic system:

$$r = \frac{p\pi L_t}{r_L Loans_{t-1}} + \frac{p\pi - w}{w} \quad (31)$$

As expected the profit rate moves in the same direction as profits. There exists an unequivocal positive relationship between the price level and the profit rate, the higher the price level, the higher is the profit rate. As mentioned, the price level is the result of the equilibrium between aggregate supply and demand. A brief intermezzo concerning causality is in order. Both the stock of labour and the stock of loans are determined by the capitalists' decision to invest (and their past decisions of having done so) and since, at least for labour, its rate of remuneration is also dependent on the amount of labour employed with respect to the whole population, this means that investment decisions are the nexus around which the price level oscillates.

Another unequivocally positive relationship exists between the profit rate and the level of labour productivity. Profits are augmented by increases in labour productivity. The same positive relation holds between the stock of labour and the profit rate. The more people are employed, the higher is the rate of profit captured by (31). Additionally, since we assume a Smithian connection between the amount of labour employed and its productivity, there is an indirect positive effect on the profit rate by labour. In other words, the more labour is employed, the higher is its productivity due to processes such as learning by doing and the Smithian division of labour. Of course there could be some time lag between new investments and their effects on labour productivity. Capital accumulation therefore affects the profit rate through at least three channels: by increasing the stock of labour, its productivity and through the price level. Should all three of these channels influence the profit rate, we will see an increase in credit formation and the expansion of investment activity, due to the positive connection between the profit rate and credit creation. At the same time and for the same reasons, we might add, the process of rapid capital accumulation which was brought about by an increase in the profit rate, can prove to be detrimental to it in the following periods of production. Simply put, this will occur due to the changes that capital accumulation has on income distribution. A similar conclusion can be reached from Keynes' (Hamouda, 2009, p. 67) fundamental equations, where the pressure on profits comes from the same two sources as in our system: workers and finance⁵¹.

Let us start with the effect of finance on the profit rate. The first term on the right-hand side of (31) is deflated by the stock of loans multiplied by its interest rate. The stock itself at any given point in time is a reflection of past decisions to invest and is therefore irrevocable. As it grows in time it creates a downward pressure on the profit rate, the relationship between the two being inverse: as the stock of loans goes up, the profit rate goes down, all other things being equal. Since so far in our analysis we have only considered loans being extended for purposes of productive investment, it could very well be the case that the indirect positive effects of credit creation – which are essentially all of the effects that capital accumulation has on the economic system – outweigh the direct negative effects on the profit rate. If past investments have increased the labour stock and its productivity considerably, then the net effect of credit creation on the profit rate will have obviously been a positive one and vice versa.

⁵¹ Obviously this is in the monetary accounting world, if we are in the labour theory of value world, the accounting standards, if you will, are different.

The overall amount of interest payments burdening firms will also depend on the interest rate, r_L . Once again we find that the higher is the rate of interest on loanable money capital, the lower is the profit rate of firms, all other things considered. We might be tempted to say that in this case there is no difference between the net and the gross effect, since there is no indirect positive relationship within our theoretical system between the rate of interest and other variables which determine the profit rate, such as the productivity of labour and the like. While it is true that there is no positive feedback loop between the interest rate and the productive side of the economy, we can imagine a positive relationship between the wage rate and the interest rate on loans. Should the latter go up, less investments are profitable, capital accumulation is slowed down and less labour is employed which puts downward pressure on wages. One can therefore go about the business of a positive profit rate in two different ways: through increased productivity which is to the benefit of the whole society, or through the impoverishment of the majority of the population in order to lower the bargaining power of labour. As has been argued in the third chapter, the interest rate can in fact have a positive effect on the profit rate if through its increase economic activity slows down wage claims. The latter have to fall more than the increase in interest payments in order for the surplus to increase, which makes both types of capitalists better off. That being said in this scenario the economic system as a whole is worse off, since in this case we do not have the benevolent Smithian increase in wealth – through an increase in the amount of labour employed and its productivity. Perhaps the causal mechanisms were not completely clear to him, but Plato reached similar conclusions to our own with regards to the interest rate and the role of money lenders in *The Republic* Book XI, 8:

'Meanwhile the money-makers, bent on their business, do not appear to notice [the dissatisfied and revolted] but continue to inject their poisonous loans whenever they can find a victim, and to demand high rates of interest on the sum lent, with the result that the drones [the rich who are merely consumers of goods and have no social function] and beggars multiply.'

Finally, we must consider the effect of money wages on the profit rate. Once again we find a clear inverse relation between the money wage rate and the profit rate, as the former increases, the latter decreases. This is a direct effect, and in this sense the Sraffian (1963) view holds good. That being said, should wages increase due to an increase in employment (due to an increase in capital accumulation *vis-a-vis* population growth), one can also imagine a scenario where the consequent increase in wages has a smaller effect on the profit rate than the increase in labour and its productivity. In other words, all other things being equal, of course the Sraffian formulation holds, but all other things are not equal. Therefore as long as increased employment has a smaller effect on money wages than on productivity, the profit rate will keep increasing. This also entails, through the channel of animal spirits, a faster growth of capital accumulation (through a faster rate of credit creation), meaning that eventually we expect wage claims to outpace labour productivity, should a near full employment scenario develop. This is by no means problematic, since a fall in the profit rate will precipitate a decrease of animal spirits, which will lead to a slower rate of accumulation and the re-emergence of unemployment and a consequent decrease in money wages, only for the whole cycle to repeat itself.

4.3.1 Alternative formulation of the profit rate

As with the price level, we can formulate the profit rate so as to resemble the formulation put forth by Graziani in his Monetary Theory of Production (2009). This will be done briefly, since, strictly speaking, the results will not (nor should they) differ, from the ones in the previous section. The logic behind the profit rate remains the same, dividing profits with the capital invested in the same period of production. However, we can skip the initial steps and already plug in the price level, again in Graziani terms, to get the following expression:

$$r = \frac{\frac{1-s}{1-b} \left(\frac{w}{\pi} + \frac{r_L \text{Loans}_{t-1}}{\pi L_t} + \frac{P_{t-1}}{\pi L_t} \right) \pi L_t}{r_L \text{Loans}_{t-1} + w L_t} - 1 \quad (32)$$

While the expression (32) might seem hopeless, there is some room for improvement. All we need to do is divide the denominator with πL_t , which makes the new denominator the same as the sum of the first two terms in the brackets in the numerator, eventually yielding:

$$r = \frac{1-s}{1-b} + \frac{1-s}{1-b} \frac{P_{t-1}}{r_L \text{Loans}_{t-1} + w L_t} - 1 \quad (33)$$

Until, finally, we get the following expression for the profit rate *a la* Graziani (2009):

$$r = \frac{1}{1-b} \left(b - s + \frac{(1-s)P_{t-1}}{r_L \text{Loans}_{t-1} + w L_t} \right) \quad (34)$$

A brief interpretation of the profit rate so expressed is in order. The first thing we can note is that there is a positive relationship between the share of investments in the national income by firms and the profit rate of firms. The more firms invest, the more purchasing power they use in order to invest, the greater are their profits, all other things being equal. The opposite relationship exists between the average savings rate (of all three types income earners) and the profit rate – the more economic units save, the smaller is the profit rate of firms. It would be tempting to argue that, in light of these two findings, firms should simply increase their investments in order to achieve and increase in the share of investments in the national income, since this will, by definition, increase the profit rate. If the share of investments, b , were a policy variable, then this would be a possibility, but it is not. Capitalists do not invest in unison, they invest separately and in order to compete with one another. When the animal spirits are high, we can expect the share of investments to go up, and the profit rate likewise. Should the profit rate start to falter, we can imagine that capital accumulation would decrease as well and with it the share of investments. Again, this might not be reasonable for the class as a whole, but it might be completely reasonable for single capitalists, for out of every crisis winners and losers emerge, irrespective of the overall macroeconomic trends.

In line with the results of the alternate formulation, the stock of loans and the interest rate are found once again to deflate the profit rate, as does the wage bill. At this point I do not wish to re-visit the

intricacies of the relationship between labour, its remuneration and its productivity, since these have already been mentioned in the previous subsection. Perhaps this different formulation is interesting because it features, directly, the profits of the previous period as a determining variable for the profit rate in the current period⁵², where a clear positive relationship between the volume of profits in the previous period and the profit rate in the current period is seen to emerge. Therefore current profitability will at least to some degree feed on past profitability of the economic system. All the factors which led to higher profits in the previous period, such as a differential between wages and productivity, cheap access to credit, a relatively low debt burden, a high share of investments in the national income or, a high general price level, are found to influence the profitability of consequent periods of production as well. Obviously there can be abrupt changes in distribution, such as an increase in the wage rate (although this is something that is unlikely to occur over night) or, more likely, an autonomous increase of the interest rate on loans, but assuming that most parameters move slowly through time, this means that the system moves like a big ship, its previous course of action influencing its current and future course.

4.3.2 The real value of profits in terms of producible commodities

In order to obtain real profits we need money profits and the general price level of producible commodities – note, this does not include commodities such as land or financial assets, therefore the 'real' value of profits *vis-a-vis* all non-producible commodities is not captured in this formulation of real profits. Having previously defined both monetary profits and the price level in equilibrium, we divide the former with the latter to get:

$$\frac{P_t}{p} = \frac{p\pi L_t - wL_t - r_L Loans_{t-1}}{p} \quad (35)$$

This can be further simplified giving us the following expression of real profits in the economic system:

$$\frac{P_t}{p} = L_t \left(\pi - \frac{w}{p} \right) - \frac{r_L Loans_{t-1}}{p} \quad (36)$$

The movements of real profits, as described by (35), are very similar to the movements of money profits in that they both respond positively to increased productivity and negatively to the burden of interest payments and the wage bill. Like their monetary counterparts, real profits also move in the same direction as the general price level. In the formulation of real profits this is due to the deflationary effect the increased price level plays on the wage rate and on the stock of loans and the interest that has to be paid on that stock of loans.

⁵² To be sure, this is true in general, since the amount of investments will depend, at least partially also on the expectations regarding future profits and seeing as how we have assumed that past profitability informs future profitability, the profit rate in any formulation is a result of expectations about the future, because said expectations determine the investments of today, and therefore the profits and the profit rate in the current period of production. To make matters worse, current profits, themselves partially determined by yesteryears profits, determine the investments of tomorrow.

Again, the most problematic thing about the above expression is the interconnected nature of all the variables. For example, we cannot be sure what sort of an effect will an increase in employment have on real profits. Will the direct effect coupled with the effects on labour productivity and the wage rate be beneficial to real profits or will it diminish them? Both of these scenarios are possible, depending on what the indirect effects of an increase in the labour stock will have on productivity and wages. Another interesting influence on real profits comes through the price level. Remember that the price level is also connected to the labour stock, the wage rate and labour productivity (among others), in which case an increase in labour productivity to an extent that the price level gets deflated, can actually have a negative effect on real profits, as can clearly be seen by examining the second term in brackets and the last term on the right-hand side of (36). It is not our aim to develop all of these scenarios, merely to note that they are possible and that the theoretical system allows for their existence.

Looking at it in straightforward terms, productivity of labour and the stock of labour both increase real profits, as does the price level, by dint of deflating the real burden of debt and wages. The opposite relation holds with respect to real wages and real interest rate payments, if either of these two categories increases, real profits will fall. However, as noted in the previous paragraph, this straightforward story is only true at a given point in time, when all of these variables are datums given to us – the same is not true in a moving system. Once we have movements, then changes in distributive variables will influence one another and the final outcome will depend on the empirical reality and specific historical context – the model only shows (some of) the causal routes.

Profits in the system are funneled into one of three avenues: consumption, investment in capital goods or they are saved in the form of money and other forms of titles of ownership. In classical terminology investment of capital goods was a direct consequence of saving, which is no longer true in our system, where the propensity to save wealth in the form of titles of ownership is not linked to the propensity to invest, they are not the same and they represent two different avenues where profits can flow. As has already been mentioned, investment into capital goods will have its direct and indirect effects on the system of production, whereas the same will not be true for private accumulation of wealth out of profits. One can see quite clearly, why the classicals held entrepreneurs in such high esteem, because their saving was in fact of the productive kind; it augmented the capital stock, the amount of labour employed and the productivity of said labour, thus enriching the whole society. As far as the issue of income distribution is concerned, profits can grow essentially in two ways, either through this Smithian channel of increasing productivity, or through the impoverishment of workers, by lowering the wage rate through unemployment. Here we should remind the reader, that unemployment is a residual to the investment decisions of capitalists. This latter route of increasing the real profitability can come through the self-imposed austerity of the capitalist class and through more investment being syphoned out of the system of production and into a personal hoard of titles of ownership and durable commodities such as gold. For profit earners this route has an added benefit, that since it reduces wage claims, it also makes it very likely that the price level would remain stable.

Profitability can be achieved through this channel, where funds are syphoned out of the system of production, and whereby the accumulation of claims on capital earnings becomes more profitable than the production of actual capital goods, or the system can increase its real profitability through the increases of labour productivity. And in fact, while the former route should entail price stability due to depressing *ex-ante* wage claims, this is by no means certain for national economies (even though it is true for the global economic system as a whole). One can easily imagine that a fall in productivity and the national income, while bringing about a lower wage rate, would also entail a fall in the value of domestic currency, which would increase the value of imports and thus create inflation at home. Additionally, should long-term unemployment come about due to a slow-down of investment activity, with all of its aforementioned consequences, this could even negatively effect the level of labour productivity, which could increase the price level even further. That being said, this series of events does in fact lead to an increase in real profits so that even in a scenario of slow capital accumulation and high unemployment, profits can in fact increase, due to falling wage claims, and should those be coupled with an increase in the price level, firms would find themselves doubly fortunate, since in that case the real value of interest payments would decrease. A much more humane route towards growth in both the gross and net income of society is the aforementioned situation of investments keeping up with population growth and the consequent increases of labour productivity which follow from having people productively employed in the system of production instead of employing tactics of impoverishment in order to subdue their *ex ante* wage claims

4.3.3 The real wage rate

Unlike with profits, the economic units that receive wages have less of a say in the production process as opposed to the social group which receives profits. Essentially wage earners can only make sure they get the highest possible money wage and it is through this channel that they influence the price level. On the other hand, firms and their owners determine the amount of employment by determining the amount of investment, also have in their hands to arrest any unwanted trends in the dynamics of money wages. However, capitalists do not invest together, so that when there is a general increase in accumulation, this will not be due to capitalists being in cahoots with one another, quite the opposite, it will be because they compete against each other. But it will be the workers who profit from such a situation, due to a fall in unemployment. While workers' actions will undoubtedly influence the production process and the investment decisions of capitalists indirectly, by applying pressure to profitability of firms, the final decision is not in their hands. This is a fundamental difference that exists between these two groups of economic agents, the position of workers fundamentally reflects the views of capitalists with regard to profitability

To get the real wage we divide the money wage with the price level or producible commodities, obtaining the following intermediary result:

$$\frac{w}{p} = \frac{(1-b)\pi}{(1-s)} + \frac{(1-b)w}{(1-s)\left(\frac{r_L Loans_{t-1}}{\pi L_t} + \frac{P_{t-1}}{\pi L_t}\right)} \quad (37)$$

This expression can be further simplified somewhat thus yielding the real wage rate in the following form:

$$\frac{w}{p} = \frac{(1 - b)\pi}{(1 - s)} \left(1 + \frac{wL_t}{r_L Loans_{t-1} + P_{t-1}} \right) \quad (38)$$

The real wage rate, like all categories of incomes and indeed like the economic system as a whole, will increase with labour productivity. Likewise it will also increase with more labour being employed – doubly so, since more labour employed deepens the division of labour that entails a Smithian virtuous circle of productivity increases. On the other hand, it should also be obvious, that at any given point in time, with a given medley of commodities in existence, the greater the share of other income vying for these commodities, the smaller the real purchasing power of any given income category will be.

For example, given the output, if the share of investments in the national income increases, that is, if b goes up, meaning that more profits, more wealth and more loans go into the production of capital goods, then this will, *pari passu* decrease the purchasing power of labour. Where because firms can get unlimited funds as long as the bankers agree that their projects are feasible, firms do not operate with limited incomes, as opposed to workers who in fact have a budget constraint, that budget constraint being their wage rate. Also, firms decide upon the composition of commodities, meaning that the share of commodities labeled under investment goods is likely to be of very little use to the ordinary worker – if a car producer buys a robot for its car production, then this is something which will qualitatively be of very little use to the worker. Note that the decision what to produce is inherently in the hands of the firms. And as long as the power to invest is also in their hands, the wage rate will never be such so as to allow the workers to tamper with investment decisions within the system itself. Of course, that being said, a higher share of investments in the current period of production means that more capital goods are there for use in the following periods, which could potentially boost employment and thus the real wage rate (by increasing money wage claims). This is the best scenario that workers can hope for in capitalism, because it is an expansive scenario and not an austere one. However, this does mean that essentially, one group of agents, the capitalists, will have more purchasing power at their disposal on the one hand – since b is linked to credit creation – and distribution as such will be decided in real terms at the start of the production period, because of the qualitative difference between consumption goods and the means of production, with the ratio between the two being essentially determined by capitalists themselves, since they control investment. Obvious the upside of increased investments, barring any investments which would seriously increase unemployment by radically changing the capital-labour ratio, β , which determines the level of employment in the economic system, is that they increase productivity of labour and therefore augment the wealth of the whole society.

Within a given period of production an increase in the savings rate out of all incomes, where for wage we assume no savings occur, will increase the real wage rate. It is obvious why this should be so, the greater the share of income that is diverted from the system of production and is saved,

or we could also say, is diverted to accumulation of wealth, the smaller will be the price level and a given money wage will therefore fetch more commodities on the market. Less money will be chasing the same amount of goods. However, in dynamic terms an increase in the savings rate will not have such a straightforward effect on real wages. Inasmuch as investments would not stall and would be funded by bank borrowing, then the accumulation of means of production would also continue and we would potentially have a situation where employment would be low and both types of capitalists would be very frugal, at least as far as their consumption is concerned (or their investment financed out of profits), meaning that there would be no downward pressures on nominal wages. Whether this would be a stable long-run equilibrium or not is anybody's guess, although the safest assumption would be, that all of the variables are continuously changing in time and that with them come shifts in the system of production and shifts in the distribution of income.

An increase in the rentier share of income, made up out of interest payments on the stock of loans, decreases the real wage rate. The same is true for profits in the previous period, that are used to buy commodities in the current one. To be sure the same dichotomy between profits used for consumption and investment persists, for in this latter form, profits increase employment and the productive capacity of the system, thus producing more goods (perhaps not in the current period), which increases the wealth of the whole society. If all profits were simply used for consumption, this would only increase the price level and thus decrease the real wage rate, without, necessarily, increasing labour productivity in the future – unless an increase in capitalists' consumption would trigger more investment in the future. In static terms, however, the larger the mass of profits in the past, the smaller is the real wage rate in the present. The same holds for that part of bank profits which are used for consumption of producible commodities. An interesting scenario that we can imagine is an autonomous increase in the interest rate on loans, r_L . Because not only does it have a direct negative effect on the real wage rate in the current period of production, it will hamper the accumulation of capital in successive periods as well due to an increase in the default rate. This means that, as in the static case in chapter three, banking policy can bring about a re-distribution of income not only in favour of rentiers, but of industrial capitalists as well, should the increase in the rate of interest on loanable money capital cause, through an increase in the default rate, higher unemployment and lower wages. Again we can think of a perverse effect where productivity would fall even further than the wage rate, but this is an unrealistic example, unless we are talking about an almost armageddon-like scenario, where civilization crumbles and all knowledge is lost. In that case, however, it is unlikely that we would still have wage labour, a banking system and industry.

4.4 The real value of interest payments on loanable money capital (in terms of producible commodities)

In nominal terms interest payments are made up of two categories, the rate on the stock of loans and the size of said stock. If either of these two categories increases, then the volume of income so created will increase as well. Rentier consumption represents a part of this volume of money, a part which is exogenously determined and depends on the lifestyles of financial rentiers. To obtain any real variable we need its nominal value and the general price level:

$$\frac{r_L Loans_{t-1}}{p} = \frac{(1-b)(\pi L_t + r_L Loans_{t-1})}{(1-s) \left(\frac{w}{\pi} + \frac{P_{t-1}}{\pi L_T} \right)} \quad (39)$$

For a given period of production the real value of rentier income will be determined by similar factors as the real wage rate. If other sources of income increase in nominal terms, and interest payments remain the same, then their real purchasing power decreases. Therefore we should not be surprised to see, that an increase in the share of investments in the national income will decrease the real value of rentier income – however, it will also increase the stock of loans and thus increase the money amount that needs to be paid to banks in the following period of production. The opposite relation will obviously hold between the share of income saved in the economy and the real value of interest payments on loans; when the savings rate increases, less funds chase the same amount of commodities, meaning that, for a given sum of interest payments, this amount will fetch more commodities, all other things being equal.

This is the same logic operating as with real wages in the previous subsection. Now to be sure, an increase in the share of investments should provide relief to unemployed workers, it should increase the price level, thereby increasing real profits, the profit rate and the rate of accumulation in the future and with it an increase in the productivity of labour and thus an increase in the per-capita wealth measured in the amount of producible commodities. Note, however, that this process is by itself an unstable one, since it increases the debt burden and it should eventually lead to wage hikes and arrest any potential increases in the rate of accumulation. We can easily imagine, however, a situation of rapid expansion of the economy, where this expansion would also entail a net increase in the real purchasing power of rentiers. Capitalists taketh away by increasing their share, b , but they giveth back by increasing the aggregate supply, πL_t , even more. Should, however, the increase in aggregate demand due to an increase in investment demand and the potential increase in demand for wage goods, not increase the productivity of labour as much as the increase in the general price level due to the increase in demand, this would obviously lead to a decrease in the real purchasing power of the rentier.

Unsurprisingly, the greater the money value of interest payments, the greater will be the real value as well. We see therefore, why bankers would wish to peddle as many loans as possible, given, of course, the belief that these loans will one day be repaid. In reality this represents a dangerous incentive for banks, because there, unlike in our economic system, they can provide loans for non-productive investments as well, investments which will not increase the price level of producible commodities – imagine loans being used to buy stocks, for example. That being said, even within the simple economic reality of the model, the same logic applies; banks get more income the higher is the rate of remuneration they receive on a given unit of loans and the greater the money value of loans is.

On the other hand, any increases in other income categories will deflate the purchasing power of interest payments. So that if either the money wage rate or profits from the previous period increase, they will squeeze out the purchasing power of the flow of interest payments on the stock

of loans. In a dynamic context the same logic applies as has been mentioned previously – higher profits of firms in the past might very well lead to an increase in the stock of loans due to an increase in investment demand, thus in fact increasing at least the money value of interest payments, and perhaps, if productivity and employment are increased by more than the price level, then the real value of interest payments might go up as well. This would be a the virtuous scenario where everybody wins, so to speak. Obviously, if the opposite were to happen, if the increases of productivity would lag behind the increase in the price level, then eventually Kalecki's (1943) proposition of rentiers becoming boom tired would come true. And as we will see in the following section, this is in fact a more general proposition, that holds not just with respect to rentiers, but wealth owners in general.

4.5 The value of private wealth in terms of producible commodities

Production in capitalism takes place with the aim of making a profit, this entails the selling of commodities at prices which are higher than the monetary costs of production. This can be found theoretically in the Sraffian system where the costs of inputs are multiplied by a factor of $1 + r$, thus yielding prices which are indeed higher in terms of the *numeraire* than the costs of production. Lately it has become very fashionable, especially amongst Marxists (a good example would be Kliman and Williams (2014)) to try and show the movements of capitalism as being somehow determined by the movements of the profit rate and making the argument further, that this movement represents perhaps the main force which pulls capitalism through periods of prolonged expansions and prolonged depressions. I will try to argue in this section, that, while positive profit rates and profits are a necessary condition for expanding accumulation, profitability itself is not a sufficient condition to explain changes in the pace of accumulation. For that, I argue, and a similar point has been made by Professor Patnaik (2009), that we need to understand the interrelation between the wealth accumulated to date and the goings on in the system of production. This is something that Kalecki (1943) had already, I believe, understood, at least on an intuitive level, when writing about the impossibilities of achieving sustained accumulation at the rate so as to maintain continuous full employment in capitalism.

Simply put past accumulation of wealth and its purchasing power with respect to the world of producible commodities matters just as much as the profit rate. I would therefore not talk so much about market rigidities – for I feel their importance is overplayed and is a logical conclusion of a theoretical system that does not fully encompass a monetary theory of production – instead I wish to show that the rigidity for the production system comes from the previously accumulated private wealth. In fact, this is nothing more than saying, what Sraffa (Deleplace, 2014) had already noted to be a key characteristic of monetary economies, namely that 'all kinds of relations between men are more or less rigidly fixed' in terms of money. While money is a specific asset due to its unrivaled liquidity, a more general point can be made regarding less liquid holdings of wealth as well, imposing rigidities on the system of production, even though they do not constitute a medium in which 'relations between men' are fixed. That being said, these holdings themselves are denominated in terms of money. As such, their value in terms of producible commodities within the system of production will also fluctuate with the value of money, as it goes up, so too, does

the value of previously accumulated wealth and vice versa. And what is the value of money? It is the inverse of the price level, as the price level increases, a unit of money will fetch fewer goods on the market, and a stock of a company denominated in the same currency will also have depreciated in terms of producible commodities as the value of money decreases, which is to say, when the general price level increases.

The logic is therefore quite simple and on the face of it, it would seem as if the 'real' value of the stock of wealth is has behind it the same logic as the real purchasing power of income flows hitherto analysed, such as profits, wages and interest rates. To some degree this will obviously be true. Real wages, for example, will not be allowed to fall below a certain level due to worker pressure, no matter how (dis)organized this pressure might be; the same holds for every other social group. However, especially the purchasing power of workers and rentiers will be adversely affected by an increase in the general price level. Remember, however, that quite the opposite holds for firm profits, they will increase with the price level. If it were true, therefore, that only profits matter, one finds it hard to believe, at least in purely technical terms, why accumulation would ever slow down – if the point of accumulation were to make a profit above the costs of production and if this aim were not adversely affected with an increase in prices, caused inadvertently by increased accumulation in the first place. To be sure, there are theoretical scenarios where accumulation, at least for some time, will in fact decrease the price level through an increase in productivity. This scenario will be neglected in this section, if for no other reason, because productivity augmentation is not something which happens over night and because it is a safe assumption, that prolonged full employment will affect the distribution of income towards workers eventually⁵³. For Kalecki (1943) the issue was first and foremost a political issue and one concerned with the maintenance of capitalism in (what was then) its current form:

'It is true that profits would be higher under a regime of full employment than they are on the average under laissez-faire, and even the rise in wage rates resulting from the stronger bargaining power of the workers is less likely to reduce profits than to increase prices, and thus adversely affects only the rentier interests. But 'discipline in the factories' and 'political stability' are more appreciated than profits by business leaders. Their class instinct tells them that lasting full employment is unsound from their point of view, and that unemployment is an integral part of the 'normal' capitalist system.'

In Kalecki's framework, profits increase with employment, up to the point of full employment. This is not necessarily true in our system, but it is a likely scenario as well, for if the reader will remember, the national income as well as the profit rate are both augmented by an increase in the stock of labour, especially if wages were to remain stagnant, or were to lag behind the increase in productivity. However, if during successive periods of production, accumulation would be such as to accomodate full employment, workers wage demands could catch up to the growth in productivity and thus negate profit increases. However, assuming that firms have access to finance

⁵³ If at this point the reader might object and point to cases where wage claims were kept down in spite of full employment, I would remind the reader that the system in question is one of pure capitalism. Additionally, even the stability of such systems in the long-run seems questionable empirically.

which workers do not, they can, potentially, always take up more loans and buy a larger share of commodities, thus bringing about a higher price level and thus negating any increases in real wage claims – increases in productive investments could, of course, increase productivity and leave the price level stable, but realistically, huge increases in investment would increase demand more than they would affect productivity. In other words, since firms control the rate of accumulation, workers will never be able to contest real wages, only nominal wages. Again, as far as profits are concerned, there seems to be no problem at all with maintaining full employment even if wage claims were to increase in every successive period, because as wages go up, so too does the price level, which means that real wages would effectively remain stagnant. Therefore even within the theoretical framework of our own investigation, we can accommodate a Kaleckian scenario of full employment and increasing profits, thus negating the simple claim, that profits are the sole motivation of capitalist accumulation. Does this mean that Kalecki was right and that unemployment is simply a means of keeping political stability of the capitalist mode of production?

