Financial Flows in a Kaleckian Framework

FINANCIAL FLOWS IN A KALECKIAN FRAMEWORK

Proefschrift

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door

Pablo Gabriel BORTZ

Magister en Economía Política con mención en Economía Argentina Facultad Latinoamericana de Ciencias Sociales geboren te Buenos Aires, Argentinië.

Dit proefschrift is goedgekeurd door de promotor(en):

Prof. Dr. A.H. Kleinknecht
Copromotor: Dr. S.T.H. Storm

Samenstelling promotiecommissie:

Rector Magnificus,	voorzitter
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This thesis is dedicated to Leyla.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1

INTRODUCTION

1.1. BY WAY OF STARTING

This thesis intends to make a contribution to the Kaleckian literature on the interaction between income distribution and growth, by adding another factor in the scene: international financial flows. The relation between income distribution and growth is at the base of the development of political economy as a science, and it is now as relevant as always given the substantial shifts in functional and personal income distribution observed in the last decades both in developed and developing countries, coupled with the decreasing trend in economic growth observed in the last thirty to forty years in the developed world and in some (though not all) emerging economies. But another development has been included in the mix, a process which had been kept constrained after the Great Depression and the post-war period: the explosive growth in portfolio, foreign exchange and other types of financial flows, an increase a number of times higher than the rate of growth of international trade.

The thesis is organised as follows: in chapter 2, we present a survey of the ways different schools of thought dealt with the issue of the interaction of economic growth and income distribution, a prelude to an exposition of the contributions of Kaleckian models to the topic as well as some critiques that this approach has faced, including some lacks regarding the thoroughness of real world features analysed with this framework, that this thesis will try to attenuate. In chapter 3, we present the results of econometric estimations performed on the Argentinean economy based on two versions of the Kaleckian model of growth and distribution. Chapter 4 serves as an introduction to the Stock-Flow Consistent modelling methodology, which will be used in chapter 5 to develop a model of an open economy which trades goods and financial assets, with capital accumulation, inflation and distributive struggle. Chapter 4 also includes a brief summary of what John Maynard Keynes wrote on the topic of controls on capital movements, an issue related to chapter 5 and chapter 6, where we develop a Kaleckian model of growth with demand-and-supply-driven capital flows, and attempt an estimation of that model for

South Korea and Mexico.

This chapter, in turn, will proceed as follows: in first instance, three main processes will be highlighted, regarding economic performance, distributive patterns and international financial flows. The following sections will provide a (still brief) presentation of these "stylized facts": section three will document major trends on economic growth, the next section will deal with some changes in income distribution that took place in the last decades of capitalism, and section five will present data regarding the explosion in the movement of financial flows across the globe during the same period, focused mainly on developing countries as recipients of these flows (or origins, in case of net outflows). The last section will present a sketch of the line of the argument that constitutes this thesis, as a way of setting the path for what will be developed in the following chapters.

1.2. SOME OVERLAPPING PROCESSES

In the last decades, some concomitant processes have occurred. Economic growth has slowed down in advanced countries and in many developing ones, with some notably and perceptible exceptions in East Asian countries, which were able to maintain high rates of growth during a substantial lapse of time. Second, income distribution has changed remarkably in the last three decades, with a higher share accruing to profit and rents, and a smaller proportion of labour income, while personal distribution has seen higher income shares captured by a top fraction of the population, in different degrees, in different countries. Third, the relative importance of the financial sector has increased, both in the national and in the international sphere, tied to a global shift towards financial deregulation and capital account openness which has dismantled the restrictions and the institutional framework (or most of it) established at the end of the Second World War (Helleiner: 1994).

What can be called the "traditional" or mainstream argument on the benefits of these policies for developing countries was set forth in McKinnon (1973) and Fry (1980) among others. Financial (and banking) market deregulation would help in the development of those markets, improving resource allocation, increasing savings and canalize them into more profitable and efficient investment. Capital account openness would enable access to foreign savings, supplying the necessary funding to develop domestic financial markets and compensate the existent lack of savings (and resources), alleviating at the same time the restriction to economic expansion due to low foreign reserves and deficits in the balance of payments, or at least the recurrent shortage of foreign exchange.

And financial flows did increase, both to developed and emerging countries, but in such a volatile fashion which the traditional argument could not explain. Besides, they did not flow necessarily to where they were supposed, and their volatility did not prevent balance of payments crises; quite to the contrary, at times these were provoked or exacerbated by sudden movements of foreign capital. Economic growth was weaker than in the post war period for most countries, domestic investment did not perform better than before, and wage income fell compared to the pre-deregulation period. This last

change might have not been unintended, however, since a distributive pattern in favour of profit income is seen as a requirement for high and sustained investment and growth, according to an old line of argument picked up by the mainstream as its own. But as we said, this high and sustained growth failed to materialized in a big portion of the globe. An alternative framework needs to be provided in order to understand these trends in an holistic and interdependent fashion, assuming as we do that they are not unrelated to each other.