While profits are surely an important determinant of accumulation of capital, we should also understand, that the accumulation of private wealth in money form represents the final destination for profits. To be sure, a part of profits will be re-invested, but only so that a part of them can be stored in the following period of production as well. Simply put, just because profits are not adversely affected by increases in the price level does not mean, that accumulation in capitalism can go on indefinitely, irrespective of an increasing price level. Current profitability, therefore cannot be the *modus operandi* of capitalism. Accumulation of capital goods augments both the wealth of societies and private individuals, but it is only motivated by the latter. It is only natural, however, that inasmuch as their wealth is not directly re-invested into accumulation of capital goods, that it has to be held in form of wealth *outside* of the system of production. Profits do not exist for to be immediately re-invested, they exist to be at least partially hoarded, as well as spent on consumption goods. The other side of the accumulation of capital goods is therefore the hoarding of wealth. In other words, capitalism –and perhaps every monetary economy where money is also a store of value – cannot be understood just through the lense of current profitability, because once economic agents have acquired wealth in money form, they then wish for that wealth to at least keep their value *vis-a-vis* the world of producible commodities, otherwise why work so hard in acquiring it in the first place? Holders of wealth will therefore always oppose policies and accumulation regimes which would bring about serious increases in the price level⁵⁴.

4.6 The implications for the value of stock on accumulation and employment

Let us begin by imagining a scenario where workers are successful in achieving substantial increases in the money wage rate. Outside the abstract economic system hitherto analyzed we can expect there to be different reasons behind such an increase, but within the logic of the model, wages increase as unemployment decreases and unemployment can only decrease if there are

⁵⁴ Even if the mass of profits and rents flowing into the stock of wealth, *S*, were to somehow negate the increase in the price level, there would still be single wealth-owners which would not profit from this – while new money would increase its holdings, old money would lose out. And everyone hopes to become old money one day.

enough means of production that, given the technological coefficient beta, every able bodied person in the economy has a job (or close to it). In other words, one would expect the wages to rise only if the accumulation of capital goods has kept up with population growth for successive periods of time. Obviously there is no *a priori* reason why capitalist accumulation should be equal to the task of maintaining such a rate of accumulation spontaneously, but we can imagine it as a thought experiment. In the Keynesian paradigm state-led investment could close the gap between the growth of the population and the spontaneous rate of capital accumulation in *laissez-faire* capitalism. Even should there be no need for state intervention, one thing is clear, full employment can only be achieved if accumulation keeps up with population growth and with labour-reducing technological advancements.

Let us assume, furthermore, that all the previous increases in accumulation were neutral with respect to the price level. More realistically, we should probably expect investments to affect productivity with some sort of time lag, leading to an increased price level within the given period of production. However, being true to our theoretical apparatus, accumulation that increases employment in successive periods has to eventually increase money wages and as that happens, the price level has to increase as well, all other things being equal. Let us look at how other incomes are affected in this scenario. Since the increase in money wages produces an equivalent increase in the price level, real wages remain the same – this should not come as a shock, workers can only contest money wages and not real wages, since prices, and indeed the composition of output, are out of their control. An increase in the money wage will therefore not diminish real profits⁵⁵, due to the counterveiling effect of an increased price level. In fact, firms might even end up with a lower real debt burden.

Whereas workers gained nothing in real terms, industrial capitalists have in fact profited from an increase in the price level, since this increase makes the real value of their debt lower. At least one group sees their income decreased in real terms – financial rentiers. Now to be sure, as the price level increases, firms need to, lest they use other sources to finance investment, take a greater volume of loans in the next period in order to get the same share of commodities, meaning that we can reasonably expect the volume of loans to increase, therefore bringing some relief to the banks. However, this will come in the following period and, crucially, the new purchasing power so created will, yet again, increase the price level and therefore deflate the real value of debt and of interest payments on that debt – the two will have canceled each other out and the banks will always be one production period behind the curve. If the banks wish to increase their profitability in real terms, they will therefore have to increase the rate of interest they charge on money capital; r_L will have to sufficiently appreciate so as to maintain the real value of income for the financial capitalists.

As this happens real profits will start to decline, depending on the increase in the rate of interest and other factors – such as the increase in the productivity of the system as a whole, which we assume to be lagging behind all these nominal changes – either to their pre-inflation level or perhaps even lower. Additionally the increase in the price of debt will increase the price level

⁵⁵ Nominal profits will in fact increase due to the increase in the price level, at least for the time being.

further, meaning that productive capitalists, in order to maintain their share of output in the future, will have to take even greater volumes of loans thus aggravating the situation even further, creating a spiral effect of sorts, whereby the price level will keep increasing from one period to the next. We have noted what can happen with all the different classes of incomes in such a scenario, but what we have not accounted for is the effects that all of this will have on previously accumulated private wealth. Because remember, should society maintain the full employment of labour during this whole time, then its productive capacity ought to increase with every successive period. As we will see, the same logic cannot be applied to private wealth.

The obvious effect that any increase in the price level has is to decrease the value of money *vis-a-vis* the world of commodities. As such continuous and potentially unstable or unexpected increases in the general price level will not be welcome by wealth-holders. Indeed we can imagine that there exists a certain price level at which those who hold their wealth in a given currency, will start to view it as being unreliable as a store of value, meaning that they will move out of it and look for a new medium to function as a store of value – historically this was usually gold. In other words, we can imagine that there exists a price level, \bar{p} , at which this will occur and above which the price level cannot venture, if a given currency is to maintain its role as a store of wealth. This upper bound of the price level, \bar{p} , is obviously not impervious to the passage of time and will therefore be dependent on the historical context. For example, even though the dollar had endured practically continuous inflation throughout the 20th century, it had remained, throughout this period, a store of wealth. More important than the level itself, are the changes to this level, i.e. inflation. As long as the wealth holders believe that the price level will traverse time in line with their expectations, more or less, they will be content. However, this has implications for the accumulation of capital goods, for it represents an *ex ante* limit upon the accumulation of capital goods, so that even if more accumulation could actually decrease the price level sometime in the future, it is simply a safer route, to choose a policy of under-accumulation, lower employment and wage claims kept in check. In the current economic system, this moderation of inflation is done through the manipulation of the interest rate on loanable money capital, by the central bank, albeit somewhat indirectly. Through this channel the central bank can limit the expansion of capital goods and therefore also the expansion of employment. Money, therefore, does not only 'more or less rigidly fix' the relations between individuals in society (Deleplace, 2014), it also puts a macroeconomic constraint on capital accumulation by the holders of wealth in money form.

As we have mentioned, however, not all wealth in this society is held in money, in fact we have assumed that wealth-holders will store some of their wealth by acquiring land and some of it by buying up stocks of companies. Whereas the price level is the inverse to the value of money, and therefore if all wealth were held in money form, it would depreciate as the price level rises, the same logic does not directly apply to the stock of wealth as a whole, since for a given amount of shares, for example, an increase in nominal saving might produce an equal increase in the price level of non-producible commodities, such as stocks and land. In order to formally see what happens when the general price level of producible commodities goes up, let us look at the evolution of real wealth accumulation:

$$\frac{S}{p} = \frac{(1 - x - \text{def}) S_{-1}}{p} + \frac{\varepsilon P_{t-1}}{p} + \frac{\gamma r_L \text{Loans}_{t-1}}{p} \quad (40)$$

Following from (40), when the price level increases, the real value of previously accrued wealth will obviously decrease, something which is plain to see when one looks at the first term in the right-hand side. Just as a side point, it is worth mentioning that an increase in the price level might make wealth-holders invest more of their holdings in the real sector. This, however, is never an option for all wealth-holders. If we assume that entrepreneurs wish to retain their share in national income by means of using previously accumulated wealth, then the share of wealth that has to be diverted in such a fashion, x , will have to increase likewise – or real investment out of wealth will simply decrease in real terms. The effects that a rising price level would have on the default rate are assumed to be neutral.

Next we need to analyze the second term on the right-hand side of (40). Here we would like to remind the reader that profits are realized on the market, and are therefore known only at the end of the production period, once the commodities have already been sold. Additionally, profits themselves depend on the price level, meaning that in order to know the profits, whether in money or in real terms, we need to know the price level. Therefore both the price level and the profits get realized on the market, where aggregate supply and aggregate demand meet and this happens only once the commodities have first been produced and successfully sold. This means, logically, that firms only have their profits at the end of the production period, meaning that the profits so realized can only be 'used' in the following production period. In other words, when the industrial capitalist decides how to divide the profits between consumption, investment and saving, the capitalist is in effect deciding what to do in the current period of production with profits which were realized in the previous period of production – and with this decision he is also, to some extent determining profits and the price level at the end of the current period of production.

In short, profits get realized in the previous period of production, but they are spent in the following period of production. Now, should the price level increase in the following period, it is obvious that even profits, which were previously assumed to move with the price level, will have in fact lost some of their purchasing power. That is to say, the purchasing power of the whole mass of profits falls, whether they be used for the purchase of consumer goods, investment goods or saved in the stock of wealth. Obviously, continuing our assumption of near full employment and the existence of a pressure from wages, the fall in purchasing power of profits forces capitalists to finance a greater part of their investment through loans. Another possible channel would be an increase in the propensity to invest out of wealth and out of profits, but this would only serve to decrease value of previously accumulated wealth even further, thus making our point *a fortiori*.

Note that for real saving out of profits to grow at a steady rate in a situation where the price level has increased, this must mean that more profits, a greater share of profits, has to be saved, that is, the savings rate, ε , has to increase if real saving is not to suffer due to the increase in the price level, all other things being equal. Again, this is an issue of time; profits that are used either to fund investment, consumption or to augment the hoard of wealth, are in fact profits from the

previous period, meaning that their value *vis-a-vis* the rest of the commodities falls as the price level increases in the current period. All the time, of course, we are assuming that capitalists would not, during these circumstances go on an investment strike and use less of their purchasing power on produced commodities and more on real estate, stocks or simply leave it in money form – that is to say, they could just hoard their wealth and thus alleviate the problem of increasing price levels. We could argue, therefore, that while price increases do not diminish real profits in the current period, and that following this logic, at least one group of capitalists might look favourably upon the increases in the price level, that this view is erroneous for profit-earners on the whole. This is due to the fact that profits realized in the previous period are necessarily spent in the next period of production and are therefore prone to devaluation. Relative price stability will therefore be something which industrial capitalists will wish to pursue as well, even though it might seem like, on the face of it, that they are not affected by price increases in the same way as, for example, rentiers. Not only this, but it is assumed that all capitalists, except for the latest vintage of entrepreneurs, are also wealth owners, meaning that as the price level goes up, all other things being equal, the purchasing power of their wealth, if it does not grow at a corresponding rate, will also have diminished, at least in terms of producible commodities.

Then if the same pattern of accumulation goes on in the next period, with wage claims again increasing and with nominal profits already higher from the previous period of production (since the price level had already appreciated in the previous period) and with a sizeable increase in the stock of loans (since, presumably capitalists wanted to maintain their share of the output and did so by increasing the loan volume to finance investment), all of which puts pressure on the price level in the current period as well. Where we have to note, that financial capitalists have essentially the same problem as their industrial counterparts, their income is constituted out of interest payments on debt from previous periods, but the real value of this income is tied to the current period and to the current price level which will prevail in the current period, meaning that in real terms their incomes will decline as the price level goes up. Ironically, inasmuch as the price level is increased by the increase in volume of loans in the current period, then this increase in the loan volume in the current period, upon which no interest is yet paid, will itself lower the real value of rentier income in the current period (through increasing the price level). Thus, much like for industrial capitalists, their financial counterparts will themselves increase the price level to their own detriment, by increasing the change in the loan volume to accommodate the increases in the price level.

If then in the production period in which an increase in the price level took place, either of these two groups wish to maintain the same share of consumption as they would, if the increase did not occur, it stands to reason, that they will need to save less⁵⁶ (or vice versa if their aim was to maintain real saving). This means, in simple terms that their respective savings rates would have to go down (and the share of investment out of profits of industrial capitalists), should they wish to maintain their standard of living, that they had grown accustomed to. Now, to be sure, for rentiers at least, there is another way to augment their purchasing power, which is to raise the

⁵⁶ Where saving for industrial capitalists would in this case constitute that part of their income which is not consumed, namely the parts which go into investment and the hoard.

interest rate, but this will again influence the price level as well. All of these increases in the price level will obviously, while perhaps maintaining the real purchasing power of one group or the other, keep decreasing the value of previously accumulated wealth. Remember, however, that the sheer idea behind having wealth, is that it should not, at least not on a continuous basis, keep losing its value, otherwise what was the point of holding it in the first place. At this point it is worth remembering what had caused an increase in the price level in the first place: continuous capital accumulation which accommodated full employment no matter what. In other words, the price level responded to the accumulation regime, so what happens with the price level if the accumulation regime should change, or never come about for a longer duration of time in the first place.

4.7 Switching accumulation regimes

Imagine now a different experiment. Personal wealth is meant to store value through time, which means that if the price level goes up and its purchasing power goes down, this does not have to be a problem *per se*; it is only a problem for those wealth-holders who wish to buy commodities and finance this purchase with from their wealth holdings at the time of the increase. The rest can wait it out, so to speak, in hopes that the price level will eventually go down again, either due to increased productivity or due to a fall in aggregate demand. How is this achieved? Well in short, capital accumulation has to decrease from the levels that were imagined in the previous section, where full employment was imagined throughout. There are various channels through which this can take place, one option is that capitalists, financial and industrial alike, start use a greater part of their profits in the accumulation of stock, S , instead of using their funds for consumption or investment in the accumulation of means of production. Additionally, since the price level is so high, one could expect that capitalists would find investment out of their stock of wealth, to be non-profitable, meaning that there would be a smaller share of previously accumulated wealth going into the system of production to finance new investment projects – x would decrease. This, implies a decrease in the pressure pressure on the price level through profits and out of previously accumulated wealth – the savings rate out of profits, ε , would increase and the investment rate out of stock, χ , would decrease.

At this point in time, various things start to happen, however, before we move on, the issue of loan expansion needs to be tackled. The sheer fact that a smaller amount of purchasing power out of past profits and out of wealth is used to fuel aggregate demand – which, through the employment of labour then also determines aggregate supply – does not necessarily entail a slow-down in accumulation of real capital goods, because, strictly speaking, although this would be schizophrenic on the side of investors, an increase in the loan volume could fill the gap from the decrease in aggregate demand that follows from an increase in hoarding and a decrease in investment out of the hoard occurring simultaneously. Well for one thing, at full employment this would not be a tenable regime for long, unless productivity would be able to keep up with the increase in loan volume – because if we are in a situation of full employment and in a situation where there is inflation, then the loan volume moving from one period to the next will have to grow at a rate to cover accumulation which allows the continuation of full employment, plus the loan volume will have to increase even more substantially with every single period due to the

increase in prices. If we imagine further, that, as was previously explained, banks would also increase their interest rate, this would all lower profitability, increase defaults⁵⁷ and, eventually therefore, slow down real accumulation as well. As this would happen, unemployment would increase and with it money wage claims would subside and the price level would decrease. Obviously the cycle could then repeat itself since, strictly speaking, with a lower price level, investment out of stock would become profitable again.

However, more realistically we can assume that as capitalists start to accumulate more claims upon future consumption, they will not, with their other hand, start to take out more loans to increase their investment. Especially since this would not solve in any way the underlying problem of the increased price level. This is doubly true, if we know that the same problem of increasing prices can be solved in a much simpler fashion by simply decreasing the accumulation of real capital goods, which will by itself eventually stabilize the price level by decreasing the amount of employment and thus decreasing wage claims simply by, if we may use a crude metaphore, by turning off the tap. In other words, since investment determines employment and if the problem of the increased price level stems from the wage claims of workers, then the simplest way to handle the problem is to invest less and save more, or to slow down accumulation of capital goods and invest more in non-producible commodities – for example, one does not need to expend much labour in acquiring a piece of land – which do not require any serious labour expenditures and will therefore not increase employment.

Perhaps the most interesting thing about the changes in accumulation regimes is how it actually takes very little for this change to take place – an increase in the savings rate of capitalists, or what comes to more or less the same thing, an increase in the propensity to invest profits into land and stock. Alternatively we could also see less investment into producible commodities out of wealth, or all of the above could occur simultaneously. Additionally we can imagine that credit expansion would slow down and thus even further decrease accumulation of capital goods. All of these factors will work in favour of decreasing the price level. Furthermore the general level of activity in the economy will decrease (or perhaps, in a growing economy, its output will simply grow at a correspondingly slower rate). Remember also that profits in the economy are positively related to the level of activity, the price level and the productivity of labour; so that should the price level decrease, and should the level of activity decrease, the pressure of the existing loan volume on current profitability increases as well. Since profitability is a key determinant in future expansion of capital goods, this will decrease even further the propensity to invest. As the so called switch between accumulation regimes takes place, by which we mean, as capitalists decided to invest more money into titles of ownership instead of actual capital goods, this produces a very real shock to the system of production. It not only slows down the expansion of capital goods, but it can very well lead to decreased profitability, which will even further decrease the expansion of capital goods – since new investments depend on past profitability of firms. Should profitability decrease to such an extent so as to trigger an increase in the default rate, then profitability will be hampered even

⁵⁷ Remember that defaults are a function of the two interest rate and the profit rate, if the interest rate appreciates and if the profit rate decreases, as it will all other things being the same, then defaults start to increase, wealth gets destroyed and this increases the rate at which real capital goods are scrapped. If capital is scrapped and new investments are not forthcoming, well, this necessarily entails a lower amount of employment.

more, and uncertainty about the future will retard investment even further. It is worth reminding ourselves, that this is all due to the initial shock, where for some reason or other, purchasing power went out of the system of production, because wealth-owners decided to hold it in form of money or some other title of ownership.

While we take the stock of wealth as homogenous, we should note that, as long as this process would continue, eventually the economy would slow down and we can expect that the prices of stocks and land would also start to decrease – this is not captured in the model, but it is generally the case that recessions do not bring about with them an increase in the stock market, at least not without the interventions of the fiscal and monetary authorities. In other words, the liquidity preference for holding money would most likely increase, meaning people would try and hold their wealth in money form. This decrease in the stock of wealth, would also have its implications for new loan generation, by increasing the loan-to-stock ratio, thus even deepening the slow-down of the economy. However, throughout this process the value of existing wealth in real terms would increase in terms of its command over producible commodities, due to the falling price level. It is also very likely, that the surviving capitalists would be left with less competition and better prospects for the future, thus making the accumulation of capital goods profitable once more. Additionally, high rates of unemployment will have destroyed the bargaining power of labour. Now note, that while the nominal wage rate decreases, the knowledge of the society did not die out during a recession, meaning that productivity should be more or less the same as before the slow-down. So if we are left with a relatively high productivity, but a decreased wage rate, this the difference constitutes a greater surplus to be divided between industrial and financial capitalists. And this was all done through the increase in saving, or what I would call an increase in holding money and investing into existing assets. Perhaps the most major consequence of increased hoarding is that the bargaining power of labour got destroyed and that workers effectively became price takers – i.e. the labour market became more flexible. A realistic example can be given, of how this mechanism would operate on the global level. Capitalists from one country can simply slow-down their investment in capital goods in that country and take their holdings elsewhere. Whether they invest them into land, leave it at a foreign bank account or bury them on a treasure island is irrelevant for the time being. Then all they need to do is wait for unemployment to develop and their holdings will have appreciated *vis-a-vis* labour and the commodities which it produces.

The existence of a constant hoard represents an important feature of capitalism with respect to the distribution of income. The hoard allows capitalists to 'not invest' and as such slow down the growth rate of accumulation, with all of the distributive effects that a lower rate of capital accumulation brings with it. The first effect is that less commodities than would be possible with the given technology are produced. In other words, less real wealth is produced, less use value if you will. The reason behind this, however, is to maintain the purchasing power of hitherto acquired exchange value, of monetary wealth. We therefore see that the accumulation of what we perceive as wealth – money, financial instruments, gold, land etc. – puts real limits to the expansion of real commodities, of real use value. This is what Adam Smith originally perceived as the Wealth of Nations and it is the product of labour. This real limit to the expansion of productive activity comes in the form of the general price level, the inverse of which is the value of money. And so the

motivation for investment becomes more important than the underlying act of creating new value, and like Midas, humanity chases a fanthom and in the process we are sacrificing our real potential productive powers.

The creation of new real wealth is limited by previously accumulated stored monetary wealth. Money, as Keynes (2003, p. 184) correctly understood, really is a link across different time periods and the previously accumulated exchange value from past labour expended puts limits on the realization of the creative potential of living labour. In terms of theory, what this means is that Keynesian demand management, while perhaps beneficial to the society, will never be accepted by wealth-holders for any sustained periods of time – they might put up with some attempts during a recession, but not as long-term policy. Furthermore we see that while the rush for exchange value motivates accumulation, it is the hoarding of this exchange value which puts a stop to that very same process of accumulation – something already understood at some basic level by Locke (Screpanti & Zamagni, 2005, p. 47) and something which holds even in a modern endogenous money world, with a developed banking system. Having exchange value stored, however, does not come without cost for nothing is really free in life. In order for accumulated wealth to hold its value *vis-a-vis* the world of producible commodities, the accumulation of capital goods has to play second fiddle to the maintenance of a stable price level. In practice this means that if we wish for the value of money to traverse time in a stable fashion, that is to say, if we wish for our hoarded exchange value to maintain its purchasing power with respect to the products of labour, unemployment has to develop. Real accumulation then becomes subordinate to the existing claims on future consumption. Dorian Gray was able to maintain his eternal youth and virility because his picture aged in his stead, money and other forms of wealth maintain their eternal youthful glint through constant limits upon capital accumulation and the level of employment. While it is true that gold itself does not rot, its value for its holders is kept stable at the expense of real productive capacity of the community as a whole. Private wealth is not free, it comes at a cost, and that cost is tallied in lost opportunities, unemployment and poverty.

4.8 A note on unproductive loans, financial accumulation and austerity

So far in the model we assumed that all loans granted would be used for so called productive investments. To be sure, we allowed the growth of these loans to outpace the growth of labour productivity, thus giving rise to an increase in the price level. Ultimately, however, loans were granted for investments in capital goods. Now this assumption will be relaxed and we will add a separate loan circuit which will be used by capitalists to undergo the accumulation of existing assets, such as land or stocks. We can imagine this circuit of loans to be used for mergers and acquisitions or, if the banks agree to this, speculative trading activity in general. This alternative loan circuit is described by the following relation:

$$\text{Unproductive Loans}_t = (1 + l)\text{Unproductive Loans}_{t-1} \quad (40)$$

The growth rate of loans is left completely exogenous, although in reality it would surely be prone to the usual boom and bust cycle in some fashion or the other. We can imagine it being linked to

certain fundamentals, such as the profit rate of enterprise, for example, but on the other hand, it also has a life of its own, where any movements in the growth rate will necessarily create their own expectations, founded in nothing else but the rate's own historical movements. This newly created purchasing power will not flow within the system of production in any direct fashion, only indirectly as outflows from the stock wealth, but it will directly affect (and change) the accumulation of wealth in society. The new temporal dynamics of wealth accumulation now become:

$$S_t = (1 - x - \text{def})S_{t-1} + \varepsilon P_{t-1} + \gamma PB_t + \Delta \text{Unproductive Loans} \quad (42)$$

The rate of increase of S is now intimately tied to the expansion of unproductive loans, together with the inflows of savings out of firm and bank profits, and the outflows which are made up out of defaults and funds intended for productive investment. This relatively small change in the theoretical economic system, a change which moreover, does not even directly affect the system of production, will be shown to have more important consequences than one would perhaps imagine at first glance.

First of all, even if all propensities to consume, spend and invest remain essentially the same, undisturbed by this new circuit of credit in the economy, now new loans are being created within every period of production. Even if we therefore assume, quite unrealistically, that the growth rate of unproductive loans, l , would be stable through time and not subject to the usual vagaries that we have come to expect from financial markets, the stock of loans will generally increase with every period of production. The economy is now experiencing the growth of loans used for investment in means of production and the growth of loans which are used essentially with respect to titles of ownership of various kinds. Note that the expansion of loans for new capital goods has important effects on the economic system in question since the stock of capital goods essentially determines the amount of employment and since capital accumulation is one of the drivers of technological advancements which increase labour productivity. In other words, while financial burdens are being created, the productive powers of the society are also simultaneously advanced. In simple terms, even though there is an expansion of the stock of loans, there is an expansion in the national income as well, which makes it possible for the loans to be repaid.

What happens when new loans are issued for the accumulation of titles of ownership? Simply put, the stock of private wealth increases⁵⁸, all other things being equal, but on the other hand, indebtedness increases as well. What does not increase, however, is the amount of labour employed, the stock of capital goods and labour productivity. In other words, while private wealth accumulation has increased due to new purchasing power going into the financial system and other markets with non-producible commodities, which are hoarded in order to maintain their value, it has not, to any significant degree increased the productive capacity of the economic system. This can be problematic, because now the economic system has another source of credit creation,

⁵⁸ To be sure, such an increase is essentially imaginary, it is a case of fixed asset inflation. That said, it does constitute purchasing power for the individuals who therefore, quite rightly, view it as their wealth.

meaning that more debt is created in every period of production, yet the increase of the real economy is still only 'fueled' by the one, original source. If we imagine that for both stocks of loans the same interest rate, r_L , applies, then we have a stock of loans which now grows at the rate of animal spirits, AS_t to which we can add the rate of growth of unproductive loans, l . Note that from the bankers point of view the two circuits represent the same stock, they need not, necessarily, even differentiate between the two circuits. One unit of loans in either of these two circuits will fetch the same interest rate for the banks, meaning that the bankers will not care much in what way their loans are spent as long as the borrowers repay them.

While this might represent sound logic from the bankers point of view, the same line of reasoning cannot apply to the whole economic system, where, as we have already noted, there is a very clear difference whether a loan is taken to finance the production of new capital goods or if the loan is used to buy a plot of land or to acquire a new company⁵⁹. The problem of unproductive loans should eventually have implications for the profitability of firms. If we look at real profits in the expanded system they are now:

$$\frac{P_t}{p} = L_t \left(\pi - \frac{w}{p} \right) - \frac{r_L (Loans_{t-1} + Unproductive\ loans_{t-1})}{p} \quad (43)$$

Let us take a brief look at which of the variables above are affected by this change. Since the new loan circuit goes into the separate accumulation of titles of ownership, we can assume only minor effects would happen with respect to the amount of labour employed – in other words, loans that are used for speculation only very rarely increase employment in the system⁶⁰. By that same logic, we cannot expect that this new circuit of credit creation would impact the productivity of labour. Any changes in the wage rate are then also out of the question, since, if the new circuit does not mean a sizeable increase in the level of employment, money wage claims are likely to remain dormant. We cannot be sure what the effect of this new credit circuit will be on the price level, but let us for the moment assume, that no sizeable increase occurs. What should become pretty obvious looking at (43), even without my explanation is that, *ceteris paribus*, real profitability of firms is negatively affected by the increased debt burden. And since the rate of growth of the original loan circuit is tied to the profitability of firms, the accumulation of real capital will eventually slow down because of the decrease in profitability. This will further slow down real accumulation, and further increase the real debt burden for firms, by slowing down the growth in output, since less labour will be employed due to the slow-down in additions to the stock of means of production. We can safely assume, however, that firm owners will not idly stand by as this happens, but will themselves shift their priorities from real accumulation, to the accumulation of titles of ownership as well. The new loan circuit can therefore, by no other reason, than for the simple fact that it exists, increase the debt burden upon firms, thus making real accumulation less profitable, thus shifting the accumulation regime.

⁵⁹ In this latter case it is safe to assume that workers will be laid or that even real capital goods might get scrapped, thus bringing about a situation diametrically opposite to the one where loans are used to increase the volume of capital goods and employment in the economy.

⁶⁰ Inasmuch these unproductive loans are used to finance mergers and acquisitions, or various venture capitalists, that the amount of labour employed will actually decrease due to their activity, thus most assuredly shrinking the economy.

Another possible causal chain starts with an increase in financial investment out of profits – or alternatively, by an increase in saving out of either profits or both together. Furthermore, we can realistically assume that the growth rate at which unproductive loans expand is at least somewhat related to previous growth rate of the the volume of wealth, which is to say that its partial derivative with respect to previous gains is positive, $\frac{\partial l}{\partial(\Delta S/S)} > 0$. In simple terms this means that if the markets for fixed assets increase more in the previous period than was perhaps initially expected, bankers and borrowers might feel more bullish about future prospects. Now for our argument this need not even be the case, but it seems a plausible scenario.

At this point let us return to the initial thought experiment, where in a certain period of production, more funds are allocated by capitalists into the accumulation of wealth. Why this change came about is less important than the consequences themselves. An increase in the savings rate, increases the rate of wealth accumulation and decreases spending and investing in the sector of producible commodities – in fact it would be safe to assume that investment out of profits would decline more than consumption, since the latter is more stable through time, since consumption habits do not move with the cycle. The initial change of the propensity to save could lead to a further increase in the following periods, due to the change in expectations.

Additionally, since credit creation of unproductive loans is tied to the rate at which the private wealth stock appreciates, this initial shock will have created an increase in the rate of unproductive credit formation. This would further appreciate the stock of private wealth, S , thus increasing the expectations about the future value of this stock, starting a virtuous circle of fixed asset appreciation, from the viewpoing of wealth-owners.

During this process, we expect two changes to the productive part of the economy. First of all, as investment out of profits would start to decrease, and as capitalists would find it more profitable to invest into the market for the titles of ownership instead of investing into real capital goods, the economy would, all things considered, grow below its full potential. Secondly, we can imagine that animal spirits would get dampened as well, which would mean that the rate at which productive loans would be granted, would also decrease. Firstly, if capitalists find it more profitable to invest their profits into fixed assets, it is unrealistic to expect that they would at the same time take out more loans intended for real accumulation. Additionally, as the debt burden of unproductive loans increases in size and seeing as how a decrease in the rate of capital accumulation also implies a slower growth of output (due to the fact that less labour is employed and that productivity does not grow as fast as it could), this decreases the profitability of the firm sector. On the other hand, simultaneously, the profitability of wealth accumulation keeps on increasing, making the choice very easy for capitalists – they will wish to invest a greater share of their income into the accumulation of titles of ownership.

If we assume that this state of things lasts for consecutive production periods, which is not an unrealistic prospect, then this will have shifted income distribution. The channel through which this occurs is the falling profitability of enterprise and the consequent decrease in accumulation of capital goods will eventually make itself felt on the labour market as well. The initial fall in

profitability occurs due to a higher debt burden by the firm sector, due to the increase in the issue of unproductive loans. As one accumulation decreases, the other starts to take off and this second accumulation (of titles of ownership) will dampen the accumulation of capital goods even further from one period of production to the next. But as profitability decreases, so too, do the animal spirits subside and investment shrinks even further. Realistically, therefore, unless the growth rate of the population falls in proportion to the decrease in the rate of capital goods accumulation, the unemployment rate will be chronically high, thus making sure that workers are essentially price takers, thus successfully destroying their bargaining power. Note how as this process starts, the destruction of workers bargaining power occurs indirectly – there is no need for changes in legislation or for any attempts at union busting – all that was needed was a move from productive to unproductive accumulation and the rest takes care of itself, from the point of view of capitalists. Again, in light of Mr Piketty's recent popularity, it has to be pointed out, that the increase in inequality which will occur in such a society – note that as the rate of proper accumulation wanes, this means, that fewer aspiring workers will get to use their ideas and become capitalists, meaning that financialization effectively kills the 'American dream' – is not due to there being too much accumulation, but instead, because there is too little accumulation of actual new capital goods taking place. Inequality, as well as poverty, are direct consequences of a the switch from productive to unproductive investment, where, it should perhaps be explicitly noted, that both of these processes will always co-exist, it only depends which of the two will be dominant. Whichever of the two might be dominant at a certain point in time, it is likely to persist through several production periods and it will have an effect on the rate of growth of output as well as on the distribution of income.

Another important feature of a finance-led economy, and something which follows from all the stylized facts mentioned in the previous paragraph, will be a stable price level. This will in large part be due to the very nature of this accumulation regime, which is one of slow growth, and low employment, meaning that no pressure on the price level will emerge from increased money wage claims by workers. A stable price level also means that rentiers will fare well in such an economic landscape, seeing as how fluctuations in the price level from one period to the next are unlikely. The great moderation under Alan Greenspan and the period after the great recession of 2008 is such a period in the global economic system. It is a period of high indebtedness, slow growth and relatively high rates of unemployment and underemployment. Quantitative easing that has taken place after the great recession and what is now quickly becoming the great depression seems to have no effects on the price level of producible commodities. The simple addition to the model in form of an 'unproductive loans' circuit explains why: it (the QE) is purchasing power that hardly ever flows into the productive sector of the economy. This equilibrium is nevertheless very volatile since stock prices can fall at any time – and will definitely collapse should it come to a decrease in the issue of new purchasing power – but the debt burden is there to stay. In other words, this is a very dangerous situation for an economic system to find itself in, because titles of ownership are not 'real wealth', their value depends on expectations and speculation and can change rapidly from one day to the next. Most importantly this state of affairs is detrimental to the majority of humanity and to the productive capacity of the economic system. Instead of finding that the rentiers are pacified, the world finds itself in an institutional arrangement which favours the rentier and which,

instead of pursuing the expansion of human capacity to work, create and learn, favours a depressed economy with a stable price level which favours the owners of claims upon current and future production. Unlike Petty, we do not realize that wealth comes from land and labour, instead finding ourselves, like Midas, admiring the glittering gold and thinking that it, is what makes us rich.

5. A BRIEF LOOK AT THE LONG-TERM PROFIT RATE OF CAPITALISM AND THE IMPLICATIONS THAT THE LENGTH OF THE WORKDAY HAS ON PROFITABILITY

This chapter features two extended versions of the model presented in the previous chapter. As the name suggests this will not be a thorough investigation but merely an exercise in applying the model from chapter four to the question of profitability in relation to the length of the working day and the issue of the long-term profit rate in capitalism. One could say that the two questions are also interrelated to some degree, as conditions in the workplace have implications for profitability. Obviously the issue of the long-term decline in the profit rate is something which follows naturally from Marxist theory, but as I will try to show within an augmented version of the theoretical system expounded in chapter four, the result is far less certain if applied to the same question. Perhaps more insightful than any actual predictions we could make are the transmission mechanisms that are employed in the extended version of the model. By looking at these mechanisms we can envisage how the system will function when faced with falling profitability and what the implications are, not just for the economic sphere, but for politics and culture in a given society as well. As far as the issue of the workday is concerned, it is also tackled in a novel fashion, employing the wage rate as the transmission mechanism. There are no changes assumed in the relation between the stock of labour and its level of productivity, in other words, there are no changes in the technical coefficients of production. In other words the implications of a change in the workday are tackled in a macroeconomic sense, whereas I would assume that in the Marxist sense changes in the workplace would in general imply a change in technical coefficients by increasing the intensity of work.

5.1 The evolution of the profit rate in an economic system with constant unemployment

In the discussion so far, we have not explicitly taken into account the consumption of that part of the population which is unemployed. If we were to imagine, that alongside capitalistic production, there are also other, pre-capitalist modes of production, such as subsistence farming, then this would not be a problem *per se*. In fact, throughout its history capitalism has, in one form or another, made use of these other modes of production to take care not only of the unemployed, but of the working class in general, even that portion of the proletariat which was employed. One can quickly see the benefits of such an arrangement, it allows real wages to be below the level of subsistence, something which was admitted by the management of South African mines so late as the 1970's (Perelman, 2013, p. 23):

'[the wage] isn't sufficient to meet the needs of a man and his family unless it's augmented by earnings from a plot of land in the man's homeland. A family man from Johannesburg, for instance, couldn't live on what we pay.' (Magubane, 1979, pp. 116-17)

In other words, outside the abstract theoretical system where only one mode of production prevails, in reality, the dominant mode will make use of the pre-existing modes and subjugate them to its

needs. While capitalism has, as the above quote shows, never shied from taking advantage of subsistence farming, it has also, when it found it profitable to do so, encroached upon petty production in order to 'free' labour and to create a market for new commodities, which were previously produced within the sphere of petty production. This is noted by Marx (as cited in Perelman, 2013, p. 19):

'[capital] transformed the small peasants into wage-labourers, and their means of subsistence and of labour into material elements of capital... Formerly, the peasant family produced means of subsistence and raw materials, which they themselves for the most part consumed. These raw materials and means of subsistence have now become commodities.'

This process is described in detail by Perelman (2013), where it is particularly interesting to note the fervent intellectual support for primitive accumulation amongst a very wide array of prominent social thinkers. Apart from internal growth through accumulation by means of increasing the amount of capital goods and by increasing the amount of wage labour employed, capitalism has always encroached on these previous modes of production as well. This logically means, that as time goes on, the pre-capitalist modes of production will start to make up a smaller overall share of the economic system, due to capitalism's logic of expansion in search of new markets. A proxy for this development could be the increase in urban population that has accompanied the expansion of capitalism across the world. Much the same was noted by Marx (Perelman, 2013, p. 13), where we can unfortunately only guess what was the logic behind his thinking. Given the current state of technological development, it would probably stand to reason, that without a plot of land one would be hard pressed to embark upon a career of subsistence farming, thus already from the get go disqualifying most of the urban population on grounds of a lack of arable grounds within the perimeters of the city. Marx seems to make the point that urbanisation is almost certainly going to accompany the expansion of capitalism⁶¹:

'The foundation of every division of labour which has attained a certain level of development, and has been brought about by the exchange of commodities, is the separation of town from country. One might say that the whole history of society is summed up by this antithesis.' (Marx, 1977, p. 472 as cited in Perelman 2013)

While various classical authors wrote about the eventual falling in the rate of profit, this fall has, most would argue, failed to emerge – in fact Mr Piketty's analysis seems to confirm that the rate of profit is very stable across time. If we neglect some other empirical analysis which seem to prove otherwise, because they are not pertinent for the current discussion, it would seem that all such thoughts and predictions make no sense whatsoever, seeing as how capitalism is still profitable today. However, what this line of reasoning does not take into account, among various other factors, such as an ever increasing rate of automatisisation, is that capitalism could, up till now at least, always rely on the precapitalist modes of production being either used to complement workers for their low real wages, or by being encroached upon and thus creating new profitable avenues for investment. In other words, a rather large chunk of the world economy was not

⁶¹ As it has accompanied the expansion of civilizations in general.

capitalist, thus ensuring that capitalism had a buffer of sorts (Patnaik, 2009, p. xvi) in the form of these pre-capitalist modes of production.

Imagine a situation, where, if a factory were to lay off workers, these workers would then have to be fed by the same factory, while not doing any work at the factory, now imagine if the whole capitalist system had to operate under these same constraints. On the other hand, even back in the 1950's, it was not uncommon for largescale migration to take place from the city back to the rural areas, during a recession (Perelman, 2013, p. 228). A. G. Frank (1975, p. 30) writes about how in 1958 around 50 000 workers and their families moved out of the city and back to subsistence farms in the nearby states. In this second case capitalism fired workers, but it did not have to take care of them, they did not constitute an expense for the capitalist mode of production. However, as the natural tendency of capitalism is growth, these possibilities become increasingly rare. Even if plots of land were available, a third generation inhabitant of London would be hard pressed to successfully practice subsistent farming; he might manage the farming part, but one cannot be so sure about the subsistence part. A similar situation was faced by other civilizations as well, the city dwellers of Rome, whose ancestors were able farmers, did not inherit – presumably by means of some genetic mechanisms – those very same traits of their ancestors and instead formed the city's lumpenproletariat that had to be fed by the whole empire.

As capitalism expands and starts to replace these other modes of production, what will happen with its dynamics? I believe that the theoretical system we have used so far can serve as a useful analytical apparatus providing a glimpse into the future dynamics of capitalism. The basic system needs to be changed to accommodate for the fact, that unemployed workers will also constitute a cost for the economic system; in other words, a part of the national product will have to be allocated to the unemployed. How this is dealt with institutionally, depends on the prevailing norms of a given historical period. A Spartan-like society, for example, would most likely kill off the unemployed (and therefore useless) members of society. Rome, on the other hand, was famous for its bread and games, and when that didn't do the trick, other measures, such as the use of the pretorian guard, were employed. In other words, a society has a number of options to fashion what it perceives to be an 'optimal policy mix'. Today various methods are employed in different societies, everything from segregation, the use of institutionalized armed force, a generous welfare state or bread and games. In fact, it is generally true, that in most societies all of the above is employed to a certain degree, depending on certain customs and norms which are prevalent at the time.

Let us, for simplicity's sake assume, that the society in question decides, that none of its people will go hungry and that even the unemployed must eat. We can therefore create a new variable, *Panem*, which captures the amount of welfare aid given to every unemployed person in money terms, to simplify the matter somewhat:

$$Panem_t = c(N_t - L_t) = cU_t \quad (1)$$

Every unemployed person will be granted a certain amount of purchasing power, analogous to a wage (but assumed to be lower). While there is no state in the economic system, unless we assume

that it runs on air, this act ought to be viewed as a spontaneous reaction of the system to the problem of unemployment. We can imagine this to come in form of charity, or that the unemployed get these funds by begging, or that the state does exist and its only role is to give welfare payments to the unemployed – in other words the institutional setting is irrelevant insofar as we realize that whatever the institutional setting will be, managing the problem of unemployment will not be free, even if done in a Spartan fashion and that there will always be some costs incurred.

With the new variable, let us look at how the profitability of the system is affected by re-visiting the profit rate, which has now obviously been altered by these new expenses which are incurred by the system of production:

$$r = \frac{p\pi L_t - wL_t - r_L Loans_{t-1} - Panem_t}{wL_t + r_L Loans_{t-1}} \quad (2)$$

All other things being equal, it is obvious that if the economic system has to pay for its unemployed, this has to lead to a reduction in the profit rate. If it is further assumed, that the rate of growth of the population will not decrease, but on the other hand, the capital-to-labour ratio, due to technological advancements, does decrease through time, then profitability will be suffer on two fronts: on the one hand, less labour will be employed to produce new commodities and on the other, more unemployed labourers will need to be fed. Additionally, as profitability declines, note that there is also a decline in the rate of accumulation, which will add to the problems of the system, since then even less people will be employed. In this simple interpretation, it is clear, that we can make an argument for a long-term decrease in the profitability of capitalism, once it is no longer surrounded by any pre-capitalist modes of production to which the unemployed can return to.

However, the sheer fact that tendencies exist within capitalism for the rate of profit to fall does not automatically mean, that there is no way to counter these tendencies. In other words, much like a plane will have to bear the forces of gravity, as long as it has fuel and as long as everything operates the way it should, the plane will not fall down in spite of gravity trying to pull it down. Furthermore, if we were only able to see a plane in flight, we would laugh at everyone telling us that there is an underlying tendency for the plane to fall down due to the forces of gravity. This is the trap of empiricism.

The first point which has to be made about the new profit rate is that, if the allowances given to the unemployed are low enough, and if their number is great enough to pressure the workers which are employed, the pressure so exerted might well ensure that the wage rate is low enough, that even unemployment would not be problematic for the profitability of the system. A realistic example of such this state of affairs would be 19th century capitalism. In this case, the difference between labour productivity and the wage rate – namely the surplus product created – would be large enough that even small payments towards the unemployed would not hurt the profitability overall, since the sheer existence of this giant pool of unemployed labour would exert enough

pressure on the employed workers, to keep the wages down and thus ensuring the profitability of capitalism.

Imagine, however, that, as has happened in Western economies, general welfare of the population becomes a social norm. This necessarily increases the amount of money, c , that every unemployed person gets. Profitability in this case is hurt twice. Firstly on the account that more of the surplus will have to be allocated towards financing the consumption of the unemployed and secondly, because a higher c will imply a higher wage rate, due to the increase in the bargaining power of labour and thus a smaller surplus in the first place – c provides a lower bound to the wage rate. One can see why capitalists will therefore never be fully in favour of the welfare state, even though they might be forced to accept it in certain historical conditions, yet they will never be fully in favour of it, because it hurts their profitability and their position *vis-a-vis* the working class. If being unemployed does not sufficiently decrease the standard of living, then the sack loses all of its meaning, and he who does the sacking will no longer be viewed in the same light, since the person that got sacked will not be facing any existential problems. The problem is therefore not just one of declining profitability, which alone would be enough, but also one of declining power of the entrepreneurial class.

5.1.1 Unproductive labour and the profit rate

During one of his lectures on classical political economy, Professor Shaikh made the distinction between productive and unproductive labour by alluding to the classic western *The Magnificent Seven*. In the movie an unlikely heroic group of cowboys defends a Mexican village from a group of plundering bandits. If the bandits are intent on plundering the village it stands to reason that the villagers must have produced plunder-worthy goods, otherwise why bother. So one group of people had to use their labour and produce a certain amount of goods, which they intended to use for their own consumption. Another group of people, the bandits, was intent on acquiring a portion of those goods for themselves, leaving the farmers with the bare minimum needed to reproduce their economic system, so that in the next production period, the bandits could repeat the same action once more. It is obvious in this case which of the two groups is involved in productive and which one does unproductive labour. Consider now the plot of the movie, where villagers get help from a brave band of cowboys who are willing to stand up to the bandits. Whereas on the face of it, it is clear that this new group is doing something valiant by protecting the working people of the village, their labour is nevertheless not productive, at least not with respect to the given period of production. Ironically, in terms of economic theory, the good guys are much closer to the bad guys than one would imagine at first glance and the reason for that is simple – none of the two groups creates any goods, they only consume them. It is true, that the labour of the valiant defenders is socially useful and that their moral code is to be respected, yet nevertheless they eat, without having themselves plowed the fields, so to speak.

We can make this same distinction within the scope of our theoretical apparatus as well. Imagine now, that we have one group of people which creates the surplus, they are, the same as before, the people who are employed in capitalist production. However, since we are not in a situation of full

employment, this means that a part of the population either does not work and receives some sorts of benefits, as in the previous case, or they are employed, but their labour, much like the work of bandits and the valiant defenders from the previous case, is not productive. Again, this does not mean that their work is not necessary for the functioning of the system, most people would agree that society needs policemen or prison guards, even though their job is not productive in the same way as a job of a farmer, computer programmer or a miner, for example.

Keeping the previous notation, let us still imagine that the difference between the whole population and the amount of people employed in capitalist production represents unemployment, U_t . While previously this whole group was fed *panem*, now we will partition this group in three ways, which represent somewhat the situation in modern societies. A part of this (unemployed) population will continue to be unemployed in the traditional sense of the word, and they will receive, as before, a certain amount of unemployment benefits. Let us imagine however, that now only the g -th part of this unemployed population receives these benefits, which means that we need to change the variable $Panem_t$:

$$Panem_t = gcU_t \quad (3)$$

As before, c will be an important distributional variable, especially important with respect to the wage rate, since it provides a lower limit to the wage rate – nobody will work for less or even the same amount of money as one could obtain from unemployment benefits. Obviously, this is only true since we assume no limits on these benefits, otherwise the same logic would not necessarily hold.

Having dealt with the bread it is time to move on to the games. Due to the ubiquitous nature of mass entertainment it is probably not necessary to convince the reader, that such a phenomenon exists in today's societies. In fact I hope the reader will also agree, that not only does this phenomenon have important direct consequences on the economic system, since it somehow has to be financed, but that it plays an important role in shaping the ideological framework of society as well. While it might represent a purely physical cost to the system of production – since reporters, sportsmen, actors, directors, game designers cannot live by consuming air – it can also be seen as a factor determining the cultural and ideological *zeitgeist*. Understood in this wider fashion, the entertainment industry becomes important for the long-run stability of the system and as a determinant of distribution. The formal mathematical definition is simple:

$$Circenses_t = hw_eU_t \quad (4)$$

A share h , of the population which is not employed in directly productive activity, U_t , will be paid a wage w_e for their services and this magnitude constitutes the new variable $Circenses_t$. Now we can add the final variable, $Gladius_t$, which will be similarly defined as the other two before it:

$$Gladius_t = (1 - g - h)w_gU_t \quad (5)$$

Another part of the surplus, to use the classical terminology, will be allocated to the professions such as the army, the police force and the like. Strictly speaking, since we do not have a functioning state in the model, we can assume that these groups would be financed directly by the capitalists themselves and not through taxes, as tends to be the case in most modern societies. Historically speaking such an arrangement would not be unheard of. With the three new variables we can re-write the profit rate once more:

$$r = \frac{p\pi L_t - wL_t - r_L Loans_{t-1} - Panem_t - Circenses_t - Gladius_t}{wL_t + r_L Loans_{t-1}} \quad (6)$$

Without looking at the details, it is quite obvious, that as there are more claims on the gross product created, the net product, that is the profits must shrink, and with them, the profit rate, must decline. This is a popular story of the decline of the Roman empire – with time the empire had too many mouths to feed and too few able hands to feed them. The evolution of the empire meant that there was an increase in lumpenproletariat which had to be fed bread, games and the occasional *gladius* as well. Of course, there are a plethora of other explanations as well, such as poor husbandry and soil management, eventually leading to increased erosion and a consequent decrease in labour productivity⁶² (Rifkin, 2009, p. 251).

However, this simple interpretation fails to explain the complexity of the economic system due to the interconnectedness of its different variables. In the first place it is worth asking the question, whether or not the partitioning of the original variable, *Panem_t* into additional variables *Circenses_t* and *Gladius_t* gives us any additional insights into the working of the economic system. After, perhaps the strain on profitability is the same in both these cases, which ought to make them identical, at least in pure economic terms. Strictly speaking, this can be true and in that case there really is no purely economic reason to add this extra layer of complexity. On the other hand, it is also very possible, for example, that by adding the element of propaganda and docility via *Circenses_t* and the element of fear through *Gladius_t* that the distribution will have changed in the system and actually make it even more profitable – considering that poverty, unemployment and inequality have to be dealt with somehow anyway.

If we look at unemployment benefits, let us call them that for now, then as before, capitalists will wish that they will be as low as possible, due to their effects on the bargaining power of labour. To this we can now add, that low unemployment benefits coupled with low wages in the system of production imply that the wage rates in the two new sectors will be low as well. That is to say, the aim of capitalists has not changed, their profits will go up if all of these are as low as possible, which means that the logic remains pretty much the same. This is not to say, however, that one wants to have low-paid news anchors for example, because that may make them resentful to the system and therefore not as useful, but in general, the same logic applies as previously – profits will be higher if all wages are lower and this means that capitalists will wish for unemployment benefits, *c*, to be low.

⁶² In Petty-ean terms we could argue that the production function was akin to: $Y = \min[\pi_L L, \pi_A A]$ and soil erosion destroyed the productivity of land, thus hampering the whole production system.

And this is where the logic of the partition becomes clear, because a large group of unemployed people might prove to be a strong political force, which, while perhaps not being successful in any revolutionary attempts, could at least increase their unemployment benefits, which increase money wage claims etc. On the other hand, if a small portion of the population which would otherwise be unemployed is paid by the ruling elite to stifle such unrest – and perhaps paid more than those workers directly employed in capitalist production of commodities – on both the level of ideas and on the purely physical level, then this can lead to a reverse effect. In other words it might pay to control the media and the military in a society, in fact it might pay so much, that these groups basically pay for themselves – something which Gandhi famously claimed for the British occupation of India; that Indians had paid for their own occupation. In more formal terms, the following inequality might very well hold:

$$gcU_t + hw_eU_t + (1 - g - h)w_gU_t < c_{original}U_t \quad (7)$$

Originally the capitalists had to pay $c_{original}U_t$ in unemployment benefits. Imagine, however, that the strain of these benefits was becoming too great for the capitalists, endangering their profitability and perhaps even the whole social order. They decide it is time to act and they hire a personal security detail and they create institutions which will tow the desired ideological line. Let us assume that given a couple of production periods they are successful and that even though they had to employ additional workers who do not add to their wealth directly, they protect their existing wealth and ensure the continued operation of the capitalist mode of production.

The additional effect of this decrease should also be obvious by now. As unemployment benefits decrease and coupled with all of the effects that are usually assumed to resonate from *Gladius_t* and *Circenses_t* especially if both are directly financed by the capitalists themselves, creating a class of 'uncle Tom's', wages will have decreased. So not only is the strain on the surplus itself smaller than in the previous example – meaning that a greater share of the difference between the wage rate and the productivity of labour will go to the capitalists – the surplus itself becomes greater, since the wage rate is depressed, and should, in such a situation, grow slower than the rate of productivity. The positive effects of *divide et impera* are therefore two-fold: they increase the amount of funds that constitute the surplus, and they make the demands upon this surplus smaller, by decreasing unemployment benefits. Note that as these benefits go down, the wage pressure in all three sectors is decreased as well. Additionally, with the addition of propaganda, perhaps the system can run smoothly even at higher levels of employment, by making sure that workers are not as militant.

In his essay on Machinery Ricardo (1951) notes that once we admit machines into the production process this can increase the profit rate, that is, it can increase the net product, while decreasing the gross product of society, by creating unemployment. Logically his argument is sound as long as the subsequent increase in unemployment does not have to be financed out of the net income, out of the surplus. Empirically, this is very likely to have been true in Ricardo's day and there are various reasons for this. One of the reasons for this was that very few people cared if someone was

dying on the street. The other reason is that even though capitalism was quickly becoming the dominant mode of production in Britain, this was not the case in its colonies and indeed, this was not yet the case for the rest of the world. Capitalism was surrounded by pre-capitalist modes of production, which meant that some of its failings, such as its inability to operate at full employment, or create enough jobs for full employment in the first place, were not yet empirically observable. In fact during the 19th century capitalism turned out to be a great success in Western Europe, where it eventually raised the living standards of the working classes. And it is partially due to its success in Western Europe and some of its former colonies, that we have come to believe that capitalism can repeat the same success story across the globe. This view, however, is a myth which is not logically.

5.1.2 A historical evaluation of employment and capitalism

By itself capitalism even in its most unfettered 19th century *laissez-faire* version – or perhaps we should say, especially in its supposedly most glorious incarnation – was never able to create enough jobs for everyone, in fact, it did not even come close to it. As Patnaik (2011) reminds us, the fact that the living standards of workers in Western Europe eventually increased, was not due to the dynamics of the capitalist system itself but thanks to, in large part, due to migration. Throughout the whole 19th century the migration from Europe to regions of temperate white settlement, such as United States, Canada, Australia, New Zealand and the like was simply outstanding, and is something which has never been replicated since then. Professor Patnaik (2011) gives some numbers to illustrate the flows of outmigration from Europe:

'In 1820 there were 12 million persons in Britain. But between 1820 and 1915 as many as 16 million migrated out of Britain, ie, more than the entire population in the base year. Looking at it differently, every year between 1820 and 1915, more than half the increase in British population simply migrated out of Britain. The total migration from Europe as a whole to the 'new world' over roughly the same period amounted to a staggering 50 million persons.'

Obviously the fact that workers could leave to the new world increased the bargaining power of those who had decided to stay in Europe. For one thing, *ceteris paribus*, the flows of migration lowered unemployment, which increased the bargaining power of labour. On the other hand, the sheer possibility of migrating raised the wage rate, since that by itself gave workers leverage over the employers. Had this leverage not existed and had this whole population not been able to migrate in the new world, one doubts that history would have moved in a similar pattern. For the past decades some economists and some futurists, Lord Skidelsky (2013) and Jeremy Rifkin (2004) come to mind, have been warning us that increased automatisisation means that there will not be enough jobs to go around for everyone. While some might argue that this is a new trend, it is clearly not – capitalism has always had a problem of creating enough jobs for everyone simply through its own spontaneous operation. In the 19th century this problem was solved through colonisation, which was a very brutal way of handling the problem, since it involved the dispossession of the local population in order to gain farmland. Note that for this to happen in the first place, an appropriate ideology was required, meaning that racism and white supremacy should

not be viewed as either spontaneous or biological phenomena. After providing justifications for one group of people, that still leaves us with everybody else. The final step requires the application of apply military force to convince the local population, through negotiations with a Winchester rifle, that they might be better off without a certain patch of land between the Atlantic and Pacific oceans, for example.

Such avenues, however, are no longer open to capitalism, partially due to technological constraints imposed upon us by nuclear weapons and partially due to the fact that civilisational norms seem to have changed – at least for the time being. And apart from some exceptions, such as North Korea, capitalism has become global. This does not mean, that pre-capitalist modes of production do not exist anymore, but their relative importance is quickly waning. Suppose that this process continues and suppose further, to simplify our thought experiment, that eventually, capitalism becomes the only one mode of production. This would mean, that it could no longer outsource its woes as it had previously done. But would this necessarily imply that in the long run, as capitalism becomes more dominant, the rate of profit must decline as well? Let us imagine that there exist a c and w below which the system cannot go, given certain standards and societal norms. Imagine further, that unemployment keeps increasing and that this puts pressure on profits, which slows down accumulation and makes the matters worse. We could say, therefore, that the falling profit rate is not completely unwarranted and in fact, as long as the population will keep outpacing the accumulation of capital and since, the whole point of capitalism is to look for labour saving technology, unemployment will eventually increase to such an extent as to bring the profit rate down to zero.

However, the above line of reasoning would imply that capitalists are simply helpless observers in this process and cannot change the course of events in any way. This is obviously not true, and while some of the avenues previously available to them might have disappeared, this does not mean that they are left with no options at all. Note that one way to handle the problem is to slow down population growth and to somehow adjust the existing level of the population downwards. This requires the changing of norms in society, else the 'adjustment' cannot happen. The easiest way to do this is along tribal lines and in finding the 'other'. Ideology will therefore play a large part in maintaining a positive profit rate in the long-run. In such a situation fascist-like racist and discriminatory tendencies become an endogenous part of the economic system, part of an elaborate game of *divide et impera* aimed at maintaining the current production system profitable. In other words, as Sraffa (Martins, 2014) predicted, capitalism will, in the final stages be preoccupied with defending itself and its own profitability and we can expect that it will do so unscrupulously. That is why the distribution of the surplus amongst the so called, unproductive sectors, is not something that the capitalists take lightly, because in the long-run, this is a mechanism through which they can maintain their dominant position in society.