The object of this thesis is precisely to provide and integrate elements into a coherent and empirically relevant framework that is able to explain these overlapping processes that we mentioned. But before proceeding to that task, we present the data that allows us to extract these stylized facts.

1.3. ECONOMIC PERFORMANCE

The graphs included in figure 1.1 present the rate of change of GDP for selected countries and geographical regions, drawing on the World Development Indicators Database from the World Bank.

This slowdown of economic growth in the last three decades or so is also appreciable in other indicators such as gross fixed investment, productivity and unemployment levels (Storm & Naastepad: 2012; Carter: 2007; Barba & Pivetti: 2012; Stockhammer: 2004). There are of course some divergences between and within regions and countries, with some East Asian countries performing better than others and than other developing countries, but overall we can be confident by saying that the world economy has gone through a period of successive and more frequent crises (Arestis: 2006) which has diminished the rhythm of economic activity among other negative impacts.

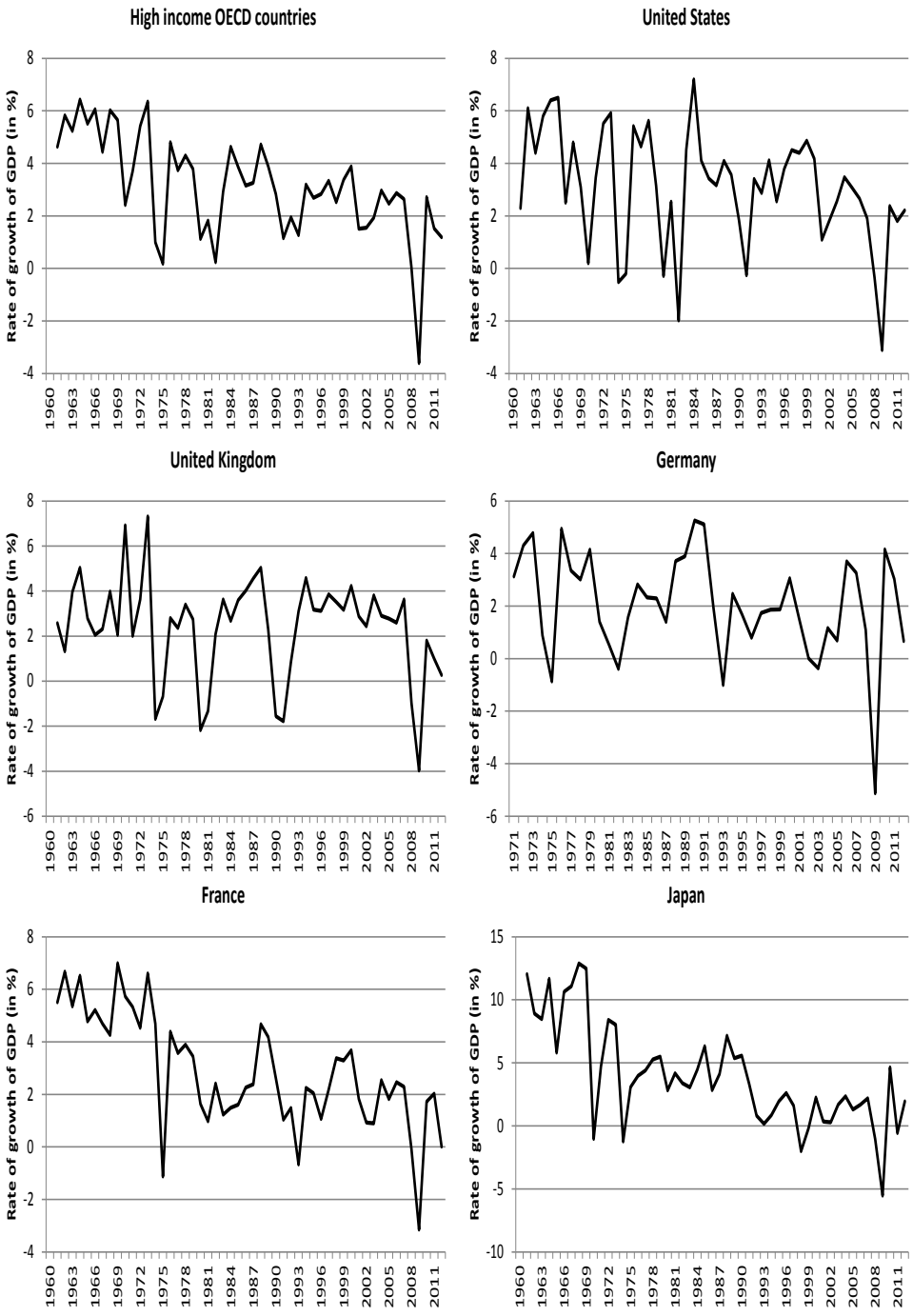
However, this performance is not unexpected in the context of the big distributive shift that happened in the same period in a good number of countries, according to the framework to be presented in following chapters. It is time to describe such a shift.