That being said, another implication of our analysis becomes clear: we cannot predict the long-run evolution of the profit rate with certainty, unless we simply expound the current trends both in movements of accumulation, population growth and civilizational norms. Perhaps somewhat paradoxically the analysis of the long-run trend in the profit rate gives us more insights about the

possible attempts at maintaining a positive rate, than it does about the eventual empirical outcome itself, of which we cannot be certain. The additional division of the surplus in this section makes it even more clear that the profit rate is determined outside the system of production. And while Sraffa (1963, p. 39) mysteriously alludes to it being susceptible to influences from the monetary authorities, we can add here, that the profit rate is susceptible to influences from other institutions as well, many of which do not necessarily constitute the usual economic variables, nor are they often analyzed together formally. Finally, we see that surplus is used to perpetuate itself. As far as the distribution of the surplus is concerned, it too can be said to determine not just the future profitability of the system but indeed the future development of society in general.

5.2 The length of the workday and profitability

Sraffa's (1963) *Production of Commodities by Means of Commodities*, while intended to be a critique of marginalist theory, was also a critique of the Marxian transformation problem (Preti, 2014). In essence, one could get the same prices and the profit rate as Marx, but without resorting to the metaphysical world of labour values (Preti, 2014), thus making Marxian theory irrelevant. However, it would seem that this was never Sraffa's intention, at least that is what his notes suggest:

I foresee that the ultimate result will be a restatement of Marx, by substituting to his Hegelian metaphysics and terminology our own modern metaphysics and terminology [...] This would be simply a translation of Marx into English, from the forms of Hegelian metaphysics to the forms of Hume's metaphysics. (Sraffa, D3/12/4/15 as cited in Bellofiore, 2014)

In other words, while the critique of the marginalist method was made explicit by Sraffa, it would seem that it had never been his intent to show the irrelevance of the transformation problem. Quite the opposite would seem to be true, as Sraffa's *Production of Commodities by Means of Commodities* seems to be aimed at dispensing with Bortkiewicz's critique of Marxian theory. In his notes Sraffa insists, that Marx's transformation problem is approximately correct, if the organic compositions of capital do not systematically differ (Bellofiore, 2014), which seems to have been Marx's assumption. This is also why Sraffa objected to Bortkiewicz's critique which focused on this trifling matter revolving around the organic composition of capital, whilst at the same time completely missing, to Sraffa's mind, the otherwise generally sound theory:

[T]he real objection (though somewhat vaguer) is this: that B's point of view, for the sake of obtaining absolute exactness in a comparatively trifling matter, sacrifice (by concealing it) the essential nature of the question – that is, that commodities are produced by labour out of commodities. (Sraffa, D1/91/16 as cited in Bellofiore, 2014)

In his paper on the Neoricardian Criticism of Irrelavance Dario Preti (2014) actually shows that whether we use the Sraffian approach, or the labour-value approach, to get the prices and the profit rate in the system. However, as Preti (2014) himself reminds us, this is in itself is of little use in the rehabilitation of the labour-value approach, if it does not tell us anything more than we can glimpse by using the original Sraffian approach. While it does cast some doubts on whether or not

the underlying system might not be governed by labour-values, it is on the other hand irrelevant, since we can, seemingly at least, glimpse the same characteristics without resorting to the metaphysical underworld of labour values. Everything changes, however, when we move away from the world of given technical coefficients. In this simple reality, if an industry employs 50 people working 8 hour shifts it must be the case that half less machinery is needed as in the case when there are 100 people employed working 8 hour shifts (Preti, 2014). In other words, there exists a certain constancy between the amount of labour and the means of production.

Consider now the following situation, where the means of production are given – similarly as in our system, within a period of production, if the reader will remember – but instead what is varied is the working time instead of the number of workers (and the means of production, since if both do not increase in lock-step, then workers will not be able to participate in the production process). Here Preti (2014) notes that if an industry or a firm employs 50 workers, they will need the same amount of fixed capital whether they work 4 hours, 8 hours or the gilded age 12 hours or more. In this scenario, where the change was not one of the amount of labourers employed but instead, the change in the working day, we clearly see that these same Sraffian coefficients no longer hold – in other words, we could have 50 workers working 16 hours a day instead of having 100 workers working 8 hours a day and we can do this with half the machinery, to get out of it the same output (at least theoretically). Leaving further details aside, here are some basic conclusions which follow from this line of reasoning: the working day can influence the choice of production techniques and, an increase in the working day, given the production technique, leads to higher profitability (Preti, 2014). With regards to my analysis the labour theory of value itself is not so pertinent, because both models that have been used revolve around the money accounting system and not the labour-value accounting system, which, even if it were the underlying determinant of distribution and accumulation, is not something which is directly observable, whereas money values are. What I will try to show, however, is that even within a completely different framework to that of the labour theory of value, we can see that the working day can have similar distributive effects.

Let us imagine a situation, where means of production are given and we also know beta, the capital-to-labour ratio, which is a sort of Sraffian coefficient, which tells us how many workers are needed to man the machinery and other tools in the economic system in a given period of time. In other words, once we have K_t and knowing beta, we effectively have the level of employment in the economy. Now we introduce a minor change to the aggregate supply relation. If the reader will remember, the aggregate supply was defined as the amount of labour employed times its productivity. While the basic idea will remain the same, we can re-define aggregate supply so that instead of it being determined by the amount of labourers and their productivity, it is instead defined by the amount of labour hours worked, LH_t , and the hourly productivity of workers:

$$X_t = \pi_{LH} LH_t \quad (1)$$

This does not basically alter the relationship between labour and aggregate supply, it is still determined by labour and its productivity. What has changed is that, a given amount of labour

hours, LH_t , can be done by a smaller or greater amount of labourers, using a smaller or greater number of machinery. Much as in the aforementioned case, we can now have a situation where fewer workers do more work in a given period of production, or more workers do less work, but the end result is the same, or so we assume, for simplicity's sake. The amount of labour hours will therefore be defined as:

$$LH_t = \text{workday} * L_t \quad (2)$$

Strictly speaking, the above relation should be multiplied by the number of days in a production period, but let us assume that the production period only lasts one day, seeing as how it is a completely abstract entity. Now remember, the amount of labour is given in a Sraffian fashion, by the amount of machinery henceforth accumulated and by the coefficients of production which are technologically given and which we assume are as optimal as they can be, using the knowledge of engineers and the cost-cutting savvy of entrepreneurs who have no limits imposed upon them by the state or any other such entity. The workday itself, while it will obviously depend on various factors, is at the end of the day dependent on the bargaining position of labour, which is itself mainly determined by the level of employment. Sure, there are various historical and institutional factors which come into play, but it would nevertheless be unrealistic to assume, that the level of employment does not play a role in determining it. It should also be noted, however, that the causality is likely to run both ways, since a longer working day makes it possible for capitalists to use technology, which will, even in the future, employ less workers, keep the level of unemployment high, and the workday long. We assume the workday to be a function of exogenous elements, labeled ϵ , and of the level of employment:

$$\text{workday} = \text{workday}(E_t, \epsilon) \quad (3)$$

It should be noted, that the level of employment in the past is likely to also inform the workday in the present, in other words, past bargaining positions will matter, both in terms of bargaining itself and in terms of the technology used in production by the capitalists, who can accumulate less capital if the workday is longer and still get the same amount of labour hours out of the workers. Let us now look at the new profit rate with this changed production function:

$$r = \frac{p\pi_{LH}LH_t - wL_t - r_L\text{Loans}_{t-1}}{wL_t + r_L\text{Loans}_{t-1}} \quad (4)$$

Which can be re-written slightly:

$$r = \frac{p\pi_{LH}\text{workday} * L_t - wL_t - r_L\text{Loans}_{t-1}}{wL_t + r_L\text{Loans}_{t-1}} \quad (5)$$

Looking at this final version of the profit rate, it is clear that, given the stock of labour employed, if the workday is increased, so too, is the profit rate. This is also beneficial, because it makes accumulation cheaper and thus the debt burden, *ceteris paribus*, lower, because less capital is

needed in a situation where less workers are employed in the first place, meaning there can be less investments made and less loans taken out by firms. In the static version, everything is pretty straightforward, if the given stock of labour does more hours of work, with the same productivity, then the aggregate supply goes up, thus increasing the profit rate. Note also, that, given the wage rate per worker, this means that the wage rate per hour of labour falls as the workdays increases. Throughout we assume homogenous productivity of labour per hour.

What kind of an accumulation pattern would an increased workday influence (or, alternatively, what kind of an accumulation pattern would, as its consequence have an increased workday)? The simplest answer is that if accumulation lags behind the rate of population growth, this will, as we have already previously noted, increase unemployment and decrease the wages of labour. This was already true in chapter five, but now since we allow for the variation of labour time per employee, high unemployment will no longer result just in a low wage, but in longer working hours on top of that as well. In other words, while high unemployment results in decreasing money wage claims, workers can in addition to that, be forced to work longer hours as well. From a sociological perspective, we can expect that such a situation would lead to increased division and tensions between different groups of workers and between the employed and unemployed workers. After all, those workers who work longer hours will feel that those who do not, or who wish to receive unemployment benefits, do not deserve them. An increase in working hours will therefore also have political implications, nevermind the implications for the workers bodies and souls, where it is unlikely to imagine, that after a 12 hour shift in the factory, the husband will take the wife to see *The Nutcracker*. Perhaps not surprisingly, the length of the workday will itself influence a certain pattern of accumulation on the one hand, while also being determined by it.

It should be obvious from the discussion above, that in light of a falling profit rate, capitalists will wish to increase the workday. Again, this is an issue, which needs to be solved on the institutional level, where capital will look to replicate the golden age of the 19th century, with hardly any limitations upon the workday. The workday in practice will therefore be a result of a complex struggle in the arena of politics and ideas, which goes back to the previous subsection of chapter six. It will also be determined by the nature of accumulation. Keynes (1930) once imagined a bright future, where the workday would be short and we would all have jobs, but as we see, this is not as profitable to capitalists, not only because of the direct implication for profitability, but because such a harmonious society would be harder to manage. Instead our societies find themselves in a perverse situation where a large part of the population cannot find work and another part of the population is engulfed by it, having its workdays increased. This not only creates tensions on the macroeconomic level, but it surely creates many an unhappy family, with the wealthy not having enough time for their (dysfunctional) families and the poor having to suffer poverty. In short, we can conclude, that increasing the workday will be profitable for capitalists in more ways than one, and equally as harmful to society in more ways than one.

6. THE ROLE OF EXPECTATIONS IN THE INTERNAL DYNAMICS OF PRIVATE WEALTH ACCUMULATION AND THE CONSEQUENCES FOR THE SYSTEM OF PRODUCTION

An important distinction was made in this thesis between the accumulation of capital goods and the accumulation of non-reproducible assets. The issue which was tackled at the end of chapter four, is revisited in this chapter from a different perspective. What we will consider in this chapter is the influence that expectations have on changes in the prices of stocks and land by making use of the methodological apparatus employed by professor Shaikh for a similar investigation. However, while there are obvious similarities between his model and the ones used in this chapter, there are also differences between them, as we explicitly link expectations that relate to market prices, with the profit rate (for stocks) and land rents. In other words, while the mechanism employed in this chapter is inspired by professor Shaikh, it is not exactly the same, nor is it applied to the same problem when we consider the changes in the price of real estate. It should be added, however, that the sole aim of this chapter is not just to look at how the prices of stocks and real estate are affected simultaneously by changes in fundamentals and expectations, but how these changes in prices then influence the system in chapter four.

In other words, while we could imagine different and much more complex models to determine changes in the prices of these two magnitudes, that was not the main point, which is also why the analysis of price movements in this chapter is not exhaustive. The models, while representing only a minor change to the original work done by professor Shaikh, have to be placed within the larger context of the thesis as a whole, where it will hopefully become obvious that autonomous changes in expectations with respect to future prices of non-reproducible assets, can by themselves change accumulation regimes and lead to a financialization of the economy, to give but one possible example. It is with these internal dynamics concerning the accumulations of titles of ownership, which have not been explicitly dealt with in chapter four, that we will be dealing with in this chapter. I believe that this is an important aspect that needs to be tackled, because inasmuch as these prices are much more prone to be influenced by expectations, we need to understand how these changes might relate to actual outcomes and to fundamental variables, such as the profit rate, which govern real accumulation in the productive system of the economy.

6.1 Market prices, natural prices and the concept of gravitation

So far we have only analysed the macrosocial consequences of the accumulation of private wealth and the implications for the rest of the economic system. In chapter four investors could decide to either invest in the means of production, thus increasing the formation of real capital, or they could invest into existing assets, which are essentially titles of ownership over the real economy. The decision rested essentially on the comparison between the two respective profit rates, if wealth-owners deemed investment in the financial market to be more profitable than real investment, the respective propensities to invest would change in that period of production. However, as we have mentioned, the stock of wealth was portrayed as a homogenous entity and no real theory was provided as to the internal dynamics of private wealth accumulation. In this chapter my aim is to present a framework which shows how expectations can create their own dynamics and periods of

disequilibrium with respect to the underlying 'market fundamentals' as they are called. In other words, the aim of the analysis is to show the connection between expectations and how these can start their own self-fulfilling prophecies. Or to put it in yet another way, whereas we know the consequences of private wealth accumulation, now we will also understand how expectations can affect either an increase or decrease in the accumulation of titles of ownership, whilst keeping intact all of the results from chapter five, with respect to the effects this has on the whole economy. And this can be done in a relatively simple framework and within the theoretical metaphors of classical political economy.

One of the key theoretical distinctions in classical political economy is that between the market price and the natural price, where the former is seen as a center of gravity around which the latter would fluctuate. In other words, the market prices themselves were an empirical phenomenon, whereas natural prices were founded in the conditions of production. Classical prices of production are such that the economic system can reproduce itself, as long as the underlying conditions, in our case the fundamentals, remain unchanged (Schefold, 1985). Should, however, these conditions change, then the system enters a new long-period position, with new prices of production (Schefold, 1985). Even though these prices of production, or natural prices act as centers of gravitation for market prices, this does not mean, that market prices will necessarily ever get close to production prices; the theory only denies that the discrepancy between market prices and prices of production can become permanently large, since this would necessarily involve considerable losses on the one hand and considerable gains on the other, which would go against the tendency for the equalization of rates of profit in different industries (Schefold, 1985). Thus the general concept underlying the classical tradition is that of 'long-period position' (Garegnani, 1976), and the uniform rate of profits, with the prices determined in this framework labeled as the necessary price, the production price or the natural price. This method has generally fallen out of favour, and one can see this even by looking at the terminology and how it has changed through time: long-period positions have become stationary or steady states (Garegnani, 1976). One can, of course see, that this theoretical framework is not without its faults. One of the arguments against this approach is that, in an economy where the long-run underlying conditions keep changing, then this must necessarily entail a change in the attitude of individuals, that will prevent market prices ever coming close and converging to their natural values (Garegnani, 1976).

However, I believe, that the concept of gravitation is not wholly without merit. Of course, one cannot simply use the original Smithian notion where: 'the natural price...is...the central price to which the prices of all commodities are continually gravitating' (Smith, 1976, bk. I, ch. VII, pp. 48-51). On the other hand, the notion of the process of gravitation as such – a notion, namely, of objective factors around which the nexus of prices and expected prices is formed, does not seem so far fetched. Shaikh (2010) makes a very nice comparison between the standard notion of equilibrium as a state-of-rest and the classical notion of equilibration-as-turbulent-regulation in which expected and actual outcomes cycle endlessly around some moving center of gravity (Mueller, 1986, p. 8; Shaikh, 1998). While we can, therefore, sympathise with the old Smithian notion of natural prices and the concept of gravitation, or the Sraffian concept of production prices, it is perhaps nevertheless worth analyzing the movements themselves and not just the long-run positions of the system. In fact, Sraffa (Martins, 2014) himself admits as much, with respect to the

theory of 'industrial fluctuations' (and currently it is fluctuations that we are interested in). For him there exist two questions which need to be answered separately: the difference between the values at which different commodities are exchanged in a given market in a given instant and the change in the values of the same commodity at different points in time (Sraffa Papers, D3/12/7 as cited in Martins, 2014). Sraffa makes the need for using different approaches explicit:

'Therefore it is possible that the two problems have to be solved in different ways: and that of two opposite general theories of value, one may be true in respect of one question and the other in respect of the second...The first problem gives rise to a geometrical theory, the second to a mechanical one... The first problem must be solved by the theory of value. The second, I think, can only be solved by the theory of industrial fluctuations...Marshall's theory of value, with its increasing and diminishing costs and [marginal] utility, scissors, pillars and forces, can only be understood as an attempt to solve the first question in terms of the second.' (Sraffa Papers, D3/12/7 as cited in Martins, 2014)

The following analysis will be aimed at explaining the variations in prices of stocks and land. Since both of these are considered to represent wealth, they also represent collateral for the granting of new loans, as such, any price fluctuations in either of these two categories will also induce 'industrial fluctuations'. That is to say, movements in the prices of stocks and land, and as such in the overall value of S , have a feedback effect on the productive side of the economy. Conversely, it will also be shown, that the productive side of the economy, that is, the fundamentals, themselves influence movements of stock prices and that these fundamentals represent, what in the classical parlance would be known as normal prices, or rather, gravitational points around which expectations and actual prices meander. But we can go further than that, because it is not simply true, that expectations and actual outcomes are attracted to some objective criterion from the real economy, i.e. a fundamental, in fact, it will be shown, that the opposite may also hold and that these fundamentals themselves are no immune to influences of actual outcomes coupled with pre-existing expectations of economic agents.

Generally, this is not the case, because whether we take the more common notion of equilibrium-as-a-state-of-rest or the notion of gravitation, it is usually assumed that the values themselves are independent of expected and actual outcomes (Shaikh, 2010), that is to say, there is not supposed to be any systematic connection between the fundamentals, expectations and actual outcomes. The gravitational value is usually accorded a life on its own, dependent on the key instruments of change neoclassical analysis, such as technology, tastes and profits (Shaikh, 2010). A very different view is espoused by one of the world's most savvy investors, George Soros, whose theory of reflectivity was formalized by Professor Shaikh. The theory, which is no doubt informed from Mr Soros' considerable experience in the world of finance, explicitly rejects the independence of fundamentals from variations in expected and actual outcomes and Professor Shaikh (2010) reduces the theory of reflectivity down to three basic theses:

'...expectations affect actual prices, actual prices can affect fundamentals, and expectations are in turn influenced by the behaviour of actual prices and fundamental prices. The end result is a process in which actual prices [market prices] oscillate turbulently around their gravitational

values. Expectations can induce **extended disequilibrium** cycles in which a boom eventually gives way to a bust (Soros, 2009, pp. 50-75, 105-106)'

In a way, this sort of thinking should come naturally to most Keynesian-minded economists, because, as noted by Joan Robinson (1966) the Keynesian revolution itself had very much to do with the theoretical treatment of time in economic theory: the (short) period of analysis was empathically located between a past that was given an unalterable and a future that was unknown (Patnaik, 2009, p. 22). That is to say, history will have a very real and direct effect on the present, which is just another way of saying that yesteryears expectations effect todays fundamentals, meaning that the so called gravitational centers are themselves path dependent (Arthur, 1994; David, 2001). This links very closely to Davidson's (1991) continuation of the Shackle-an and Keynesian theme of fundamental uncertainty, where the future is not a stochastic reflection of the past, which in statistical terms means that the overall economic system cannot be viewed as being ergodic. A moving center of gravity, influenced by actual outcomes and expectations, does not mean that the system is completely chaotic in the popular use of the word. However, it does mean that the efficient market hypotheses is, at least to some degree invalidated, since the pull of gravitational centers entails with it an inherently oscillating process. Or as explained by Shaikh (2010):

'The existence of extended disequilibrium processes invalidates the efficient market hypothesis, and the dependence of fundamentals on actual outcomes invalidates the notion of rational expectations (Soros, 2009, pp.58, 216-222). Last, it is important to recognize that although expectations can influence actual outcomes, they cannot simply create a reality that validates them (ibid., pp. 40-44). On the contrary, gravitational centers continue to act as regulators of actual outcomes, which is precisely why booms eventually give way to busts.'

It is this last statement which is particularly interesting with respect to the classical notion of normal prices: they are a sort of regulating mechanism of actual (market) prices, with expectations tagging along, representing the sentiment of investors who are left to wonder when (if ever) the twain shall meet. Soros's first proposition is that expectations affect actual outcomes, that is, expected prices will influence actual prices, which is a straightforward proposition. However, if this was the sole proposition, and if it were correct, then we would be in a universe of 'thinking makes it so'. The basic logic of this simple proposition is that if prices are expected to appreciate, they will appreciate, due to the excess demand as a result of an expected rise in the value of a financial asset (Soros, 2009, pp. 3-5). The second proposition is that market prices affect fundamentals (Soros, 2009, pp. 59), which is strictly speaking, against the classical notion of a rigid, almost exogenous, center of gravity, since market prices ought to reflect and the fundamentals, instead of the fundamentals being a reflection of market prices. However, the classical notion of gravitation around normal prices returns in the third proposition of reflectivity (Shaikh, 2010):

*'The third proposition is that expectations are influenced by actual prices and fundamental prices... For instance...'change in fundamentals may then reinforce the biased expectations in an initially self-reinforcing but **eventually self-defeating process**' (Soros, 2009, p. 59). This describes a*

process in which expectations feed on themselves, while at the same time, any resulting bubble progressively undermines the confidence that the process will continue.'

The aim of the following analysis, which will look (separately) at the determinants of the movements of prices of stocks and land, is to capture this process of dynamic gravitation. While it is obvious that expectations alone cannot fully shape reality, nor are they able to fully escape from it – except in the realm of dreams – they do shape reality inasmuch as our actions are based around expectations. While this might not be obvious at first glance, since the issues are dealt with separately, this analysis is in fact linked, albeit indirectly, with the analysis of the productive economic system in chapter four. Note that in chapter four we always looked merely at the volume of aggregate wealth, S , setting aside the internal dynamics within this aggregate itself. But by understanding the internal dynamics, part of the motivation for accumulating titles of ownership, such as stocks and land, becomes more obvious. In other words, this analysis might help us to better understand the lure behind accumulation of private wealth. Additionally, by better understanding these internal dynamics we will also be better equipped to understand the relationship between the accumulation of wealth and the rest of the economic system. While the focus now will not be on the productive side of the economy, which is to say, that part of the economy which produces commodities with the help of labour, but with purchasing power aimed at acquiring titles of ownership, it should be noted that the causality in modern monetary economies, runs both ways.

Changes in distribution and other variables within what is often dubbed the 'real' economy, will have, as their consequence a change in the amount of purchasing power chasing a given amount of titles of ownership, thereby indirectly influencing the movements in prices of said titles. If this happens, expectations about the future change as well, and depending on whether or not more or less purchasing power went into the accumulation of wealth, other economic agents will look more or less favourably upon this avenue of making more money, as opposed to investing the same funds into capital accumulation. This would be, for example, a shift induced, for various reasons imaginable, from the side of the system of production. Just as likely, however, some event could trigger a change in expectations about the future of some stocks or the other, or of the future movements of land prices, which would achieve the same result as a 'shock' from the 'real' economy. I do not believe, that the connection is exclusively one-sided, and that the financial sector is always determined by the real economy or that, whenever a crisis hits, even though it manifests itself in the financial sector, that it is always also the fault of the financial sector.

It is true, however, that financial markets are an embodiment of fickleness, where expectations play a much larger role than in markets for producible commodities, which is why a car's price is usually cost-determined and will not fluctuate from one day to another in money terms, whereas stocks most definitely will. Note that as prices of stocks change from one day to another, then so too, does the volume of S , which is why it is so important to understand these dynamics. It is also with respect to these prices that future flows into the stock market will be determined and it is with respect to these same prospects, that wealth-owners will decide between going into the stock market, or buying land, as opposed to investing in the productive sectors of the economy. Note also, that as long as the stocks go up and you happen to own them, you are guaranteed to make

money without having to produce anything⁶³, whereas investing into something tangible will also require a certain set of skills and knowledge, or else the enterprise is bound to end up in failure.

In classical terms we could say that the aim of owning stocks is not for their inherent use value, but with the aim of increasing one's monetary wealth, something which is only possible, if their prices go up. Prices of producible commodities are firmly grounded in their production costs, but the same is obviously not true for stocks or land, especially inasmuch as both of these two classes of assets are held expecting an eventual appreciation of their money prices. Therefore understanding the role of prices and expected prices is not only vital with respect to the internal logic and movements within the aggregate of accumulated wealth, it also explains why shifts between accumulation regimes can occur. Furthermore, seeing how big of a role expectations play, and how easily they can influence actual prices, it should become quickly obvious, why this is problematic with respect to accumulation of capital goods. The ease with which expectations also materialize in actual prices means that depending on whether or not these expectations are positive or negative, the real economy will be affected in different ways. It should also be noted, that whether the situation is one of a boom or a bust, or one where the oscillation is completely out of the blue, it will be destabilizing to the real economy, where production takes time and requires stability. Therefore if an economic system is governed by the accumulation of private wealth, this will, impair the creation of producible commodities, which represent real wealth. Institutional arrangements which can create a stable financial system, aimed at financing real activity, should be more successful at creating more tangible wealth.

6.2 Dynamics of stock prices

Stock price movements cannot be understood without additional analytical categories, otherwise we are simply in the empirical world of correlations and the like. Therefore the problem stock price dynamics will be dealt with in a theoretical system of equations. The first proposition will be, that the amount of funds diverted into the stock market, will depend on both the actual prices of stocks and on the expected future prices of stocks:

$$\dot{m} = m(p^e - p) + \varepsilon_1 \quad (1)$$

Simply put, the above expression says, that as long as the investors expect the prices to rise above the current actual market prices, this will increase the flow of funds into the stock market. The expression is also subject to zero-mean stochastic shocks, ε_1 , as will be the case with most of the relations in the system. As long as the difference between expected prices and actual prices is positive, we can expect that investors will pour ever greater quantities of money into the stock market – where it should be noted, that for the sake of simplicity, we do not differentiate between money capital which was borrowed and money capital which comes from the savings of rentiers and capitalists (or workers, but we have assumed throughout that they do not save their income). In this case, where the difference between p^e and p is positive, we can talk of a bull market, whereas the reverse is true if expected prices are lower than the actual ones, in which case we can

⁶³ Which is why a City trader in a documentary by Adam Curtis (1999) called stocks 'supercharged pounds'.

talk of a bear market. Next, in order to be able to analyze the influence of these new funds on the stock market, we need to have a relation which describes the issue of new stocks:

$$\dot{q} = q + \varepsilon_2 \quad (2)$$

The rate at which new stocks are issued is given exogenously. This seems the best possible solution, since it would be hard to fathom, a general rule which would describe the speed at which new stocks are issued, and what are the factors upon which this would depend, nor is this material to our analysis. Having both the rate at which money enters the stock market, and the rate at which new stocks are issued, we can now obtain change in actual prices of stocks:

$$\dot{p} = \dot{m} - \dot{q} \quad (3)$$

The growth in stock prices is simply the difference between the amount of new funds entering the stock market, and the speed at which new stocks are issued. Next we need to define a gravitational value, a dynamic fundamental price around which actual prices and expected prices will oscillate:

$$\dot{p}_F = f(\dot{p} - r_F) + \varepsilon_3 \quad (4)$$

The fundamental price is linked to the profit rate of the firm sector, r_F , which is given in the system of production, which was analyzed in the previous sections, and which is itself dependent on the shifts in the stock of wealth, if the reader will remember. For all intents and purposes, it is viewed as exogenous within this part of the analysis, since it is formed in a separate system. However, much the same as the profit rate represents a percentage increase over what was originally invested in production, so to does the increase in actual stock market prices measure the appreciation of one's originally invested sum. In other words, we are comparing the profit rates that can be achieved in one sector or the other, by either investing in the production of commodities or by investing into titles of ownership. However, it is obvious that the titles of ownership over firms themselves, have to bear at least some minimal relation to the actual profitability of said firms, in other words, there cannot be an infinite decoupling of the stock price and profitability. The difference between the appreciation of the the stock prices, \dot{p} , and the profit rate in the firm sector, r_F , could be said to represent either a degree of over- or under-evaluation, depending on whether or not the stock price has decoupled from the underlying profit rate, or whether it is lagging behind it. Having define the change in actual prices and fundamental prices, we still need to define the change in expected prices:

$$\dot{p}^e = e(p - p^e, p - p_F) + \varepsilon_4 \quad (5)$$

There is a positive relationship between the change in expected prices and the difference between actual, p , and expected prices, p^e . Reasons for this should be obvious to the reader, imagine that an economic agent had certain expectations with regards to the movements of stock prices and that these expectations came short with respect to the actual prices which formed on the market. Say that an investor expected a five percent appreciation in the value of a certain stock, but instead the

stock appreciated for twice as much. There could be various reasons as to why this had happened, one could be, that many investors thought that the stock would go up and, not taking into account each other's actions, the stock appreciated more than single economic agents had imagined – not fully taking into account the actions of other market participants. Whatever the case may be for the actual results to outperform the expected ones, as long as the difference between actual, p , and expected prices, p^e , is positive, this will create a positive feedback with respect to the rate of change of expected prices, or even more simply put, the expected prices move in the same direction as the difference between actual and expected prices; when the difference is positive, this will increase expected prices, when it is negative, this will decrease expected prices of stocks.

The opposite relation will hold between the degree of over- or under-valuation and the rate of change in expected prices, \dot{p}^e . As actual market prices will start to diverge from their fundamental counterparts, grounded in the profitability of the firm sector, this ever greater gap will tell the investors, that eventually a correction of actual market prices needs to happen. In other words, an increase in the divergence between fundamental prices and actual market prices will influence the *expectations* of investors; it will affect the expected prices, since investors will start to expect a correction in the markets. That the change in expected prices will move in the opposite direction to the difference between actual and fundamental prices should come as no surprise, since, if the actual stock prices, p , are deemed to high with respect to the fundamentals, p_F , the expected correction of actual is going to be downward and vice versa. The change in expected prices therefore moves in the opposite direction to the difference between actual and fundamental prices since expected prices represent the channel through which this adaptation will take place. While expectations might very well have been at the root of the decoupling between the gravitational values and actual outcomes, it is through this very same channel, through expected prices, that the initial decoupling is eventually nullified and a stock price boom gives way to a bust. And these movements represent, what we could call, the classical notion of gravitation, where, unless a very special case occurs when all three sets of prices are the same, there is a constant movement of actual prices around the gravitational value. Finally, I would like to add, that I do not believe these movements represent instability, instead I think they should be viewed as an inherent part of the workings of the stock market, with their own internal logic, which I have tried to describe in the simple system above and which is based on the ideas of Mr Soros and the formalization of those ideas by Professor Shaikh (2010).

6.3 Dynamics of land prices

A similar approach that was taken with respect to the dynamics of stock prices will now be used to analyze the movements in prices of land. First we need to know the rate of growth of land, to which we will add the rate of growth of the population, as both these two categories are important for the determination of land prices:

$$\dot{a} = a \quad (1)$$

$$\dot{n} = n \quad (2)$$

For both the expansion of land, \dot{a} , and the expansion of the population, \dot{n} , we assume exogenous growth rates. This is an obvious simplification, but one which will be useful for further analysis

and one which can be relaxed further, should we ever require more detail with respect to either of these two variables. I should add, that a very obvious influence on the expansion of usable land would be through productivity increases and through land-augmenting investments, which is why it would not be unreasonable to assume some sort of connection between economic growth in general and the speed at which new land is acquired. It should also be noted, that while population growth knows no bounds, there is an upper-bound to the amount of available land in existence. However, that being said, until the upper bound is reached and maintained, which seems very unlikely, there will always be some land which will go into dis-use and new land which will be used by the economic system, either for productive or speculative purposes; the difference between these two constitutes the growth rate of land, \dot{a} . The reason why population was brought into the picture is rather simple, because the ratio between the population on the one hand, and between the available land, will determine rents:

$$\dot{r}_{Land} = r_{Land}(\dot{n} - \dot{a}) \quad (3)$$

The rents that their owners will be able to charge on land will be an increasing function of the ratio between the size of the population and the size of available land, or in the dynamic case, the increase in rents will depend on the difference between their respective growth rates. Should the population start to expand faster than available land, landlords will have gained an upper hand and rents will eventually increase. I think it becomes rather obvious then, that a development of this sort, can retard the growth of the productive sector, since it makes investment, already an uncertain venture by itself, even less appealing. This is why for authors like Kalecki (Lopez & Assous 2010; Ghosh, 2011), land reforms were a pre-requisite for developing nations to increase their productive capacity in the field of industrial production. The other option, of course, would be to slow down the growth rate of the population, which is what was done in China with the one child policy. Setting problems of development aside, productive investment becomes less appealing if the ratio between population and land increases, and this can in general be problematic for the productive system. Next, in order to understand money prices of land, we need to know how much money capital will be looking to manifest itself in the form land ownership:

$$\dot{m} = m(p^e - p) + \varepsilon_1 \quad (4)$$

The increase in the amount of money capital invested in land will depend on the difference between the expected price of land, p^e , and its market price, p , subject to zero-mean stochastic shocks. It is expected that the change in the amount of money capital will move in the same direction as the difference between the expected price and the actual price, since, if economic agents expect prices to go up, they will feel that buying land at current prices will fetch them a profit – and this is what investors who are buying land in order to increase their wealth holdings are ultimately interested in, the movements in the exchange value of land. Having defined the changes in the amount of money capital invested into land and having previously defined, albeit exogenously, the rate at which land holdings expand, we can now define the movements in actual land prices:

$$\dot{p} = \dot{m} - \dot{a} \quad (5)$$

The rate of change of land prices, or what we could also call the inflation in the price of land is captured by relation (5). The expression 'inflation' is usually reserved for consumer goods and measured by the consumer-price index, which is a rather haphazard statistical measure of inflation, based on arbitrary commodities chosen by statistical offices. While I do not wish to make too fine a point of this, I think it is worth noting the difference in the inflation of stocks and land (that is to say, the inflation in the stock of wealth), is usually seen as far more appealing than this same process going on in the realm of producible commodities. The reason for this, I suppose, is that if the price of bread rises, we view this as a decrease in our real wealth, whereas if the price of our stock portfolio (or wealth portfolio in general) increases, this is cause for celebration, for we have been granted, without actually contributing to the productive powers of mankind, greater purchasing power over other types of commodities, such as producible commodities created within the classical system analyzed in chapter five.

In other words, while nobody is fond of asset 'bubbles', people in general tend to appreciate the appreciation of their wealth; in other words, while stock and land inflation is seen as positive by the wealth holders, an increase in the price level, as was already shown, is deemed as unacceptable by wealth-holders. This duality can be seen in the sort of economic policies that capitalists will generally favour, although rentiers more so than industrial capitalists. Capitalists will therefore be in favour of Keynesianism on the stock market, be it in the form of fiscal or monetary policy, although the latter is usually preferred, whereas they will oppose Keynesian demand management in the productive sector, which might have as its consequence an increase in the price level of producible commodities, thus destroying the purchasing power of wealth-holders with respect to labour-made commodities. It becomes clear then, why quantitative easing is not a policy which wealth-owners would oppose, since it brings with it an increase in the value of their holdings *vis-a-vis* the world of producible commodities. Perhaps adding insult to injury, such policies create a stock of loans which will further retard economic growth and future growth in employment.

All that remains to close the system is to add the equation determining the economic agents' future outlook on the movement of land prices:

$$\dot{p}^e = e(p - p^e, \dot{p} - \dot{r}_{Land}) + \varepsilon_2 \quad (6)$$

The rate of change of expected land prices, \dot{p}^e , moves in tandem with the difference between actual land prices and expected land prices. If actual outcomes are better than what economic agents had predicted, then it is to be expected that eventually they will have revised their expectations upwards, and vice versa, if the actual outcomes are below expectations. The opposite relation exists between the rate of change of expected land prices, which is to say, the expected inflation of land prices, and the difference between the actual increase in land prices and land rents. Therefore if land prices keep increasing whilst the rents remain the same, for example, we could say, that inasmuch as land prices are expected to reflect the fundamentals, which in this case means land rents, that, at least with respect to these fundamentals, land has become overvalued, which will eventually be noticed by market participants. As this is noticed, eventually expectations will be

revised in the opposite direction to the difference between inflation in land prices and rents, if rents are high and prices low, expectations will be revised upwards, and if rents are low and prices high, eventually expectations will be revised downwards. Of course, expectations are effected by two differentials, where at different parts of the cycle, one of the two will prevail. As long as prices keep rising, there will be an urge amongst economic agents to keep the good times going, so to speak, but they will all have to keep in mind, that eventually the music will stop, which is when the difference between actual market prices and the fundamental value, in this case rents, will come to the fore. Again, however, the revision comes through the change in expectations and the new discrepancy between fundamentals and market prices will once again come through the channel of expected prices.

6.4 Some implications for the system of production

6.4.1 From expectations to the system of production

The analysis of movements in prices of stocks and land was not carried out simply for its own sake, but with the aim of looking at how these movements affect the real system of production. This matter can be approached from two sides, on the one hand we could start the analysis from the system to production and end up in the system of wealth accumulation, or vice versa. It is hard to say whether or not either of these two approaches is superior; within the methodological approach used in this and the previous chapters I believe the two approaches are equivalent. Whether this is also true in actual fact and not just from the point of view of methodology, is another matter, one which will not be dealt with and one which perhaps cannot ever be fully resolved, since the methodology chosen will often determine the problem itself in any case.

One of the reasons adding prices into the analysis was because without them, it is very hard to describe the motivation behind the accumulation of titles of ownership as a profit-seeking activity in its own right and not with respect to the underlying physical reality of the productive system. To begin the thought experiment, imagine that an ever so small shock in the expected prices of either stocks or land occurs. Even if the the stochastic shocks are zero mean, this does not mean that expectations would not be affected, and as we know from the previous two subsections, once expectations are affected this will increase the differential between expected prices and actual market prices, thus changing the flow of money capital from the banking system and from the system of production (in the form of savings). Should expected prices rise with respect to the existing state of expectations, this will mean that the speed at which money capital will flow into stocks and land will likewise increase, thus triggering and increase not only in expected, but in actual prices as well. To be sure, the process will not go on *ad infinitum*, as eventually economic agents will see that the disconnect between fundamentals and actual prices is simply too large, but by then it will have already been too late – history will have already gone its way and this process will have created an irrevocable series of events.

An increase in prices and expected prices will have as its consequence an increase in \dot{m} , something which, however, cannot occur without either an increase in credit creation, or an increase in the

propensity to save out of profits and bank profits⁶⁴. If there is an expected rise in prices, economic agents will shift a greater portion of their money capital into the accumulation of titles of ownership, and less into physical investments, meaning that the propensity to invest into fixed assets out of firm profits, ε , is expected to increase as the difference between expected prices and actual prices widens, meaning that the partial derivative is $\frac{\partial \varepsilon}{\partial (p^e - p)} > 0$. As ε increases, all other things being equal, the stock of wealth will increase as well, and should ε increase through consecutive periods, due to the differential between expectations and actual outcomes, this will have increased the rate of private wealth accumulation.

At the same time as wealth-holders are expecting their titles of ownership to appreciate further, they will decrease their propensity to invest out of wealth into capital goods, x . In partial derivative terms this means that the propensity to invest out of wealth will move in the opposite direction to the differential between expected and actual market prices, $\frac{\partial x}{\partial (p^e - p)} < 0$. The effect, while diametrically opposite in terms of the partial derivative, will have a similar effect on the rate of accumulation of private wealth; increasing it through a decrease in the rate of outflows. Another source of money capital could come in the form of loans taken exclusively to fund the purchase of stocks and land, where we once again expect a similar situation to come about, as the differential between expectations and market outcomes widens, so too does the rate of unproductive credit creation, l , increase. In some sense, this differential makes the rate of credit creation with respect to private wealth accumulation endogenous, where the relation is similar to the one from the previous paragraph, $\frac{\partial l}{\partial (p^e - p)} > 0$. Yet again, the intangible is found to influence the tangible, and private wealth accumulation impacts the productive system.

As more profits are invested outside the system of production, this immediately implies that there will be a decrease in investments, unless an increase in productive loan extension occurs simultaneously. Even in that rather improbable case, the system would be riddled with a higher debt burden which would eventually lower the profitability of firms, and thus decrease the financing of new investments from all three sources, profits, wealth and new loans. All other things being equal, an increase in the amount of purchasing power flowing into the aggregate S , presumably due to expected increase in prices of its sub-categories, will mean that a smaller amount of funds is invested, thus slowing down capital accumulation. As this happens, output growth slows down as well, since fewer people will be employed, and as that happens, the potential growth in labour productivity is also stifled. However, even though output will start to expand at decreasing rates, due to the decrease in investments, profitability need not immediately be threatened, in fact, it is quite possible for net income to increase or remain stable even when gross output declines. This is due to the fact that once capital accumulation slows down, unemployment is expected to increase which will keep money wage claims stagnant, thus ensuring a larger surplus which is then divided amongst the financial sector and the firm sector. However, if this process goes on, it is not unreasonable to assume that the relatively slow accumulation of capital goods,

⁶⁴ We are staying within the confines of the classical system from the earlier chapters.

while implying a slower growth in national income, might also imply a decrease in profitability of firms due to the pressures of the ever increasing loan stock.

In other words, the situation the economic system will find itself in is one in which there is unemployment⁶⁵ due to inadequate investment demand, which will have as its consequence a slower growth of the national income and on top of that, there will be an additional pressure on profitability from an increasing stock of productive and unproductive loans – the latter growing at increasing rates as long as stocks and land are expected to appreciate further. So whereas the growth of the real economy is impaired by the change in the accumulation regime, the interest payments keep increasing with every production period, and unlike in production of commodities, where prices have an anchor in costs, here a differential between expected and actual prices can persist for long periods of time – especially since new credit creation aimed explicitly at acquiring titles of ownership will increase the expected inflation of wealth even further, with actual outcomes constantly outpacing the expected ones. However, eventually the correction in prices, if we may call it that, will occur. The reasons for this could be purely behavioural, or they might have something to do with the underlying fundamentals of the system of production – such as a decrease in profitability due to the increased debt burden. Note that as the debt burden continuously expands for the purchase of stocks and land, the productivity and employment in the system of production did not experience the same level of growth. Thus even if wages were to be kept as low as possible, eventually the interest payments would catch up with the productive side of the economy, simply because of the increased growth of the stock of loans.

Once profitability finally does decrease after a prolonged period of 'overvaluation', the bearish market makes a comeback through decreased price expectations – market participants start to sell their stocks leading to a decline in actual market prices. With the value of assets falling, a credit crunch will further stymie the process of credit creation (by lowering animal spirits, since the ratio between the stock of wealth and the stock of loans will decrease), thus ensuring even further contraction in capital formation and, *pari passu*, the national income. What will not fully disappear, however, is the stock of loans, representing fixed obligations from the past, putting pressure on the economic system in the present. This whole plethora of different factors will increase the default rate, thus further destroying previously accumulated wealth. As the stock of wealth decreases, it is perhaps worth remembering how it increased in the first place. All it took for this process to begin was a minor change in expectations and all it took for this process to unfold was, yet again, a change in expectations, albeit together with a change in market fundamentals. We find, therefore that collateral itself is pro-cyclical and dependent on the state of expectations about the future. Seeing as how collateral is supposed to be wealth that the lender can seize if the debtor cannot repay the debt, one wonders how much of a use this institution is in the macroeconomic sense, since the value of the collateral will be at its lowest, when it should be at its highest, from the vantage point of the creditor. In other words, banks give out loans based on a construct, which much like our egos, will seem at its grandest when everything is going according to plan, and it will evaporate in the hour of need.

⁶⁵ In the extended model an increase in unemployment could also potentially decrease profitability.

6.4.2 From the system of production to a change in expectations

At the beginning of this subsection I had mentioned that another possible way of approaching the subject was from the side of the productive system. One obvious avenue through which an increase in the underlying prices of stock could occur is through an increase in profitability. This increases the fundamental price, as long as making more funds available to invest outside the system of production – and it is not unreasonable to assume that an unexpected rise in profitability would have such an effect. Once actual prices of stocks and land (or other such non-producible commodities) would increase, this could create a positive pull on expected prices. Once economic agents expect gains, more money capital would flow into the accumulation of titles of ownership, where once again there would be an increase in all the propensities to invest into these assets, due to an increase in the differential between expected and actual prices. Another possible avenue would be through the increase in interest on loanable money capital, since such unilateral action would increase the wealth of rentiers, thus channeling more purchasing power into the stock of wealth. As this happens, expectations increase and even productive capitalists enter the fray, which starts the same pattern as mentioned in the first part of the paragraph. Finally, another incentive to hoard one's wealth could come with increased pressure from workers demanding higher money wages. While their real claims might be in vain, their money claims would end up increasing the price level. One way to solve this problem is by going on an 'investment strike' and diverting the wealth outside the system of production – increasing the propensity to invest into financial assets and land, or simply hoarding money itself, or in our terminology, increasing the stock of wealth, S . Of course the moment this happens, prices of those assets which constitute wealth would go up, and the aforementioned spiral would ensue.

Two final observations are in order. As prices of titles of ownership start to fall, the value of money in terms of these assets increases. However, since we know that once the prices of these assets start to fall, this spells trouble for the productive system as well, this will also mean that, during a recession, money will have gained in value *vis-a-vis* producible commodities as well as with comparison to other titles of ownership. In other words, money as a form of holding wealth, is counter-cyclical, it loses value during the boom and acquires it during the bust. Insofar as this assumption holds good and the monetary standard remains the same, then economic agents will always wish to hold part of their wealth in the form of money. Economic agents will therefore be aware, that once a crisis manifests itself, they will wish to have as much of the general equivalent, or of liquidity in Keynesian parlance, as possible. It is very likely therefore, that the preference for holding money, the propensity to hoard money, will itself start a downward trend in prices and expected prices and another self-fulfilling prophecy will have been created.

Once the dust settles, however, those holding money, will be able to acquire the remaining assets for a song. This is just another example of how dynamics in the accumulation of wealth influence, constantly, the productive side of the economy, the accumulation of real capital goods. Now to be sure, it is the lure for wealth which spurs accumulation of capital goods, but this same lust for wealth creates the cyclical tendencies that are associated with capitalist production. It is therefore the internal dynamics in the movement of wealth – such as the changes in price expectations, or an increase in liquidity preference – which often come to dominate the so called real economy,

meaning that if the aim is to have a stable system of production, this must necessary entail a limited role assigned to the financial system and all institutions which are connected with the accumulation of wealth in general. It is therefore no surprise that Keynes had argued for a post-war world where the machinations of the financial sector would be limited in favour of real productive activity – because the two cannot peacefully co-exist without strict limits imposed by the former upon the latter. It should be obvious why this is so: the formation of prices when it comes to titles of ownership is so dependent on speculation and the state of expectations and where very small initial movements in expectations can spark a continuous increase in actual market prices which is eventually halted by a bust – where the real productive forces of mankind are yet again impaired.

Keynes (2003, p. 104) had argued that as long as speculation is limited in size with respect to the system of production, there is nothing to worry about:

'Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done. The measure of success attained by Wall Street, regarded as an institution of which the proper social purpose is to direct new investment into the most profitable channels in terms of future yield, cannot be claimed as one of the outstanding triumphs of laissez-faire capitalism — which is not surprising, if I am right in thinking that the best brains of Wall Street have been in fact directed towards a different object.'

As we have seen, this simply is not true absent some very stringent institutional limits, because very small initial differentials between expected and actual outcomes can bring about a situation where 'the development of productive forces becomes a by-product of a casino' to paraphrase Keynes somewhat. While the correction eventually comes, it comes yet again at the expense of real capital accumulation, and at the expense of the majority of the population – the workers. In a world of 'Keynesianism for the banks', the speculators as a class are also safe from the eventual decline in the prices of land and financial assets. Additionally, this institutional arrangement of constant under-investment of capital goods with respect to the stock of men, will keep the majority of the population in check and the value of money stable through time. While busts are unfortunate, they seem a small price to pay for the maintenance of the current mode of production in its most useful form to the wealth-holders and in its most detrimental form to the expansion of human productive capacity.

7. CONCLUDING NOTES ON LIMITS TO KEYNESIAN POLICIES IN CAPITALISM AND AN INSTITUTIONAL ARRANGEMENT FAVOURING THE SYSTEM OF PRODUCTION

Concluding his *magnum opus*, *The General Theory of Employment, Interest and Money*, Keynes find two outstanding faults with the economic system in his time. The first fault was its inability to provide for full employment, its second fault was the arbitrary and inequitable distribution of wealth and incomes. In the preceding analysis, and even in Keynes' own work, the two are to a

large degree interconnected, since the failure to employ enough labour will necessarily involve an inequitable distribution of income as well, so that there is at least some overlap between the two problems. The same problems which plagued capitalist society in the first half of the twentieth century are still present in its current incarnation, in fact if anything, some of the faults have become even more pronounced. At the time of this writing, these problems have therefore not receded, they have in fact got worse, something which has lately been brought to the attention of traditional economists and the general public by Mr Piketty in his *Capital of the 21st Century*. In the preceding analysis, we find similar conclusions to those of Mr Keynes, whilst tempering his and Mr Piketty's optimism about the possibility of an enlightened capitalist society with the theoretical traditions of Karl Marx and Michal Kalecki.

One of the main theoretical breakthroughs of the Keynes-Kalecki revolution was that saving is not necessarily a driver of capital accumulation, lest the system find itself under permanent full employment, something which it has shown itself incapable of achieving for any prolonged periods of time – and even when near full employment was achieved in some parts of the system, this was mainly due to mercantilist policies, which do not represent a global solution to the problem of unemployment. Keynes (2003, p. 187) explains how his theory drives a wedge between capital accumulation and saving as the main driver of new investments:

'...the belief that growth of capital depends upon the strength of the motive towards individual saving and that for a large portion of this growth we are dependent on savings of the rich out of their superfluity...For we have seen that, up to the point where full employment prevails, the growth of capital depends not at all on a low propensity to consume but is, on the contrary held back by it; and only in conditions of full employment is a low propensity to consume conducive to the growth of capital.'

As I have argued, saving can sometimes be a misnomer and the way traditional economics views saving, especially with respect to investment, is not relevant for monetary economies, unless money is understood only in its limited role as a means of circulation; but that would mean that we are effectively in a barter economy. Once we allow for money to be hoarded, the relations between saving and investment change altogether. For if we were to imagine ourselves in a simple reality where Ricardian corn represents the only commodity produced and consumed, then there would be some logic in maintaining that the output of tomorrow will be potentially higher, disregarding the uncertainty with respect to weather, if consumption today is lesser, since that entails an increase in the stock of corn that can be planted tomorrow. Money, however, as should be obvious, is not corn; for corn gives man something for nothing, it is alchemy, the sun's embrace of mankind, whereas no such claim can be made for dollars or gold. Money is a custom, and can therefore be viewed as wealth only insofar it can be used to motivate mankind to produce new commodities, otherwise, apart from aesthetic considerations, it is completely worthless in the production process itself.

This distinction is more important than it might appear at first sight and it has consequences both for the capacity of mankind to create more goods and for their consequent distribution. In short, when we talk of investment proper, we mean investment in new capital goods, that is in means of production that are used in the production of new commodities by labour. This is what the

classicals meant when they talked about saving, since for them saving was always equal to investment, meaning that what was not consumed was immediately re-invested in productive capacity. Once money, and more generally, wealth, enter the picture, this same logic no longer applies, something which various authors have been well aware of for a long time, and something which was further examined in the foregoing investigation. As long as savings are used to finance new investments in capital goods, then the same logic applies as with the analysis of classical political economy; more savings mean a higher rate of accumulation. The virtuous circle envisioned by Adam Smith comes to life, as new machinery and other means of production increase labour productivity and the whole society prospers, even though some of its members might suffer unemployment due to technological advances. Note however, that this state of affairs is by no means certain once we allow for saving to remain in money form and not re-enter the system of production. In other words, the moment we allow for investments outside capital equipment, the classical connection between savings, investments, labour productivity and the national income, breaks apart.

To put simply, the funds which fall under the category of saving might very well be invested in means of production, but they can just as well be left in the form of money, since money is a form of holding wealth, or they can be invested in various durable (but often non-producible) commodities. The key distinction to be made between the two forms of investment (and between simply holding money), is that investing in titles of ownership or the hoarding of money outside the system of production will not result in real capital accumulation. Let us remind the reader, that capital formation at the end of the day determines the level of employment and has direct and indirect effects on the productivity of labour and on the national income itself. As can be easily seen, and was shown in the dynamic classical system, once we allow for funds to flow either into investment proper, or into the accumulation of titles of ownership⁶⁶ (and thus augmenting S_t , the stock of private wealth), saving becomes a poor indicator of real capital formation, simply because it need not be used to produce investment goods. There is an inherent difference therefore, between the act of buying titles of ownership, which if we take their quantity to be given, will just increase their price, as opposed to ordering more means of production, since the accumulation of the latter will also change the conditions of production.

The peculiarity of capital goods, as opposed to some other assets, such as land, is noted by Keynes (2003, p. 188):

'The owner of capital can obtain interest because capital is scarce, just as the owner of land can obtain rent because land is scarce. But whilst there may be intrinsic reasons for the scarcity of land, there are no intrinsic reasons for the scarcity of capital.'

Capital goods are different because more of them can be produced, whereas land, for example, is a given datum. What we have to ask ourselves, however, is with respect to what are capital goods scarce? The only logical answer would be with respect to labour itself. If there are more willing hands than there are machines to be manned, unemployment is a necessary consequence. Additionally, if one group of people controls the quantity and quality of new capital goods, they

⁶⁶ This merely augments the value of private wealth, denoted as S_t in our analysis.

inadvertently also determine the level of employment. Since employment plays a role in determining the wage rate as well, this means that distribution of income is to a large degree determined by capital accumulation. Keynes had originally argued that full employment would only negatively affect the interests of the rentiers, however, one does wonder, whether or not the regime of full employment would not adversely affect the whole capitalist class. Additionally, following Keynes' reasoning, once there is enough capital for everyone to be employed⁶⁷, the profit rate, or what he calls the interest on capital, should dwindle down to zero, thus destroying the whole *raison d'etre* of capitalism. In other words, I believe that Keynes was much more radical than he alone would care to admit, because the moment that capital is not scarce *vis-a-vis* labour, or in simpler terms, the moment unemployment is no longer an issue, then what follows from the preceding analysis is exactly what Keynes had anticipated: a fall in the profit rate. Not only that, there are potential consequences for the price level as well.

The recent era of financialization, Mr Piketty's analysis notwithstanding, was not an era of too much capital, if by capital we mean means of production; the very fact that most of the world suffers from the usual problems of unemployment should make that abundantly clear. Realistically, there can be no other indicator of capital scarcity other than unemployment, since capital cannot be scarce with respect to itself or any other entity, other than labour. The distinction made in our analysis, between capital goods and other assets, is therefore very important and especially pertinent when we consider the issues of unemployment and income inequality. Or as Stiglitz (2014) explains:

'It's not agricultural land, it's the value of urban land... It's the value of existing assets...And that increases wealth but it doesn't increase capital...What has happened repeatedly in recent years is that we've had monetary authorities allowing — through deregulation and lax standards —banks to lend more, but not for creating new business, not for capital goods. The effect of it has been actually to increase the value of land and other fixed resources [buildings, real estate, etc]. Disproportionately it goes to the increase in the value of these fixed assets.... The links with inequality are twofold: one is that at a very, very macro level, if more of the savings of the economy leads to an increase in the value of land rather than the stock of capital goods, then worker productivity won't go up. Wages won't go up. So some of what is going on is that we haven't been doing the kind of investment that we should be doing...So the link is that credit affects land prices and fixed asset prices, and those go disproportionately to the rich. And that is a major part of the increase in the wealth.'

These are exactly some of the issues which were dealt with in my analysis. Capital formation can augment employment and labour productivity, thus leaving potentially everybody in the society better off. For fear of repeating myself, the same is obviously not true if more funds are funneled into fixed assets, instead of increasing the amount of capital goods, in which case we only find a re-distributive effect taking place. What is especially problematic is the fact that investment into fixed assets is so dependent on future expectations about the prices of said assets, which can easily create self-fulfilling prophecies that create long periods of disequilibrium as was shown in chapter seven. This means that very small shifts in expectations can quickly effect the market prices of

⁶⁷ In a dynamic system with a growing productivity this requirement becomes far from trivial.

fixed assets, which will in turn increase or decrease expectations yet again and so forth until the opposite movement occurs. The fact that these assets respond so quickly to changing expectations is especially problematic with respect to capital accumulation, since investments in means of production are made immediately less attractive once the value of fixed assets starts to increase. Unfortunately the productive system is not well served with a deflation in fixed assets either, since that entails an increase of debt with respect to the value of stock, S . Any institutional arrangement, therefore, that favours the accumulation of the stock of wealth, S , or that does not differentiate between the stock of wealth and the stock of capital goods⁶⁸, hampers the real productive capacity of the economic system, because it limits the capacity of the system to accumulate the means of production. We could almost say, that a crowding-out effect takes place, where investment into capital goods is crowded out by investment into titles of ownership. The irony is, that as more funds get diverted into the accumulation of wealth, this act by itself makes accumulation of stock, S , more appealing as opposed to investment in capital goods, since the profitability of such an investment is essentially based on the expected appreciation of the price level for fixed assets.

7.1 Keynesian demand management in the 21st century

A possible solution for an underwhelming capital accumulation could be a state-led Keynesian state-led demand management. Full employment in our system brings about higher money wage, it should increase productivity, since we expect a positive feedback loop between the level of employment and the productivity of labour and it increases national income to its full potential. In fact, and this seems to have been Keynes' point, even profits might increase, depending on how strong the responses of various variables in the system might be to an increase in capital accumulation and the level of employment, and not only that, but investments could increase even further should the price level go up, since that would entail a fall in the real value of debt and an increase in real profits as well. In the dynamic system presented within this work, higher accumulation could actually lead to a fall in the price level as well, should labour productivity react to it more favourably than the wage rate. However, another distinct, and perhaps more realistic, possibility exists. Within our theoretical system and given an increase in capital accumulation, money wages could start to outpace productivity growth, thus giving rise to inflation, which would destroy the value of money and debt, thus leading rentiers (and wealth-holders in general) to oppose any measures aimed at achieving full employment, especially for longer periods of time.

While it is true that various scenarios are feasible within our analytical framework, at full employment and in *laissez-faire* capitalism, the price level is an inverse function of unemployment; as it increases the price level decreases. The society in question then has to decide whether it prefers to augment its capacity for production of new commodities, or does it prefer to hold on to the value of past savings, in their various forms, be it in the form of money or other titles of ownership captured in the stock of wealth, S . Insofar as the economic system is geared towards the accumulation of purchasing power, and then storing a part of it away from the

⁶⁸ This is the fallacy of gauging the economic system through the lense of the stock market, for example.

productive system, then the question is obvious: the price level must never endanger the accumulated wealth, no matter what the consequences are on the productive system. This is why the comparison between Dorian Gray and his picture is so apt, because in order for Dorian to remain virile *ad infinitum*, the picture has to age in his stead; the same holds for wealth in money form, if it is to retain its value with respect to the world of producible commodities then the productive system cannot be allowed to operate at levels which rapidly increase the price level. Keynesian bottles are therefore no solution to unemployment, insofar as there exists a possibility, that this operation would undermine the value of money, which as was shown, is in fact the case in a pure capitalist system.

7.2 Finance capital and Keynesian demand management

Today there exists another limit upon Keynesian demand management which was not present at the time of the General Theory, which is why it might be interesting to note some of the changes that capitalism has undergone since the days of The General Theory. In a way, this will be a short look at how finance capital has been able to adjust to the problems that it faced with the distinct possibility of full employment becoming a constant bane of its existence. Another way of looking at the relationship between finance capital and the productive system is with respect to the optimal institutional superstructure that is required for one in comparison to the other. The productive system requires stability in order to flourish, it requires finance to be at its disposal in order to finance new investment. For finance this means constraints in form of regulation which subordinates it to the system of production. Finance capital prefers a situation where speculation as was described in the previous chapter is not limited and where expectations rule the roost – but as we have noted this *pari passu* impairs real capital formation. If capitalism is led by a regime of finance capital, then it is almost certain that production will not expand at its maximum possible rate, which is given by the size of the population and the capital stock. So if finance is allowed to impose its rules of the game, then by no other reason than due to the fact that these rules are not optimal for capital accumulation, the productive system gets affected. And once that happens, the level of employment is affected as well, as is the distribution of income, in favour of the wealth holders and to the detriment of workers⁶⁹, this, the reader will remember, all follows directly from our analytical framework. This is a systematic feature of finance capital, which is not primarily concerned with the augmentation of productive capacity, but with speculation, which inherently rests on expectations and which does not benefit the community as a whole.

An important *specifica differentia* between the current variation of capitalism to the capitalism of the early 20th century is the predominance of international finance capital. This means, that, intentional or not, the institutional superstructure is geared towards what I have dubbed the financial accumulation regime and not towards accumulation proper; in other words, the institutional arrangement is not optimally geared towards the productive system and is outright hostile to Keynesian demand management, as long as it is not of the kind that bails out financial

⁶⁹ It is hard to say how industrial capitalists are affected in the short run. If wages fall fast enough it might increase the profit rate. However, a potential decrease in the price level increases the real value of debt and interest payments, thus decreasing profitability, meaning that the net effect on profitability is not certain. The surplus as a whole, however, ought to increase.

institutions or is used for war (Bellofiore, 2014) – the latter lending itself, among other things, to commodity speculation and the like⁷⁰. The difference in finance capital and its role today as opposed to previous periods in the history of capitalism is explained by Patnaik (2010) in three main points. Firstly, originally, finance capital, while seen as subduing industrial capital, was still linked to it. Nowadays, it seems to have gained traction on its own, and it is easy to see why: speculation need not have any connection with the productive system, other assets will do just fine.

Additionally, as is mentioned in my analysis with respect to changes in accumulation regimes, once speculation becomes more profitable to investment in capital goods, former industrial capitalists turn into finance capitalists as well, simply because it is more profitable. Capital-as-finance is therefore not bound to the financial sector *per se*, since the gains of the latter, will influence industrial capital as well. A change in the regime of accumulation, while not changing the logic of pursuing profit for the individual capitalist, will have consequences on the system of production as a whole, with all the aforementioned accompanying side-effects. Secondly, modern finance capital is de-linked from the nation state, the biggest financial and non-financial companies are no longer linked to the interests of single nation states anymore. The global nature of finance capital means that there are no distinguishing features between capitals from two different countries, both will generally share the same goals as far as the institutional arrangement of the world economy is concerned, even though the two capitals compete with each other. The final distinguishing feature of modern finance capital is that its global operations require an open world, that is not split up into different blocs. As Patnaik (2010) mentions, finance capital prefers a world with just one hegemon, a world where inter-imperialist rivalry is muted to some extent, or limited to proxy wars, with the regulatory regime under which global finance, and capital in general, continues to function⁷¹ in the same fashion as hitherto.

What becomes quickly apparent is that while capital has successfully managed to transition into a global entity, the nation-state remains confined to its geographical location, at least for the most part. This means, that the state has lost some of its autonomy due to the fact that capital in financial form, that is, in the form of money and other financial claims, is free to move from one country to another (Patnaik, 2010). One of the consequences of this state of affairs is that it makes democracy less relevant, since, strictly speaking, newly elected governments will never be able to radically change the system, unless they are willing to face capital flight. It should be obvious, that any meaningful attempts at state-led investment programmes aimed at alleviating unemployment and increasing the general productivity of the economy, stand very little chance to succeed, unless they are financed *via* the mercantilist route – a measure that *a priori* is not open to every economy, since exports in one country imply imports in another. The neoliberal regime is not, however, a regime where states play no role, their role is subordinated to the needs of finance capital. So whereas policies aimed at increasing full employment, the provision of welfare or the protection of petty producers in developing nations will be opposed by the international financial order,

⁷⁰ Note also, that in chapter six we have shown that investing into the potential to dish out violence can have a positive influence on profitability, since it could keep the wage rate in check. This is especially true in a global context, where the destruction of capital goods in one part of the world will increase unemployment, keep wages in check etc.

⁷¹ Ideally, it does not matter for finance capital which country is the superpower at the time, as long as the current institutional arrangement favouring finance capital is preserved.

quantitative easing and fiscal intervention to prop-up asset values will be sold to the public as something which inevitably has to happen, if we do not wish for a repetition of the 1929 crisis to happen. The state far from backing down in this era of global finance has taken an active role in promoting the agenda of international financial capital (Patnaik, 2010). The interests of finance are being presented as being equivalent to the interests of society as a whole, where if a country will not behave as it should, capital flight and higher interest rates will immediately follow. Of course this is a clear example of a mixed up causality; it is akin to a small business owner rationalizing the weekly payments to the local crime syndicate, by arguing that if he does not pay, his shop will get vandalized. The shop owner is correct in assuming that this series of events will indeed take place, but that does not mean that the crime syndicate is now right out of a sudden some benevolent entity, which needs to be appeased and everything will be alright, since they themselves are the ones who will do the vandalizing.

Again, what has to be understood, however, is that even in this regime which is one of financial accumulation and not of capital accumulation proper, the state plays a role in shaping the institutional environment. In other words, the state is not a passive actor, the state is the one which, among others, is responsible for the changing parameters which creates the transition from one accumulation regime to another. So that even if the state is not directly present in the theoretical apparatus of this work, one can imagine that through its regulatory (or deregulatory) power, even without playing an active role as an investor and employer, the state can affect the nature of accumulation, and this is exactly what it has done in empirical practice. While it is not the aim of this investigation to understand the unravelling of the post-war Keynesian-led accumulation regime with its emphasis on achieving full employment through state-led investment programmes, the fact is, that the consequent de-regulation of financial markets and international capital flows was a conscious decision and one which required the concerted action of the leading capitalist nations in order to be implemented. Now one can go a step further into the abstract and look at the logic of capitalism as being the underlying reason behind this shift – since some authors claim that it was due to the falling profit rate that this institutional change came about in the first place⁷² – but the fact remains, that the nation states represented the medium through which this change was enacted.

What is problematic from the perspective of the productive system, is that the current social superstructure is geared towards accumulation of private wealth, *S*, and not towards capital accumulation. The current system of international tax havens and a large shadowbanking system fosters the role of money as a form of wealth. Part of my analysis was aimed at trying to show the antagonistic character between money as a store of value, and wealth accumulation in general, and the productive side of the economy. Currently we are in a situation, where this role of the store of value is even more pronounced, since capital flight is made so easy. Sraffa (Martins, 2014) once alluded to money as having the capacity to flow like a river and to be still like a lake. Supposedly this metaphore shows the two sides of money: it can either circulate or be hoarded. In the current scheme of things, hoarding has once again been made more attractive. Imagine a scenario, where

⁷² Or what comes to the same thing, that organised labour had gained too much ground *vis-a-vis* capital, thus endangering not only current and future profitability, but the system as a whole.

capital faces rising wages in one country, all it has to do is pull out of that country, wait for catastrophe to ensue, remain stored in an offshore tax haven and return after a certain period of time, once both the assets and labour have become cheap enough, to make investment profitable again⁷³. The current institutional setup is therefore far from optimal with respect to the productive system of the global economy and with the interests of the majority of the population, which in capitalism consists of wage labourers. We will now consider a theoretical situation, where the outstanding faults of this system could potentially be rectified. However, as should be obvious to the reader, the main problem is not coming up with an institutional framework which would allow for a regime of proper capital accumulation. The main obstacles are within the current system itself, which has an army of spokesmen, mediapersons, professors, bureaucrats, technocrats and politicians situated all across the world telling us, that there can be no other reality (Patnaik, 2010) and that this is the best that we can achieve. Theoretically, the existence of these groups is explained in the chapter on the falling rate of profit, where the surplus is divided unequally, in order to gain support for the status quo amongst certain groups.

But to return to the main predicament, while the underlying problem is economic in nature, it will resolve itself not on the marketplace but in the realm of politics – which is why when we speak of macroeconomics, we should always be aware that we are in fact in the realm of political economy. The situation we find ourselves in is explained nicely by Žižek (2010), while in the realm of technological⁷⁴, almost everything seems possible, indeed with time, it is generally believed that absolutely everything can and will be achieved, the general belief concerning our social structure seems to be, that nothing can change. We can build lasers into human cells, but if we increase welfare support schemes, our civilization will end. But this should not come as a surprise, this sort of call for 'sound finance' is a sign of our times, it is a requirement of the current variation of capitalism, epitomised by international finance capital. The next subsection will not give any theoretical insight into how an institutional change might come about in practice, but it will provide, on the basis of the theoretical investigation in my thesis, a broad outlook on what I believe has to be done in order to create a more productive and fairer global economy.

7.3 International financial reform

Marxian theory is useful in understanding that capitalism is a system with inherent contradictions which manifest themselves in various forms. In order to get rid of these contradictions, the organisation of society needs to change. Past that, unless we are interested in central planning, Marxism tells us very little about how to better manage society. It is what Žižek mentions in his criticism of popular movements and revolutions: what happens the day after? In other words, even

⁷³ Indeed, this is the metaphore that the reader can imagine when the accumulation of stock, S , is mentioned in the investigation. It allows for the storage of purchasing power in wake of falling profits, only to return later on, once the situation has changed, where we have to realize, that the sheer fact that capital gets pulled out of production, will necessarily entail a fall in the value of assets and it will eventually make labour cheaper.

⁷⁴ It is sometimes argued that the current state of affairs, especially with respect to the division of wealth and income, has more to do with technological factors than with globalisation and the international financial system. While technology does play a part, in fact the current financial order would not be possible without it, we have to also be aware, that technology is also created with the aim of securing profits, meaning that it too, is part of the logic of accumulation. And this had been true in every variation of capitalism so far.

if the political battle is won, how do we manage this 'new' society? Do we simply take over the supercomputers from Google, seize them in name of democracy and implement this newest technology towards alleviating the economic problem? Perhaps, but it seems to me, that this is not a very thought-out plan. Thankfully, however, while Marxian theory might be of little practical use for 'the day after', the same is not true for post-Keynesian theory.

A frequent issue in my thesis was that the main *specifica differentia* between a monetary economy like capitalism and a barter economy, is due to the fact that money is a means of holding wealth; it represents a store of value. I have tried to argue further, that wealth in general, as a concept, whether it be in held in the form of money or in the form of financial instruments or some other claims, will mainly have this feature, which can best be described as a wedge between saving and investment, the ability to disappear from the real economy, remain outside of it and return at will. It is this feature which makes accumulation in capitalism such a tumultuous process. And if it is our aim to try and create a society, which promotes the wealth of all nations and individuals, this can only be done by augmenting capital accumulation further in scope, and perhaps with a changed direction in a qualitative sense as well. In other words, while this arrangement with its constant cycles and crises might have served humanity well enough in the past, we would not be human if we did not try and make it better, and in doing so, perhaps ease some of the underlying contradictions plaguing the current economic system as well. Thankfully we do not have to come up with a new theory, nor do we have to come up with new policies, because some solutions concerning the global financial institutional arrangement have already been proposed in the past. I only intend to point out the features of these policies which make them especially pertinent with the findings of the previous investigation.

Building on the original idea of the Keynesian bancor, Paul Davidson (2002, p. 231) has advocated for an international closed double-entry bookkeeping system. Unlike the original proposal by Keynes, Davidson argues that there is no need for an international central bank, but instead calls for a clearing house based on double-entry bookkeeping. As he himself states, his proposal is aimed at creating an international system, which allows for national sovereignty when it comes to matters of fiscal and monetary policy, something which, as I have argued, is not the case in the current setting, where the free flow of especially speculative capital means that countries have to always look at the reaction of global financial markets when contemplating their policy decisions at home. And this is a very real determinant of policy, since it does not just affect the decisions of the ministry of finance, or the policy decisions of the central bank, it also determines, to some extent, all other areas, such as education policy, social spending and welfare programmes etc. Most pertinent to our analysis is the fact that it hampers the accumulation of capital goods and it actually favours the accumulation of stock, *S*, instead.

Davidson (2002, p. 232) provides eight broad provisions which need to be satisfied in order for his scheme to operate. A very important feature of his proposal is one-way convertibility of the international monetary standard, which allows each nation to institute controls and regulations on international capital fund flows. In his own words (Davidson, 2002, p. 232) this proviso is important because it limits the bear-bull sentiment:

'The primary economic function of these international capital-flow controls and regulations is to prevent rapid changes in the bull–bear sentiment from overwhelming the market maker and inducing dramatic changes in international financial market price trends that can have devastating real consequences.'

A similar conclusion can be found at various parts throughout my investigation, but mainly in chapter seven. There it was shown that expectations in the value of assets can determine the so called market fundamentals and this then leads to a change in the accumulation regime, because of the initial change in expectations. More generally, markets which are driven by expectations are volatile and this volatility affects the production side of the economy as well. Production of complicated commodities takes time and in order to increase the complexity of modern economies, the system needs to be geared towards financing these long production circuits. Instead, we find ourselves in a situation, where a small change in the amount of funds invested into financial instruments, or other claims upon existing wealth, can create an inflationary spiral, which can quickly grow out of hands.

Perhaps the most important provision of all, is the existence of an overdraft system, whereby the surplus accumulated by the exporting nations in terms of the new international currency, would be made available for productive investments in countries that would be in need of short-term credit (Davidson, 2002, pp. 233-4). In other words, what this proviso would ensure, on the global level, is that funds accumulated by more productive parts of the world would not lie idle and would be re-invested to those parts of the world that actually need more capital accumulation. In other words, the power of classical banking would be unleashed on the international level, thus bringing forth Sraffa's (Martins, 2014) interesting observation, that in the final stage, money is no more, we return back to a barter economy. Another interesting thing to note, from the viewpoint of theory, is that if such an arrangement were to take place, it would make much more realistic the views held by the classicals, who assumed that what was saved was also automatically re-invested. Note the ultimate irony of the situation; a post-Keynesian proposal, that is, a proposal from a school famous for its monetary understanding of production, would shape the economic reality closer to the assumptions of classical and neoclassical economics and making its past criticisms (and therefore itself) less relevant.

An additional proviso mentioned by Davidson (2002, p. 234) is the existence of an *ex-ante* limit on trade surplus accumulation, where in the final instance, a consistent trade surplus by a member country would eventually be confiscated and distributed at will amongst other members. The idea is rather simple, and that is to say, that for every deficit there must be a surplus, and if we all wish to prosper, both parties need to adapt their behaviour, not just the country with a trade deficit. Again, from the point of view of global productivity growth, this proviso makes sense, because it fosters productivity growth in different regions, by allowing countries that are currently less productive, to catch up. Note that in the current iteration of capitalism immigration has become a big issue of both the developing and the developed world; this would not be so, if the whole world would advance together instead of exports being used in a neo-mercantilist manner, which is currently the case. Any meaningful developmental strategy other than those based on neo-mercantilist foundations are very unlikely to succeed in this institutional setup, meaning that only

lip service is paid to development of less developed countries and their economies. This, I would argue, is another reason why Davidson's scheme would make sense, because it would allow states across the globe to pursue different policies, which ought to increase the productivity of the economic system overall. Or if that should not be the case, perhaps it would become more humane through the actions of the state, whose role would have to change as well. As it is, international institutions for development together with state and private entities in the developed and developing world are still pursuing the goals of capital, even so far as promoting what I would call a final global push for primary accumulation, as can be seen from a very telling excerpt of a World Bank report (Perelman, 1984, p. 18):

'The prospects of improving traditional agriculture by adding cash crops of diversifying subsistence production are difficult to assess. Characteristic of New Guinea's subsistence agriculture is its richness; over much of the country, nature's bounty produces enough to eat with relatively little effort... Until enough subsistence farms have their life styles changed by the development of new consumption wants, the relative ease of producing traditional foods may discourage experimentation with new ones.'

When we therefore speak of Davidson's scheme fostering Keynesian demand management, my interpretation of both ideas is not that they should be used in order to enforce the current *modus operandi* on a global scale, but to allow countries to actually have a choice and a say in whether or not and to what extent they wish to modernise and at what rate if any at all, do they wish to embrace the capitalist mode of production as it currently stands. For if the state, also through its demand management, merely destroys petty production in order to force upon its people to sell their labour to the capitalist class, then even if the state ensures the existence of full employment, it would seem to me that the process through which the transition came about will have to be one of at least minimum institutional violence. And this is, I am afraid, often what occurred to Keynesian demand management in practice. Perhaps it is a feature which cannot be overcome – but if we are to have any chance in changing this facet of the involvement of the state in economic affairs, then at least we need to be conscious of its role in the recent past. After all, we should remember that *laissez-faire* while perhaps being spontaneous in its nature, required of this spontaneity to manifest itself in the institutional structure of the modern capitalist state. If the reader will indulge me for a moment longer, another interesting thing to note – in fact it is somewhat of an irony – is that within the proposal of an international clearing house, which has always been a proposal fostered by Keynes and his disciples, lies the true possibility for a libertarian society of petty producers; a state of affairs which is completely impossible in the current state of the international financial system.

It is not my aim to develop further the proposal by Davidson, merely to show, that my investigation confirms the view, that a different monetary system would better fit the expansion of human productive capacity. If this system could be implemented, I see it as a possibility to end many of the conflicts plaguing the current international arrangement. Not only that, it would actually foster the expansion of economic freedom in both the developed and the developing world, as opposed to a situation, where the less developed parts, usually with large populations, provide downward

pressure on global wage growth – which effectively means a downward pressure on global living standards for the majority of the population. As opposed to a centrally planned system, this arrangement would allow for different parts of the world to try different economic experiments and we could all learn from one another as to which works best, without the fear of capital flight. As such, it would create an institutional framework for *social entrepreneurship*, the idea that we can actually try and reform parts of our social life for the better, without fearing that if we fail once, we need to return to the old dogmatic ideas of 19th century *laissez-faire*. In fact, I would argue that this system, inasmuch as it fosters a Smithian increase in the wealth of all nations, is closer to what *laissez-faire* ought to be, as opposed to the current iteration of financially dominated capitalism. And instead of one plan for the whole global economy, we would have individual economic freedom, coupled with some form of international control, which would at the very least, limit some of the excesses of capitalism, and which might in time help us transcend it.

As economists we cannot look in a crystal ball and give the answers as to how the world ought to be. After all, capitalism as a system came about by itself, through experimentation, through success and failure, and if we wish to transcend it then this is how I propose we proceed as well. But if we wish to do this, if we wish to find new forms of social interactions amongst ourselves, which would make life better for all of us, then we need to be free to experiment, without fear of repercussions from a small global elite and its cronies. As our analysis has shown, the current social arrangement is far from optimal with respect to the system of production. While I cannot say with certainty that a better arrangement is possible, it would be foolhardy not to try. After all, this is just applying the same logic which has served us so well in the natural sciences in the field of society. That being said the powers that be will fight tooth and nail against any changes and the investigation of the surplus in the chapter on the falling rate of profit gives a good explanation of why this is.

7.4 Implications of a positive net income in the current stage of economic development

It is true that Keynes was very critical of capitalism on the count that it very rarely operated at full employment and that it promoted great inequality in wealth and income, his theory was nonetheless aimed at preserving the 'Manchester System' while simultaneously trying to rid it of the aforementioned faults. In fact he explicitly states that he sees 'no reason to suppose that the existing system seriously misemploys the factors of production which are in use' (Keynes, 2003, p. 192). A similar line of reasoning can be found in the recent work of Mr Piketty, who was quite adamant on different occasions that his wish is to make capitalism more equal, but not to do away with the system altogether. In this short concluding note, I will argue that there is in fact reason to suppose that the current system wastefully employs at least a part of its production factors, to use the traditional term, in order to perpetuate itself. Usually the critique of modern economies is that they have become engulfed by the spirit of consumerism and that people have become hedonistic automata, happiness machines, that can never get enough. Additionally, it is argued, the consumer is not free to choose the products, instead, by using modern marketing techniques, big corporations ultimately shape our preferences. The debate then revolves around whether or not the consumer is a passive force or whether or not the decisions of the consumer ultimately decide what gets

produced and to what extent. Traditional theory maintains that consumers ultimately represent the guiding force of the economic system and that while we cannot glimpse into their soul to see their preference maps, their decisions in the market nevertheless speak for themselves and it is in the marketplace where their preferences get revealed. Admittedly this is somewhat of a tautology, but nevertheless, it seems to be a tautology with some appeal, since the underlying logic has remained the same for quite some time.

My aim is not to follow any of the usual lines of reasoning, mainly because the very fact that they have been around for so long and do not get resolved, seems to me to indicate, that there is something wrong with the questions themselves. I can think of at least two reasons why discussions of the 'nature versus nurture' never get resolved. Firstly it is due to the fact that the problem under investigation is usually dependent on both the variables in question and is as such ideal for endless academic deliberations. Secondly, the question itself might be framed in the wrong way to understand the underlying phenomenon; in the above example 'nurture' is actually a part of 'nature', meaning that the dichotomy itself is a false one. While it might very well be the case that consumer preferences get affected by modern marketing techniques and while perhaps consumerism has run rampant in the advanced world, my line of inquiry into the problem misallocated resources will focus on the existence of the surplus, the net product. If it can be shown, and indeed, in my thesis this has been shown in chapter six, that the surplus, in order to perpetuate itself, needs the production of commodities of a certain quality, which would otherwise not be needed in society, if there was no surplus, then we have at least cast doubt on Keynes' statement that the allocation of production factors in capitalism does not have to be questioned. All of the usual critiques then become somewhat irrelevant, however, should they prove true, this just makes our point hold *a fortiori*.

The sheer existence of the surplus requires misallocation of resources, to some degree at least. Remember that the surest way to keep the wage rate down is for unemployment to persist, as such the surplus comes at a price, its price being unemployed hands and the subsequent lower wages for the employed workers. In other words, the surplus all but requires the existence of unemployment and poverty, exactly the two features of capitalism that Mr Keynes found so disdainful and abhorrent. However, as I have shown in the chapter on the falling rate of profit, the net income of the society requires more than just unemployment and poverty to perpetuate itself, it requires the existence of certain institutions whose main aim is to perpetuate the *status quo* in society. Some were partly mentioned in the investigation on the long run analysis of the surplus. Since poverty and wealth represent a potent social mix at least part of the surplus will have to be diverted to help physically secure one group from the other, this requires the system of production to produce weapons and a part of the surplus needs to be diverted to the people who would wield this weaponry. It is true that even in egalitarian societies men have felt the need to produce weaponry and that therefore there is no reason to suppose that if the economic life of man were organised differently that there would be no need for weapons. On the other hand, it has also become apparent that capitalism in its post-imperialist phase has a tendency to create regional conflicts and making different ethnic and religious groups angry at one another. That is the definition of *divide et impera*.

As far as diversion is concerned, modern society has become quite adept at trying to keep the majority of men quite happily docile. Perhaps this is too much of a simplification, for what we have seen with the rise of infotainment is the news being used in ingenious ways to keep the general public always angry at what are ultimately less than relevant issues. In purely mathematical terms, it is not hard to prove a misallocation of resources in capitalism, because as soon as the surplus is used to fuel the institutions of the superstructure which are aimed at perpetuating the current mode of production, the argument is over. My point is that the very composition of produced goods will have to conform to the social reality around them. If the working day increases, then how can we expect the workers to have the same preferences when it comes to television programming? It is very likely that after a twelve hour day some sort of sports or some other light entertainment will be much preferred to an independent European movie production. In other words, the allocation – whether or not this is misallocation or not I do not intend to go into – of both the productive factors and the quality of the products they produce at the very micro level, will be dependent, at least to some degree, on the macrosocial arrangement of society.

Our investigation gives a glimpse into how the surplus is divided between different groups, hence immediately making the management of society easier, and how it itself is used for its own perpetuation. This means that, completely disregarding the composition of wage goods, a sizeable portion of the national income is used to maintain the existing power relations in society. This goal is pursued in a Machiavellian fashion, with the system also learning from past mistakes. Apart from capitalism producing unemployment and an unequal division of income and wealth, it is found to allocate a large chunk of its resources in maintaining itself, its social relations. In purely formal terms this means that both the quality and the quantity of the output are also in part determined by this quest of maintaining a positive net income. Additionally we see that the system has its own stabilizers which allow for the continuation of the two faults which were mentioned by Mr Keynes. Not only that, but those two faults are to a large degree responsible for the existence of the surplus in the first place. While the benefits of the surplus are obvious to its recipients, the same could not be said for the community as a whole. Sraffa had explained that in the final stage capitalism would resort to Machiavellian methods in order to continue the extraction of the surplus (Martins, 2014). Once this happens, the previously progressive class of capital owners, who were the human agents behind the formation of fixed capital goods, have now become a backward class, limiting the productive capacity of mankind.

CONCLUSION

The object of this thesis was a treatise on growth and distribution in a monetary economy. The main task was to establish a monetary theory of distribution and production. In the past century we can find several attempts that recognised the importance of monetary factors on the workings of modern capitalism. Theoretically my attempt was to bring together the Sraffian interpretation of classical political economy, with the dynamic theories of Keynes and Marx in an analytical framework of Augusto Graziani and the circuit school. While there exists a body of traditional neoclassical theory on growth and the business cycles, there are some valid reasons why this heterodox framework could be potentially useful in understanding the nexus of growth, distribution and the trade cycle in a capitalist economy.

The fact that a more traditional approach was not taken is due to the fact that while there may be many factors that one can single out in the economic development of mankind, the main object of study should be the systemic factors which influence our productive capacity. The choice of technique was therefore determined by the authors understanding of the underlying problematic and not because it would constitute a mere theoretical curiosum. The use of the classical approach was appealing, because it leaves room for an institutional development of the theory of distribution, one that is not given by the natural endowment of agents and the relative scarcity of the factors of production. Another reason for this choice, one mentioned by Garegnani (2003), is that it would seem more reasonable to assume, that competition is not limited just to the markets of producible commodities, but to the factor markets as well. As to the use of Keynesian theory, it should be obvious why the analysis of effective demand and expectations, especially with respect to investment demand, would have an effect on both growth and distribution. In much the same fashion as Keynes, Marx also understood capitalism as an inherently vibrant system that could hardly be described by positions of equilibrium. Furthermore both authors understood the role of money in production, for Marx analysing capitalism on any other basis would not be reasonable, since it would constitute an ahistoric attempt at understanding a specific set of relations in society, for Keynes not dealing with a monetary economy meant assuming away the problems of modern societies. For all its advancements traditional theory is still based on the pre-Keynesian notions of an exchange economy, where money is added on top of the real analysis, once all the serious theoretical work had already been done. This usually leads to identifying economic reality, especially prices, as being too slow to adapt.

The feature of money which was highlighted through the course of this work is its capacity to be stored as wealth. This if nothing else, is what makes a monetary economy different from a non-monetary one and it is this feature – the liquidity preference for holding money, in Keynesian parlance, or the ability of money to be hoarded, in Marxist terminology – which constitutes an important specific differentia of monetary economies. The question that came to my mind was a very simple one, what happens in a modern monetary economy, if money, which is endogenously supplied via the banking system, is then funneled outside the system of production? It was for this reason that the dynamic classical system was created, to see the consequences of money as a store of value (and, more generally, of all other instruments that are used to house value in general), on

the productive forces of the economic system, by which we mean the usual economic categories of output, employment, the price level and the division of income.

While these latter issues are important, it seemed just as important to create an analytical framework capable of dealing with the aforementioned problem of hoarding personal wealth and the effect that this has on society. The idea as such is simple, if we imagine the economy working as a circuit, what happens if that circuit is stopped, or if money starts to flow outside of the production circuit. Stated in theoretical terms this might seem like a trivial issue, but what if it is restated in more practical terms? Essentially we are asking ourselves what happens to an economy, if its wealth holders, instead of re-investing their profits and instead of holding their wealth at home, decide to shift their wealth abroad, in a tax haven, for example? This would be just one example, we can also imagine them hoarding money in their safe deposits. Or we can imagine, as has been done throughout the course of this work, that wealth can also be stored in form of financial instruments, land and other durable commodities, which need not be produced, for they represent existing assets. And it is the consequences of this state of affairs; where circuitous production gets halted, because money need not flow back from whence it came, so to speak; it need not flow back into production, but it can remain safely outside this circuit, until the opportune moment for profitable investment arises as judged by the wealth-holders, that I wished to analyse. In short, how does hoarding of private wealth affect the community as a whole? This was the main aim of the preceding work, to establish an analytical framework which would allow us to answer this question, leaving the development of the more specific elements in this analysis, such as a more detailed institutional framework, for further investigation.

The findings of the preceding analysis are many and will not be extensively repeated at this point. In the first part of the analysis, I have managed to show the effects of distribution on the the level of output, and its consequent movements, in a simple bank-money world model of the economy. What was shown also, was how the profit rate moves with the interest rate and a causal explanation was given for this. In a relatively simple setting, it was possible to show, why an increase in the power of finance capital can benefit industrial capital as well, by dint of lowering the share of income accruing to the workers, in effect showing why financialization was a rational response of capitalists to an increase in the bargaining power of labour.

In the second part of the analysis, which revolved more around the determinants of growth, the analysis focused on how the price level determined the distribution of income in a growing economic system and how the distribution of income itself, in turn, proved to be a determinant of growth. The analysis once again made it perfectly clear that the price level is not everywhere and always a reflection of the quantity of money in the system of production and that money and wealth are not veils under which reality rests, instead these nominal concepts are found to exert tangible pressure on the economic real. In fact, the analysis shows, that the price level will generally depend on how the system reacts to new investments (or new monetary flows in general), through the channel of labour productivity. Depending on the reactions of the sytem, it will be found that a policy of high interest rates might, quite unexpectedly, retard economic growth, the level of employment and lead to a higher price level due to a fall in productivity which is higher than the fall in money that is actively chasing producible commodities. It was also argued, based on the results of the analysis, that the stability of the price level of producible commodities can exude a

certain toll on the productive system, because wealth-holders will wish for their holdings to retain their value *vis-a-vis* the world of producible commodities. Finally, the same dynamic theoretical construct was used to analyse the long-run profit rate of capitalist economies and to show, that it's decline is not inevitable and depends on various factors having to do with the distribution of the surplus. Additionally, we have been able to show that longer working hours, given the stock of population, will increase the profit rate through the channel of unemployment.

I believe that the analysis carried out in this work has meaningful insights for modern capitalist economies. It shows different channels of output fluctuations and presents the factors which influence the determinants of long-term growth in these economies. After having done the formal analytical part, I present a very brief view on some institutional arrangements which would be better suited to developing the productive capabilities of mankind, as opposed to the current one. Theoretical arguments in this work can help us glimpse and see where the limits of the current institutional arrangement are hidden and what can be done about them. I propose a more stable international monetary system, that takes us closer to a world where money is re-invested in productive human activity instead of being hoarded to augment private wealth.

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APPENDICES

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Appendix A: List of variables in chapter two

C – Consumption

I – Investment

Y – National income

YD – Disposable income

FF – Firm funds

θ – Theta, share of firm funds, a distributional parameter

Λ – Lambda, propensity to invest out of firm funds

IF – Investment funds, part of FF determined by Λ and θ

L – Stock of loans, loanable money capital

$r_L = \bar{r}_L$ – Interest rate on loans

M – Deposits

$r_M = \bar{r}_L - \varepsilon$ – Interest rate on deposits

ε – Difference between the rate on deposits and loans

PB – Bank profits

$\Delta L_D = \Delta L_S$ – The change in demand and supply of loans

$\Delta M_C = \Delta M_S$ – The change in demand and supply of deposits

K – Capital stock

ΔK – Change in the capital stock

K^T – Targeted capital stock

γ – Accelerator

Appendix B: Solution of the stock-flow model in chapter two

In its equilibrium state of bliss, the system offers helpful qualities that allow us to unlock its all secrets. A curious transformation in the attitudes of capitalists occurs; shedding their frugal ways and 'tired' of accumulating wealth (for now), they decide to spend their whole disposable income in a given period. In all seriousness, let us imagine that capitalists have achieved some short-term goals concerning their desired accumulation of wealth. This allows us to rewrite equation (19) in the following manner:

$$YD_C^* = \alpha_0 + \alpha_1 YD_C^* + \alpha_2 M_C^* \quad (24)$$

Furthermore, we know that at all times the following must hold:

$$K = M = L \quad (25)$$

The targeted stock of capital – understood to be a sort of proxy to the desired economic activity of the capitalists – is equal to the equilibrium stock of capital, thus becoming obsolete, in a manner of speaking and allowing us to re-write (20):

$$K^* = \beta Y^* \quad (26)$$

And then plugging (25) in (24) and making use of (26) we obtain:

$$YD_C^* = \alpha_0 + \alpha_1 YD_C^* + \alpha_2 \beta Y^* \quad (27)$$

In order to solve (27) we need to have YD_C^* expressed in terms of Y^* which is done by means of utilising relation (13) yielding:

$$YD_C^* = (1 - \Lambda)\theta Y^* - (1 - \Lambda)\theta \bar{r}_L L^* + \bar{r}_L L^* \quad (28)$$

Making use of (25) and (26) we get:

$$YD_C^* = Y^* \left((1 - \Lambda)\theta + \bar{r}_L \beta (1 - (1 - \Lambda)\theta) \right) \quad (29)$$

Now we can to re-write (27) in terms of Y^* only, eventually getting:

$$Y^* = \frac{\alpha_0}{(1 - \alpha_1) \left((1 - \Lambda)\theta (1 - \bar{r}_L \beta) + \bar{r}_L \beta \right) - \alpha_2 \beta} \quad (30)$$

Obviously the model only makes sense if the denominator is greater than zero, which means that the following must hold:

$$\frac{(1 - \alpha_1)}{\alpha_2} > \frac{\beta}{(1 - \Lambda)\theta (1 - \bar{r}_L \beta) + \bar{r}_L \beta} \quad (31)$$

Given (30) it is safe to assume that the results will be sensible in most circumstances, barring, perhaps, a scenario of impending armageddon, with consumption flying through the roof.

After we have Y^* , we can get K^* from relation (26):

$$K^* = \frac{\alpha_0 \beta \theta}{(1 - \alpha_1)((1 - \Lambda)\theta(1 - \bar{r}_L \beta) + \bar{r}_L \beta) - \alpha_2 \beta} \quad (32)$$

The money stock should equal the capital stock if our equilibrium solution is correct. To check this we transform (15) and take into account that in equilibrium $YD_C^* = CC_D^*$ should hold, which gives us the following relation:

$$M_C^* = \frac{(1 - \alpha_1)}{\alpha_2} YD_C^* - \frac{\alpha_0}{\alpha_2} \quad (33)$$

To check if we get the same result we need to first get YD_C^* :

$$YD_C^* = \frac{\alpha_0((1 - \Lambda)\theta(1 - \bar{r}_L \beta) + \bar{r}_L \beta)}{(1 - \alpha_1)((1 - \Lambda)\theta(1 - \bar{r}_L \beta) + \bar{r}_L \beta) - \alpha_2 \beta} \quad (34)$$

And finally, the stock of money following from (33) and (34) is:

$$M_C^* = \frac{\alpha_0 \beta \theta}{(1 - \alpha_1)((1 - \Lambda)\theta(1 - \bar{r}_L \beta) + \bar{r}_L \beta) - \alpha_2 \beta} \quad (35)$$

We seem to have come up with the right solution. Now we can go on to define FF^* - the part of the national income distributed to capitalists and workers:

$$\begin{aligned} FF^* & \quad (36) \\ & = Y^* - \bar{r}_L \beta Y^* \frac{\alpha_0(1 - \bar{r}_L \beta)}{(1 - \alpha_1)((1 - \Lambda)\theta(1 - \bar{r}_L \beta) + \bar{r}_L \beta) - \alpha_2 \beta} \end{aligned}$$

Having FF^* means we have defined the shares of income that workers and capitalists get from firms, since all we need to do is multiply (36) by θ to get profits or with $(1 - \theta)$, to get labour income.

When not in equilibrium, we need to check the behaviour of the investment and saving functions, to see if saving has a stronger reaction to changes as opposed to investment, a stability condition similar to the ones employed by Kaldor (1960). In order for our model to be stable we must show, that $\frac{dS}{dY} > \frac{dI}{dY}$ holds good. Before we can do this, however, we have to explicitly define the saving function. Lucky for us, the saving function is merely the complement of the consumption function.

$$S = -\alpha_0 + (1 - \alpha_1)(Y - r_{L-1}L_{-1}) - \alpha_2 M_{C-1} \quad (37)$$

The partial derivative of this equation with respect to Y is quite simple:

$$\frac{dS}{dY} = (1 - \alpha_1)$$

Now we take the partial derivative of (21) with respect to Y_{-1} and we obtain:

$$\frac{dI}{dY_{-1}} = \Lambda \theta$$

This is an approximation of a stability condition because the two income variables are not from the same time period, yet we still want $\frac{dS}{dY} > \frac{dI}{dY_{-1}}$ to be true:

$$(1 - \alpha_1) > \Lambda\theta \quad (38)$$

Appendix C: List of variables in chapter four

X_t	Aggregate supply, national income in real terms
π	Productivity of labour
L_t	Labour employed in capitalist production
Y_t	National income in nominal terms
p	Price level
I_t	Investment demand
$\Delta Loans_t$	Change in the loan stock
α	Propensity to invest in capital goods out of firm profits
P_t	Firm profits
x	Propensity to invest out of private wealth
S_t	Stock of private wealth (in money terms)
$Loans_t$	Stock of loans
AS_t	Animal spirits, the endogenous rate of loan growth
φ	Exogenous element in AS_t , also animal spirits proper
P_t^e	Expected firm profits
K_t	Stock of capital goods, means of production
δ	The rate at which the stock of capital goods gets scrapped
def	The default rate of firms
β	The capital-to-labour ratio
N_t	Total population
n	Population growth rate
E_t	Employment rate
Cc_t	Capitalist consumption
Cw_t	Worker consumption
γ	Propensity to save out of bank profits
PB_t	Bank profits
ε	Propensity to save out of firm profits
WB_t	Wage bill
w	Wage rate
r_L	Interest rate on loans
b	Share of investments in the national income
s	Saving rate out of wages, firm and bank profits
r	Profit rate of firms
$Unproductive Loans_t$	Stock of loans used to finance private wealth accumulation
l	Rate of growth of unproductive loans

Appendix D: list of variables in chapter five

Most of the variables in this chapter are the same as in chapter five, below are listed the specific variables found only in chapter six:

$Panem_t$	Part of the national income allocated to the unemployed
c	Unemployment benefit per unemployed person in money terms
g	The genuinely unemployed, that part of the population who do not work, productively or unproductively
$Circenses_t$	Part of the national income allocated to mass entertainment, the Marxian opium of the masses
h	Part of the non-productively employed workers who work in entertainment, religious institutions etc.
w_e	The average wage rate in the $Circenses_t$ sector of the economy
$Gladius_t$	Part of the national income allocated to armed forces, police and private security contractors
w_g	The average wage rate in the $Gladius_t$ sector of the economy
$c_{original}$	Unemployment benefits in an economy without $Circenses_t$ and $Gladius_t$
π_{LH}	Hourly productivity of workers
LH_t	Amount of labour hours worked
$workday$	Length of the workday
ϵ	Exogenous, institutional factors influencing the length of the workday

Appendix E: list of variables in chapter six

\dot{m}	The rate at which money capital flows into the market for titles of ownership
p^e	Expected prices of titles of ownership
p	Actual prices of titles of ownership
ε	Zero-mean stochastic shocks
\dot{q}	The rate at which new titles of ownership are issued
q	Exogenously given rate of new titles of ownership formation
\dot{p}	Rate of inflation of titles of ownership
\dot{p}_F	The rate of change of fundamental prices
r_F	Exogenous firm profit rate
\dot{p}^e	Expected price inflation of titles of ownership
\dot{a}	The rate of land expansion for productive use
a	Exogenously given rate for land expansion
\dot{n}	The rate of population growth
n	Exogenously given population growth rate
\dot{r}_{Land}	The changes in land rents

Appendix F: Summary in Slovenian language / Daljši povzetek v slovenskem jeziku

Namen te disertacije je preučiti družbene pogoje, ki predstavljajo podlago za proizvodnjo in razdelitev blaga v kapitalističnem gospodarstvu. Analiza gospodarske rasti in razdelitve dohodka zahteva uporabo abstraktnih sistemov, ki nam pomagajo pri razumevanju družbene realnosti, kajti, kot je pripomnil že Alfred Marshall (1925), 'dejstva sama zase molčijo'. Po drugi strani pa je pri deduktivnem pristopu vedno prisoten problem redukcionizma, ki se ga v resnici ne moremo znebiti. Vsak abstrakten model je namreč grajen na določenih predpostavkah, ki so v svoji osnovi arbitrarne in odvisne od stanja v disciplini ter avtorjeve svobodne izbire. Čeprav se ekonomija kot veda pogosto kritizira zaradi nerealističnih predpostavk, se moramo zavedati, da bomo pri uporabi formalne logike vedno imeli pomanjkljive predpostavke glede na ekonomsko realnost.

Sistemi razmišljanja bivajo v svetu idej (tam predstavljajo prefekcijo) in v kraljestvu idej ne le predstavljajo realnost, temveč so realnost. Ključna je torej interakcija abstraktnega sveta idej in ekonomske realnosti, kjer je edino zdravilo za problem redukcije realnosti na nekaj poenostavljenih predpostavk zavedanje pri raziskovalcu, kje so pomanjkljivosti modela v relaciji do realnega. To velja tako rekoč za vsako interakcijo med idejami in realnostjo, znotraj ekonomije pa postane tolikanj bolj problematično, kajti zaključki ekonomske analize lahko vplivajo na preučevano materijo te iste analize; še več, to je pogosto tudi namen analize. Osnovne predpostavke raziskave pa lahko v veliki meri tudi determinirajo same rezultate, kar nekako pomeni, da že v prvi fazi analize omejimo možnosti glede njenih zaključkov (Žižek, 2005, p. 21; Sušnik, 2011, p. 4). Zaradi zgoraj naštetih razlogov je v doktorski nalogi veliko prostora namenjeno obrazložitvi samih predpostavk in sestave modelov, kar je tudi edina možna rešitev problema redukcionizma v ekonomski znanosti.

Prvi del doktorske naloge je namenjen analizi razdelitve dohodka in fluktuacijam nacionalnega dohodka v stacionarnem monetarnem gospodarstvu z ločitvijo med bančnim sektorjem in ostalimi podjetji. V tretjem poglavju je predstavljen t. i. 'stock-flow', makroekonomski model po zgledu Godleya in Lavoieja (2012) z nekaterimi ključnimi inovacijami, kot je npr. eksplicitna razredna delitev med kapitalističnimi in delavskimi gospodinjstvi. Najpomembnejša sprememba glede na obstoječe modele leži v obravnavanju razdelitve med različnimi razredi, kjer sta v modelu poleg delavcev prisotni še dve skupini kapitalistov, industrialci in finančniki. Narodni dohodek je v vsakem produkcijskem obdobju razdeljen v več kategorij, ena izmed njih so plačila obresti na pretekla posojila, preostali del pa je zajet v spremenljivki FF , sredstva podjetij. Ta sredstva se nato razdelijo med lastnike podjetij in delavce. Gre za razdelitev dohodka med tri družbene skupine, podobno kot v Marxovi (1972) shemati $M \rightarrow M \rightarrow C \rightarrow M' \rightarrow M''$. Presežek je najprej ustvarjen, obstaja v obliki denarja, določen delež je namenjen poplačilom obresti dolžniškemu kapitalu, ostalo pa gre kapitalistom, le da je v našem primeru logika malce obrnjena in se rezidual razdeli med delavce in lastnike podjetij. Statična primerjava različnih ravnotežnih položajev

gospodarstva, ki sledijo iz modela, pokaže zanimive rezultate in jasno povezavo med vlogo razdelitve dohodka in gibanjem celotnega narodnega dohodka.

Z analizo različnih ravnotežnih položajev gospodarstva lahko vidimo, kako spremembe v razdelitvi vplivajo na poslovni cikel, tj. na gibanje nacionalnega dohodka. Tehnično se to doseže s premikanjem nekaterih parametrov razdelitve, ki se nahajajo v modelu. V nalogi sem se osredotočil predvsem na gibanja deleža FF , ki ga dobijo industrijski kapitalisti, označen je s θ , na premike obrestne mere, \bar{r}_L , ter na premike nagnjenosti k potrošnji kapitalistov, α_1 . Prav gotovo so poslovni cikli posledica različnih dejavnikov, kjer lahko pričakujemo, da veliko vlogo igrajo pričakovanja in splošna negotovost, vendar pa je v tem modelu uspešno prikazano, da so premiki v nacionalnem dohodku lahko tudi posledica vprašanj v zvezi z razdelitvijo dohodka med različne družbene skupine. Nekateri rezultati modela potrjujejo že znana dejstva, medtem ko nam nekateri rezultati dajo nov vpogled v vprašanja, povezana z razdelitvijo dohodka.

Raven nacionalnega dohodka je negativno povezana s θ , deležem kapitalistov v sredstvih podjetniškega sektorja. Prav tako obstaja negativna povezava med obrestno mero na posojila in narodnim dohodkom: ko se obrestna mera poveča, je ravnotežni narodni dohodek nižji. Ravno nasprotno velja za nagnjenost k potrošnji, ki jo imajo kapitalistična gospodinjstva: večja je nagnjenost k potrošnji, višji je ravnotežni narodni dohodek. Zanimiva je povezava med θ , profitno stopnjo podjetij in nacionalnim dohodkom. Večji delež sredstev podjetij gre k lastnikom, višja je profitna stopnja, a obenem se z višanjem θ niža ravnotežna raven narodnega dohodka. Obstaja torej jasna ločnica med interesi lastnikov podjetij, ki zasledujejo čim višjo profitno stopnjo, in med družbo kot celoto, ki zasleduje čim večji narodni dohodek.

Analiza v drugem poglavju nam omogoča tudi boljše razumevanje dveh pomembnih gospodarskih fenomenov druge polovice 20. stoletja, financiranja in finančne deregulacije. Če namreč postane θ nepremična (npr. zaradi pritiska sindikatov) ali pa se začne celo zmanjševati, imajo kapitalisti kot celota, tj. tako industrialci kot finančniki, na voljo še obrestno mero za posredni premik deleža, ki ga v nacionalnem dohodku dobijo oboji. Zvišanje obrestne mere ima na kratek rok jasne negativne učinke za industrijske kapitaliste, saj pride do zmanjšanja sredstev podjetij, FF , in nekatera podjetja zaradi zvišanih obrestnih mer bankrotirajo. Ta sprememba pa je v monetarni politiki bančnega sektorja lahko na dolgi rok uspešna za kapitaliste v celoti. Zvišane obrestne mere namreč ne zmanjšajo le deleža, ki ga v narodnem dohodku dobijo industrijski kapitalisti, temveč se zniža tudi delež, ki ga dobijo delavci. To pri danem stogu delavcev pomeni zvišanje brezposelnosti in zmanjšano pogajalsko moč v prihodnjih produkcijskih obdobjih. Delavstvo na ta način izgubi svoj vpliv in θ se prej ali slej začne zviševati zaradi začetnega monetarnega šoka v obliki višjih obrestnih mer.

Zvišanje obrestne mere tako zniža delež narodnega dohodka, ki gre delavcem, kar pomeni efektivno znižanje realne plače in zaustavitev zahtev po višjih plačah. Podoben rezultat sledi

iz metodološko drugačne, sraffijanske (dolgoročne) analize profesorja Panica (1988, p. 94), kjer višja obrestna mera zniža realne mezde in zviša realne profite. Tudi tu velja omeniti, da znotraj enega samega produkcijskega obdobja zvišanje obrestne mere ne bo zvišalo profitne stopnje. Ravno nasprotno, ob dani theti se bo profitna stopnja znižala. Tu pa je treba upoštevati še dinamiko razdelitve skozi več obdobj, kjer prvotnemu znižanju profitabilnosti zaradi večje obrestne mere sledi zvišanje profitabilnosti zavoljo znižanih zahtev delavcev. Theta se torej (z zamikom) giblje v smeri obrestne mere in večja obrestna mera tako zniža pogajalsko moč delavstva in na daljši rok zopet zviša profitno stopnjo industrijskih kapitalistov. Višja obrestna mera pa ne pomeni le višje profitne stopnje, temveč tudi večji delež kapitala, tako industrijskega kot tudi finančnega, napram delavstvu. Nadalje, takšen makroekonomski režim visokih obrestnih mer pomeni tudi apreciacijo vrednosti denarja v primerjavi z vrednostjo dela zavoljo zvišane brezposelnosti, kjer iz nižjih mezd sledi, da lastniki denarnega kapitala dobijo več delovne sile za določeno enoto denarja. Iz tega sledi, da si interesi finančnega in industrijskega kapitala v končni fazi ne nasprotujejo tako zelo, kot se zdi na prvi pogled, kajti na daljši rok lahko uspešno zvišanje obrestnih mer v prid prvemu pomaga tudi drugemu z znižanjem pogajalske moči dela, kar vodi tudi do apreciacije dotlej akumuliranega monetarnega bogastva obeh skupin kapitalistov.

Za analizo dinamičnega monetarnega ekonomskega sistema je treba sprva pogledati, kako narava denarja vpliva na rast, razdelitev in pričakovanja v ekonomskem sistemu. Za razumevanje razlik med monetarnim in barterkim gospodarstvom se moramo ustaviti predvsem pri vlogi denarja kot hranilca vrednosti. Velik del naloge se namreč vrti okoli preprostega vprašanja, kaj se zgodi z ekonomskim sistemom, če se denar ne vrne v obtok. Tradicionalna ekonomska analiza rastočih gospodarstev se zaveda pomena zapuščine tehnoloških in naravnih danosti, ki so v veliki meri posledica pretekle akumulacije kapitala, izpuščena pa je vloga preteklih (nominalno fiksnih) plačilnih obveznosti na sedanost (Patnaik, 2009, p. 26). Povpraševanje po blagu ene skupine agentov je odvisno od poplačila obveznosti druge skupine in obratno, poplačilo preteklih obveznosti je odvisno od povpraševanja po blagu s strani druge skupine agentov. Če se tokokrog ustavi in kupna moč ostane v obliki denarja, to pomeni, da določeni agenti ne bodo mogli poplačati svojih nominalnih obveznosti. Logično nadaljevanje takšnega razmišljanja je še dodatno zmanjšanje povpraševanja s strani kreditodajalcev, kar vodi še v dodatno nezmožnost plačevanja preteklih obveznosti ipd.

Znotraj tradicionalnega razmišljanja dominantne neoklasične teorije zgornja situacija ne bi bila problematična. Višje povpraševanje po denarju, ki je navadno blago kot vsako drugo, bi zvišalo njegovo ceno in posledično povečalo tudi njegovo ponudbo. Z drugimi besedami, tako kot višje povpraševanje po katerem koli drugem blagu ni problematično in ne destabilizira gospodarstva, tako tudi večje povpraševanje po denarju ne bi smelo imeti negativnih učinkov na gospodarsko aktivnost. Takšna logika bi bila seveda na mestu, če bi bil denar proizvedljivo blago, kjer bi bilo treba za povečanje njegove proizvodnje povečati tudi zaposlenost. To ne velja v modernih monetarnih gospodarstvih, kjer bančni sistem prek kreditne dejavnosti ustvarja denar. Keynes (2003, p. 171) piše o tem problemu že v Splošni

teoriji: 'Brezposelnost je posledica dejstva, da ... ljudje hrepenijo po luni; vendar pa predmet njihovega poželenja (tj. denar) ni proizvedljivo in povpraševanje po njem ni zajezljivo.'

Posledica hrepenenja po blagu, ki ni proizvedljivo s človeškim delom, je brezposelnost, kot je Keynes pravilno ugotavljal. Denar je v osnovi ideja, predstavlja bogastvo in bogastvo ne more biti neposredno proizvedljivo. Način ustvarjanja monetarnega bogastva v kapitalizmu je s prodajo blaga za denar in ne s proizvodnjo denarja samega, kajti denar je abstraktno bogastvo in je kot tako neproizvedljivo. Če torej razumemo proces akumuliranja osebnega bogastva v kapitalizmu, nam mora postati jasno, da bodo ekonomski agenti hoteli na vsak način proizvesti čim večjo količino raznovrstnega blaga za prodajo na trgu, da bi akumulirali (vsaj direktno) neproizvedljivo blago, tj. denar. Gre torej za situacijo presežne ponudbe proizvedljivega blaga in presežnega povpraševanja po denarju oz. še natančneje presežna ponudba proizvedljivega blaga je neposredna posledica hlepenja po denarju. Presežna ponudba in presežno povpraševanje pa zavoljo neproizvedljivosti denarja (z zaposlovanjem novih delavcev ob večjem povpraševanju po denarju) izgineta šele pri določeni stopnji brezposelnosti in nižjem nacionalnem dohodku (Patnaik, 2009, p. 141). Poleg klasične analize rasti in razdelitve je tako peto poglavje doktorske naloge namenjeno tudi analizi vpliva nekaterih značilnosti denarja in zasebnega bogastva na brezposelnost, rast in pričakovanja v ekonomskem sistemu.

Z makroekonomskega vidika je ključna razlika med monetarnim in barterkim gospodarstvom v razumevanju vloge varčevanja. Znotraj kanonskega Ricardijanskega modela gospodarstva z eno samo dobrino (po navadi je to koruza, ker lahko predstavlja tako input kot output) je razmerje med varčevanjem in investicijami dokaj preprosto. Manjša potrošnja v določenem obdobju pomeni toliko več semena za naslednje proizvodno obdobje, zato večje realno varčevanje dejansko pomeni višje investicije in tudi večjo rast gospodarstva v naslednjem obdobju. V takšnem modelu dejansko ni razlike med varčevanjem in investiranjem, kajti varčevanje implicira investiranje; seme, ki ga skupnost ne potroši v sedanjem obdobju, bo uporabljeno za pridelek v naslednjem obdobju. Od tod tudi sledi logika klasičnih ekonomistov pri zagovarjanju čim višjih profitov. Kapitalisti naj bi imeli najvišje stopnje varčevanja, zatorej družba kot celota profitira, kajti višji profiti implicirajo višjo stopnjo investicij v kapitalske dobrine. Ta preprosta povezava v monetarnih gospodarstvih ne velja več, varčevanje dohodka v denarni obliki ne zagotavlja, da bo tok denarja z gotovostjo preusmerjen v produktivno dejavnost. Z drugimi besedami, varčevanje v monetarnih gospodarstvih nič več ne implicira investicij v kapitalske dobrine. Privarčevani dohodki so lahko hranjeni v obliki denarja, raznih vrednostnih papirjev, nepremičnin ipd., kar vodi le v zvišanje cen obstoječega bogastva (npr. rast delniških indeksov, zemljišč ipd.) in ne v ustvarjanje novih produkcijskih kapacitet. V dinamičnem modelu obstaja torej ločnica med akumulacijo zasebnega bogastva in akumulacijo kapitalskih dobrin, razlika, ki morebiti ni bila relevantna v času Ricarda, čeprav je tudi to težko verjeti, je pa gotovo relevantna v moderni inačici kapitalizma.

Poleg te pomembne dihotomije, za katero se izkaže, da ima velik vpliv na celoten ekonomski sistem, velja omeniti še nekatere ostale osnovne predpostavke, na katerih temelji klasični dinamični model, predstavljen v petem poglavju in kasneje razširjen še v šestem poglavju. Rast populacije v družbi je zavoljo preprostosti in jasne ekspozicije dana eksogeno. Pomembno vlogo v ekonomskem sistemu igrajo pričakovanja prek spremenljivke živalskih duhov, *AS*. Ta spremenljivka je vezana na preteklo profitabilnost in zadolženost podjetij. Manjša kot je profitabilnost in večja kot je zadolženost, nižja so pričakovanja glede prihodnosti. Pričakovanja, zaobjeta v spremenljivki *AS*, vplivajo na izdajo novega dolga, predstavljajo endogeno stopnjo rasti posojil v gospodarstvu. V osnovnem modelu so posojila namenjena izključno produktivnim investicijam v kapitalne dobrine, kasneje so v model dodana tudi neproduktivna posojila, namenjena nakupu finančnih instrumentov, prevzemu podjetij, špekulativni aktivnosti in vsem dejavnostim, ki so v nalogi kategorizirane kot zasebna akumulacija bogastva. Endogena determinacija stopnje rasti kreditov predstavlja pomembno karakteristiko celotnega teoretičnega sistema, kajti spremembe v toku kreditov imajo v modelu vpliv na realno akumulacijo kapitala in s tem tudi na rast gospodarstva in zaposlenosti. Spremembe v slednji vplivajo tudi na razdelitev dohodka v družbi, povezava med njima pa teče prek pričakovanj o prihodnji profitabilnosti do izdaje novih posojil in končno do investicijskih odločitev, ki so odvisne predvsem od pričakovane profitabilnosti.

V tradiciji klasične šole in keynesianske ekonomike je trg dela determiniran s strani akumulacije kapitala, tj. s strani trenutnih in preteklih investicij v ekonomskem sistemu. Zaposlenost v trenutnem obdobju je odvisna od pretekle akumulacije kapitalnih dobrin, da pa bi dosegli polno zaposlenost, morajo investicije v vsakem obdobju slediti rasti prebivalstva. Na tem mestu naj opozorim, kako malo je verjetno, da bi sistem sam od sebe zagotavljal raven zaposlenosti, ki bi bila vsaj blizu polne zaposlenosti. Stopnja akumulacije je namreč vezana na pričakovanja o profitabilnosti in investorjev izpolnjevanje makroekonomskega pogoja polne zaposlenosti ne zanima. Gre za optimizacijo različnih ciljev, pri čemer se je treba zavedati tudi dejstva, da večja zaposlenost lahko dejansko zmanjša profitabilnost v sistemu. Z drugimi besedami, raven zaposlenosti v modelu je popolnoma odvisna od preteklih gibanj v akumulaciji kapitala. Kratek pregled podatkov in nekaterih študij (Stockhammer, 2011) nam pokaže, da tudi na empirični ravni obstaja jasna povezava med gibanjem realne bruto formacije kapitala in med ustvarjanjem novih služb, spremembe v hitrosti formacije kapitala pa so dober indikator za prihodnja gibanja na trgu dela.

Akumulacija kapitala vpliva neposredno na raven zaposlenosti, posredno pa tudi na razdelitev dohodka med kapitalom in delom v našem teoretičnem sistemu. Denarna plača je v modelu namreč vezana na stopnjo brezposelnosti. Višja je stopnja brezposelnosti, nižja je pogajalska moč delavcev, zato je temu primerno nižja tudi končna izbrana denarna plača. Lahko si zamislimo preprost poslovni cikel, kjer v obdobju visokih profitnih pričakovanj banke povečajo kreditno dejavnost, zato se povečajo produktivne investicije, kar posredno vpliva na zvišanje zaposlenosti. Na ta način se zviša pogajalska moč dela, kar spet pripelje do višjih plačnih zahtev, dokler se celoten proces ne obrne. Na tem mestu je pomembna

vzročnost in vidimo, da teče od investicij v kapitalske dobrine na trg dela, ki je v resnici rezidual investicijskih odločitev.

Poleg delavcev in podjetij so v modelu prisotne tudi banke. Dobičkonosnost bank je vezana na stog posojil, izdanih skozi pretekla obdobja, in na povprečno obrestno mero teh posojil. Slednja je dana eksogeno in ni predvideno, da bi se skozi poslovni cikel obnašala tako, da bi sledila preprostim determiniranim pravilom. Seveda pa se lahko predvideva, da bi ob morebitnem znižanju realne vrednosti obrestnih plačil banke odreagirale z zvišanjem obresti na posojila. Model jasno pokaže, zakaj finančni rentniki niso naklonjeni režimu rasti. Ta namreč konstantno zvišuje cene, zato se kupna moč njihovih dohodkov zmanjšuje. Po drugi strani pa je zvišanje obrestne mere lahko v takšnih primerih učinkovito orodje, ki ga ima v rokah bančni sistem za upočasnitev gospodarske aktivnosti – višje obrestne mere upočasnijo tako investicije kot tudi pritiske delavstva po višjih plačah, kar umiri pritiske na raven cen in realna kupna moč obrestnih plačil ostane relativno nedotaknjena.

Profiti predstavljajo v dinamičnem teoretičnem sistemu petega poglavja rezidual, razliko med celotnim narodnim dohodkom in finančnimi obveznostmi podjetij. Slednje imajo podjetja do bančnega sektorja v obliki plačil obresti na pretekla posojila in do svojih zaposlenih. Profiti so tako pozitivna funkcija narodnega dohodka, ravni cen, števila zaposlenih in njihove produktivnosti. Po drugi strani na profitabilnost podjetij negativno vplivajo višje plačne zahteve delavcev, višja obrestna mera na posojila in večji stog posojil. Tako kot v stacionarnem modelu bo tudi tu konkurenca med različnimi družbenimi skupinami vplivala na profitabilnost podjetij. Višja zaposlenost po eni strani pomeni višjo družbeno delitev dela, zato je tudi višja produktivnost delavcev, kar zviša profitabilnost, po drugi strani pa nižja brezposelnost implicira višje plače, kar lahko potencialno zniža profitabilnost ali pa zviša raven cen.

Vendar je treba na tem mestu opozoriti, da v končni fazi podjetja in banke determinirajo tako raven aktivnosti kot tudi razdelitev v gospodarstvu. Morebitno zvišanje realne plače delavcev je lahko le kratkoročno, kajti znižana profitabilnost implicira nižje investicije v prihodnosti, kar vodi do višje brezposelnosti, nižje pogajalske moči in nižjih plač. Morebitno daljše obdobje polne zaposlenosti pa ima zavoljo negativnih učinkov na raven cen, ki so opisani v petem poglavju, za posledico tudi zvišanje obrestne mere in padeč profitne stopnje podjetij. Po drugi strani pa tudi zvišanje obrestne mere, ki se lahko zaradi njene eksogenosti zgodi zaradi različnih razlogov, ne prinaša le pozitivnih posledic za bančni sektor (v smislu večje profitabilnosti). Višja obrestna mera namreč poveča stopnjo bankrotiranih podjetij, ki svojih preteklih posojil ne bodo sposobna odplačati, zato se kratkoročna zmaga finančnih rentnikov lahko na daljši rok ne obnese, saj pripelje do recesije, ki pa ima (podobno kot v statičnem primeru) zopet blagodejen učinek na profitabilnost tistih podjetij, ki jo preživijo. Višja brezposelnost, ki sledi ohladitvi investicijske aktivnosti, prinese s seboj tudi nižje *ex-ante* plačne zahteve. Razlika med produktivnostjo in plačo delavca predstavlja v sistemu presežek, ki se med recesijo zavoljo padajočih plač poveča. Čeprav finančni in industrijski

kapitalisti med seboj tekmujejo za čim večji delež presežka, pa je obema skupinama v interesu obdržati čim večjo razliko med plačilom in produktivnostjo dela, tj. presežkom.

Za razumevanje razdelitve dohodka v sistemu je treba najprej izvesti cenovno raven. Dobimo jo z enačenjem agregatne ponudbe, ki je preprosto funkcija količine dela zaposlenega v kapitalističnem proizvodnem procesu, pomnožena z njegovo produktivnostjo, in agregatnega povpraševanja, ki je enak dohodkom, pomnoženim z nagnjenostjo k potrošnji, vseh treh družbenih skupin v modelu. Dobimo naslednji rezultat:

$$p = \frac{w}{\pi} + \frac{1}{\pi L_t} ((1 - \gamma)r_L Loans_{t-1} + (1 - \varepsilon)P_{t-1} + \Delta Loans + xS_{t-1})$$

Zgornja relacija, ki opisuje formacijo cenovne ravni v našem teoretičnem sistemu, nam omogoča pregled spremenljivk z vplivom na raven cen. Sama interpretacija ni vedno preprosta in enoznačna zavoljo medsebojne povezanosti spremenljivk, kot sta npr. mezda in produktivnost dela. Obe spremenljivki se namreč pozitivno odzoveta na povečanje zaposlenosti, njun neto učinek na raven cen je torej odvisen od moči odziva ene in druge spremenljivke na povečano količino dela. Kljub temu lahko iz zgornje relacije hitro vidimo glavne povezave med spremenljivkami in ravnjo cen.

Višja denarna plača vpliva na povišanje ravni cen. V modelu ne predvidevamo varčevanja iz plač, kar pomeni, da se vsako morebitno povišanje plač vrne v obtok proizvedljivega blaga. Posledica povišanja plač bo torej vedno višje povpraševanje. Nasprotna relacija velja za produktivnost delavcev; višja produktivnost dela implicira nižjo raven cen. Enak vpliv na raven cen ima tudi absolutno število zaposlenih v gospodarstvu, več ljudi je zaposlenih v produktivni dejavnosti, nižja je raven cen (ob predpostavki *ceteris paribus*). To nas ne bi smelo presenetiti, kajti več delovnih rok proizvede večjo količino dobrin, kar pri danem dohodku, ki po tej količini povprašuje, zniža cene blaga zavoljo povečanega obsega proizvodnje. Na tem mestu se lahko bralec že zamisli nad nekaterimi tradicionalnimi pogledi na vzroke inflacije v gospodarstvu in nad implicirano negativno povezavo med nezaposlenostjo in ravnjo cen. Tudi vloga denarja ni tako samoumevna, kajti nova denarna sredstva, ki so uporabljena za povišanje produkcijskih sposobnosti ekonomskega sistema, ne povečajo le povpraševanja, temveč tudi ponudbo, zato je neto učinka na raven cen ne moremo predvideti vnaprej. Inflacija torej ne more biti vedno le denarni fenomen, kajti denar vpliva na kapacitete realnega gospodarstva.

Prvi člen v oklepaju na desni strani enačbe zajema tisti del bančnih profitov, ki jih njihovi prejemniki porabijo za potrošne dobrine. Bolj so finančni rentniki zapravljeni, višja je raven cen. Med produktivnostjo celotnega sistema in med potrošnjo finančnih rentnikov ni nobene povezave v teoretičnem sistemu, zato je ima vsako povišanje njihovega trošenja temu primeren učinek na povišanje ravni cen. Višja je njihova stopnja varčevanja, γ , nižja je raven cen in obratno. Podobno velja za gibanja obrestne mere. Če se ta poveča in če stopnja varčevanja ostane enaka, se bo raven cen temu primerno zvišala. Enaka pozitivna povezava obstaja med stogom posojil, ki je osnova za plačila obresti bančnemu sistemu s strani

podjetij, in cenovno ravnjo. Finančni rentniki imajo torej v primerjavi z delavci preprostejšo relacijo do cenovne ravni v ekonomskem sistemu. Vsi dejavniki, ki vodijo do povišanja rentniškega dohodka, pripeljejo tudi do višje ravni cen. Če torej neko gospodarstvo sledi politikam, ki povečujejo rentniške dohodke v primerjavi s produktivnim delom gospodarstva, lahko pride do perverznega učinka povišanja ravni cen in znižanja produktivnosti gospodarstva. Zakaj je tako, se nam ne bi smelo zdeti čudno, saj višje obrestne mere uničujejo produkcijske kapacitete, proizvede se manj blaga, ki ga zasleduje več enot denarja, edina logična posledica je zvišanje cenovne ravni.

Zadnji trije členi v oklepaju predstavljajo tri različne vire financiranja investicij v ekonomskem sistemu: delež preteklih profitov, spremembo v posojilih in delež obstoječega bogastva, namenjen za akumulacijo kapitalskih dobrin. Vsaka od teh postavk sama po sebi (kot tudi vsota vseh treh) očitno zviša raven cen v ekonomskem sistemu, vendar pa so tu stvari zopet malce bolj zapletene kot v primeru finančnih rentnikov, kajti vsi trije viri sredstev so namenjeni za financiranje investicijskih dobrin, ki povišajo stog kapitala. Povečanje količine sredstev za proizvodnjo namreč poveča tudi število zaposlenih v ekonomskem sistemu, kar očitno zniža raven cen v gospodarstvu. Investicije v nova proizvodna sredstva in višja ekonomska aktivnost (skupaj s povečano specializacijo) predstavljajo v sistemu sile, ki zvišajo produktivnost dela. Povečanje sredstev za investicije ima tako neposreden in posreden učinek na raven cen. Neposreden učinek je jasen in enoznačen, saj povišanje sredstev, namenjenih za investicije, zviša raven cen.

Kljub temu v dinamičnem kontekstu interpretacija ni več tako preprosta. Za razliko od potrošnje rentnikov imajo namreč investicijska sredstva očitni vpliv na produktivno stran gospodarstva. Višje investicije pripeljejo obenem tudi do znižanja ravni cen prek kanalov, povezanih s formacijo kapitala v gospodarstvu. Nove kapitalne dobrine imajo same po sebi pozitiven učinek na produktivnost dela, povečana količina kapitalskih dobrin pa zagotovi večje število delovnih mest, kar zopet poveča proizvodne zmogljivosti gospodarstva. Prav lahko se torej zgodi, da morebiti z zamikom in ne v istem produkcijskem obdobju povišana stopnja investicij pripelje do takšnega povečanja v proizvodnih zmogljivostih gospodarstva, da prvotni učinki povečane ravni cen zavoljo povišanja investicijskega povpraševanja postanejo neznatni. Denarne plače so vsaj še en pomemben kanal, prek katerega investicije posredno vplivajo na raven cen, kajti višja stopnja akumulacije napram stogu obstoječe populacije pripelje do višje stopnje zaposlenosti in posledično do višjih plač (vsaj v monetarnem smislu, v realnem zaradi zvišanja ravni cen morebiti ne pride do sprememb).

Lahko si zamislimo situacijo, v kateri so investicije skozi več produkcijskih obdobjih dovolj visoke, da ekonomski sistem obratuje na ravni polne zaposlenosti. To bi pomenilo, da družba izkorišča vse svoje proizvodne zmogljivosti in celoten človeški potencial. Nadalje, v sistemu brez države in državne pomoči posameznikom omogoča takšno stanje vsem ljudem, da lahko zaslužijo potreben dohodek za normalno eksistenco. Vendar tu ni konec zgodbe, kajti takšna situacija pripelje prej ali slej do stalnih zahtev po višjih mezdah s strani delavcev zavoljo situacije polne zaposlenosti. Tu opisujemo situacijo, ki si jo je zamislil Kalecki (1943) v svojem eseu o političnih učinkih polne zaposlenosti na ekonomski sistem. Kmalu postane

jasno, da takšno stanje rastoče ravni cen iz enega produkcijskega obdobja v naslednjega ni vzdržno za rentnike, katerih dohodki izgubljajo kupno moč v primerjavi z vsem proizvedljivim blagom v ekonomskem sistemu. Nadalje, ker je vrednost denarja glede na svet proizvedljivega blaga v resnici le inverzna vrednost ravni cen, izgubljajo kupno moč tudi vsi agenti, ki imajo prihranke v denarju. Ne le to, tudi lastnikom delnic in nepremičnin se zmanjša vrednost njihovega bogastva v primerjavi s svetom proizvedljivega blaga, če se zviša raven njegovih cen. Čeprav lahko podjetniki obdržijo realno vrednost profitov (delavci ne morejo neposredno vplivati na cenovno politiko podjetij in profiti so pozitivna funkcija ravni cen), pa tudi njim takšen scenarij na dolgi rok ne ustreza. Kljub temu da višja raven cen ne ogroža profitabilnosti podjetij (lahko jo celo poveča zavoro znižanja realne vrednosti obresti), pa uničuje vrednost privarčevanega zasebnega bogastva.

Četudi bi predpostavljali, da to dejstvo kapitalistov ne bi motilo (kar je sicer popoln nesmisel, pa vendarle), bi proti takšnem stanju stvari gotovo nastopili finančni rentniki. Zviševanje ravni cen zavoro polne zaposlenosti bi pripeljalo do zvišanja obrestnih mer na posojila, kar zviša realno vrednost obresti, ki jih podjetja na posojila plačujejo bančnemu sektorju. Posredna posledica zvišane obrestne mere je seveda povišana stopnja bankrotov, kar avtomatično zniža gospodarsko aktivnost, zmanjša število potencialnih investicij in s tem se upočasni tudi proces akumulacije kapitala. Ta upočasnitev seveda vpliva tudi na trg dela, kjer se začne pojavljati brezposelnost, kar zniža zahteve po višjih denarnih plačah in s tem tudi upočasni rast cenovne ravni. Model torej potrjuje intuicijo Kaleckega (1943), ki je ravno v razredu finančnih rentnikov videl glavno oviro na poti k polni zaposlenosti v kapitalizmu.

Problem ne tiči samo v realni vrednosti obresti, temveč v sami vrednosti denarja in zasebnega bogastva nasploh glede na blago, proizvedeno znotraj produkcijskega sistema. Če predstavljajo profiti glavni motiv za produkcijo v kapitalizmu, potem mora to abstraktno bogastvo v monetarni obliki držati svojo vrednost napram ostalemu blagu skozi čas. Z drugimi besedami, profiti niso končni cilj kapitalistične proizvodnje, končni cilj je akumulacija zasebnega bogastva v obliki denarja in njegovih derivatov. Zato potencialno zviševanje ravni cen ni v interesu ne industrijskim ne finančnim kapitalistom, saj zmanjša vrednost do tedaj akumuliranega zasebnega bogastva. *Laissez-faire* kapitalizem zato ne more operirati na ravni polne zaposlitve za dlje časa, kajti to bi lahko potencialno uničilo kupno moč denarja in drugih oblik zasebnega bogastva. Dokler je realna akumulacija kapitala podrejena motivu zasebne akumulacije bogastva, bo brezposelnost vedno problem ekonomskega sistema, kajti ravno brezposelnost je glavno orodje, ki zadržuje potencialne zahteve delavstva po višjih plačah. Brezposelnost je tako glavni vzročni kanal, prek katerega se v kapitalizmu umiri raven cen proizvedljivih dobrin.

Denar torej drži svojo vrednost na križu brezposelnosti, nizkih plač in revščine; večja je akumulacija zasebnega bogastva v družbi in večji vpliv imajo lastniki tega bogastva in finančni rentniki na režim akumulacije v gospodarstvu, večja je revščina celotne populacije. Gre za Midasovo razumevanje bogastva, kjer je bogastvo abstraktna ideja, namesto za

Smithovo razumevanje bogastva, kjer je bogastvo skupnosti njena sposobnost proizvodnje vedno novih in bolj raznolikih dobrin. To slednje prihaja iz akumulacije kapitalskih dobrin in iz aktivnosti človeka, iz človekovega dela, in ravno slednje, če naj služi privilegiranim družbenim skupinam, ne sme nikoli v celoti najti zaposlitev. Vrednost denarja torej ne pride brez stroškov celotni skupnosti, stroški se merijo v neproizvedenih dobrinah, revščini, neenakosti in brezposelnosti. To je cena virilnosti denarja in njegove vrednosti. Gre za groteskno sliko Dorian Graya, kjer je vrednost denarja tolikanj večja, kolikor bolj groteskna je slika družbe.

V petem poglavju je uporabljen razširjeni model iz četrtega poglavja za analizo dveh ločenih vprašanj na temo, kakšno je gibanje profitne stopnje (in presežka) na dolgi rok ter kako vpliva dolžina delovnega dne na profitno stopnjo. Za odgovor na prvo vprašanje v model dodamo koncept neproduktivnega dela, tj. dela, ki ne ustvarja dodatne vrednosti za kapitaliste, a je vendarle potrebno za delovanje družbenega sistema. Prvi dodatek v teoretični sistem so plačila za brezposelne, ki seveda predstavljajo še dodaten pritisk na profitabilnost sistema. Pred tem smo namreč predvidevali, da brezposelnost ni problem podjetnikov, kar seveda ne more biti res. Tudi v situaciji, kjer obstaja močna država, je treba socialno državo financirati, kar lahko vpliva na znižanje profitne stopnje, dokler se socialni transferji financirajo iz presežka. Teoretično igrajo socialni transferji podobno vlogo kot plačila obresti rentnikom; predstavljajo še eno družbeno skupino, ki ni del proizvodnega procesa, a ima kljub temu dostop do proizvedenega blaga.

Analiza gibanja profitne stopnje postane bolj problematična, ko v sistem poleg plačil za brezposelne vključimo dodatne spremenljivke. V končni fazi ima sistem tri nove spremenljivke s povednimi imeni: *Panem*, *Circenses* in *Gladius*. Prva spremenljivka predstavlja plačila za brezposelne, ki so namenjena potrošnji osnovnih potrošnih dobrin. Spremenljivka *Circenses* predstavlja vse monetarne stroške družbenega sistema, ki so namenjeni masovnim medijem, profesionalnemu športu in potencialno tudi religioznim ustanovam. *Gladius*, kot že ime samo nakazuje, predstavlja stroške, ki jih ima družba za zagotavljanje fizične varnosti in potencialno izvajanje institucionalnega fizičnega nasilja in represije. Interakcija vseh treh novih spremenljivk nam še dodatno pokaže, kako lahko zunanje, neekonomske sile vplivajo na velikost presežka in profitne stopnje in del presežnega proizvoda se lahko uporabi v namene lastne perpetuacije. Analiza na neki način pokaže zunanjo determinacijo razdelitvenih spremenljivk, kjer povpraševanje in ponudba znotraj sistema produkcije nista determinanti razdelitve, temveč je slednja eksogeno determinirana izven sistema produkcije. Na to značilnost ekonomskega sistema je opozoril že Sraffa (1963) z omembo vpliva denarne obrestne mere na profitno stopnjo. Analiza v petem poglavju pokaže, da institucionalna determinacija ni vezana samo na monetarno in ekonomsko politiko, temveč se determinacija razdelitve dogaja tudi na ravni popularne kulture, religije, miloščine in institucionalnega nasilja. Analiza nam ne pove, kakšno bo gibanje profitne stopnje v prihodnosti, nakaže pa vzročne kanale, ki bodo uporabljeni ob njenem morebitnem znižanju, in vidimo lahko, da ne bodo samo striktno ekonomske narave. Poglavje na neki način ponovno afirmira metodologijo in relevantnost politične ekonomije.

Drugi del petega poglavja je namenjen analizi vpliva dolžine delovnega dne na profitabilnost ekonomskega sistema. Keynes je leta 1930 napisal esej o priložnostih naših vnukov, v katerem je za 21. stoletje napovedoval drastično skrajšanje delovnega dne in praktično izginotje ekonomskega problema, tj. problema redkosti. Vprašanje o dolžini delovnega dne je torej na neki način vprašanje, zakaj moderna družba kljub vsem svojim neverjetnim dosežkom še vedno trpi zaradi kronične brezposelnosti in revščine na eni strani, po drugi strani pa se delavniki zaposlenega dela prebivalstva bistveno ne krajšajo. Z drugimi besedami, drugi del petega poglavja je namenjen iskanju objektivnih družbenih razlogov, ki ne dovoljujejo učinkovitejše razdelitve delovnega bremena v družbi. Če v analizo dinamičnega teoretičnega sistema dodamo še spremenljivko dolžine delovnega dne, vidimo, da je profitna stopnja pozitivna funkcija delovnega dne, tj. daljši delovni dan implicira večjo profitno stopnjo. Razlogov za takšno stanje je več, najbolj očiten znotraj našega modela pa je naslednji: pri danem stogu prebivalstva pomeni daljši delovni dan večjo stopnjo brezposelnosti, kar zniža plačne zahteve delavstva in poveča profitabilnost podjetij. Dodatno povzroči delovni dan tudi razkol med zaposlenim in nezaposlenim delom prebivalstva, izmučeni delavci ne bodo čutili empatije do brezposelne populacije, ki dobiva socialne transferje. Takšno stanje stvari ima torej tudi politične implikacije. Tu vidimo, kako ekonomska sfera lahko vpliva na neekonomsko, obenem pa je determinacija dolžine delovnega dne tudi posledica eksogenih dejavnikov, katerih pomembnost je bila izpostavljena že v prejšnjem odstavku.

Zadnji del formalne analize v šestem poglavju je namenjen analizi vplivov cenovnih pričakovanj na dejanske tržne cene naslovov lastništva, kot so npr. delnice. To poglavje je pomembno, ker pokaže interno dinamiko akumulacije zasebnega bogastva, na neki način predstavlja mikroekonomske osnove, ki pokažejo, kako pričakovanja vplivajo na dejanske cene in kako cenovna inflacija na finančnih ter nepremičninskih trgih spremeni akumulacijski režim. Višje cene naslovov lastništva in pričakovana prihodnja inflacija na teh trgih naredi akumulacijo kapitalskih dobrin relativno manj privlačno, kar ima negativne posledice za produktivni sistem zavoljo zmanjšanega potencialnega narodnega dohodka, višje brezposelnosti ipd. Gre za pomemben doprinos k prejšnjim poglavjem, ker pokaže notranjo logiko špekulativne dejavnosti in njen vpliv na realni sektor. Če ima torej družba institucionalni ustroj, ki favorizira finančne trge in špekulacijo na splošno, potem nam analiza v sedmem poglavju pokaže, da relativno majhne spremembe v pričakovanjih lahko povzročijo daljša obdobja diskrepance med pričakovanimi cenami, tržnimi cenami in tržnimi fundamenti, ki naj bi jih tržne cene odražale. Ravno nasprotno ugotovimo, da dejanske cene vplivajo na tržne fundamente, kot je profitna stopnja, s tem pa tudi na gibanje realnega gospodarstva. Akumulacija zasebnega bogastva in špekulacija o prihodnjih cenah finančnih inštrumentov tako nista le odraz realnega bogastva v ekonomskem sistemu, temveč dejansko vplivata na sedanji in prihodnji razvoj tega sistema. Večji kot je vpliv špekulacije, večja bodo nihanja ne le na finančnih trgih, temveč tudi v produkcijskem sistemu.

V svojem *magnum opusu*, Splošni teoriji zaposlitve, obresti in denarja, Keynes (2003) najde dva glavna problema ekonomskega sistema v njegovem času: nesposobnost poskrbeti za zagotovitev polne zaposlenosti in arbitrarna ter nepravilna razdelitev dohodka v družbi. Tako Keynesova kot moja analiza sta pokazali, da sta problema med seboj v veliki meri povezana. Podobno lahko ugotavljamo, da se v času od 30. let 20. stoletja do začetka 21. stoletja glavne karakteristike kapitalizma niso bistveno spremenile. V doktorski nalogi so analizirani nekateri sistematični vzroki problematike brezposelnosti in neenakosti v monetarnih gospodarstvih. Naloga je bila pisana v upanju, da bi nekatere od teh vzrokov odpravili. Z uporabo teoretičnih zaključkov doktorske naloge postanejo jasne omejitve trenutnega institucionalnega ustroja predvsem z vidika mednarodne monetarne ureditve, ki favorizira špekulacijo in s tem akumulacijo zasebnega bogastva. Na koncu naloge zato predlagam stabilnejši mednarodni finančni sistem, ki služi akumulaciji dejanskih sredstev za proizvodnjo in ne zasebnemu kopičenju lastninskih pravic nad že obstoječimi sredstvi.