1.4. THE WAGE SHARE

The graphs in figure 1.2 present the evolution of the adjusted labour wage share for several developed and some developing countries. In the first twelve countries presented, the series represent the evolution of the adjusted wage share of income, with data taken from the AMECO database (accessed on 8/7/2013). In the case of South Korea, the graph shows the evolution of the ratio of compensation of employees to Gross Domestic Product, both registered in won at current prices. The data is from the Bank of Korea. Finally, for Mexico, we use the Labour Income Share of the Total Economy for the wage share, drawn from the OECD database.

Most of the countries presented in these graphs are developed ones, and a significant change in income distribution is discernible in many of them (though not all)

Figure 1.1: Growth rates



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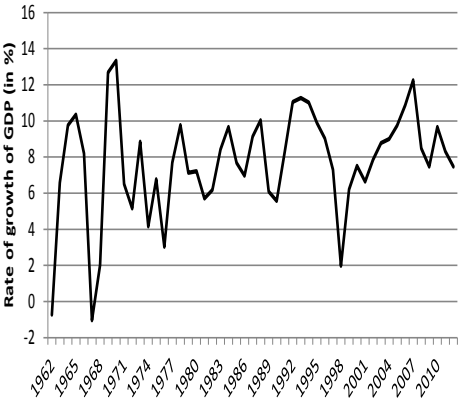
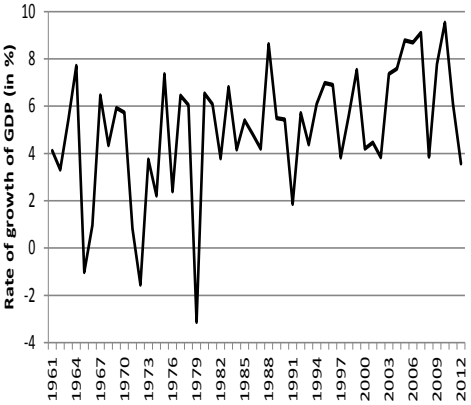
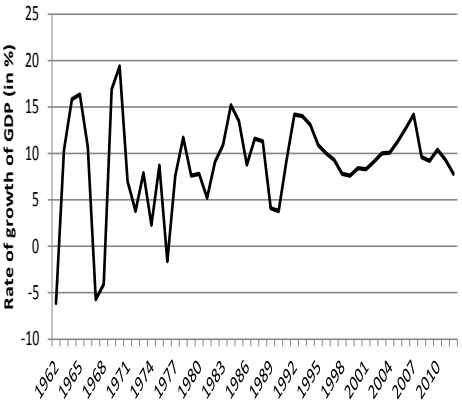
East Asia & Pacific (developing countries only)



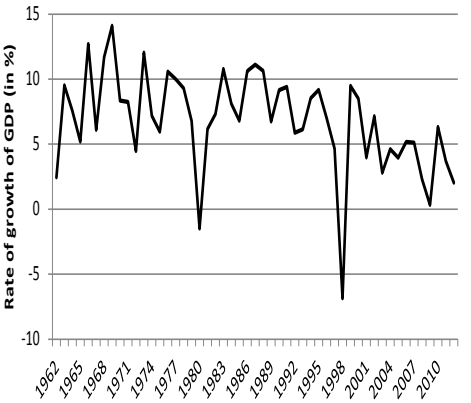
South Asia



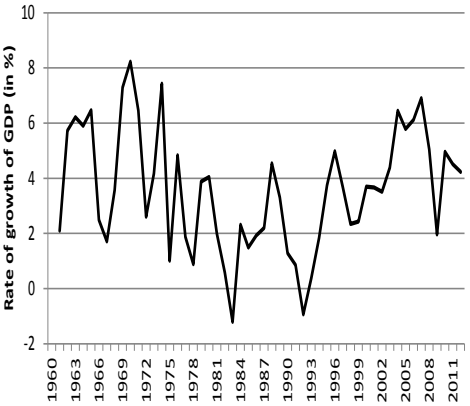
China



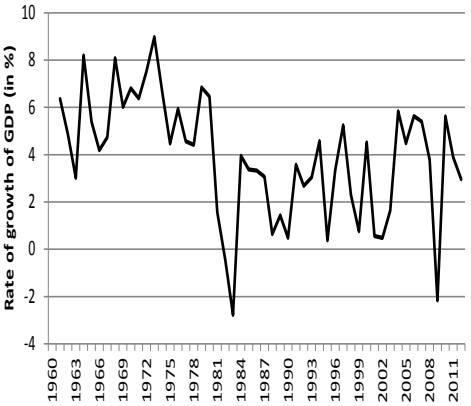
South Korea



Sub-Saharan Africa



Latin America & Caribbean



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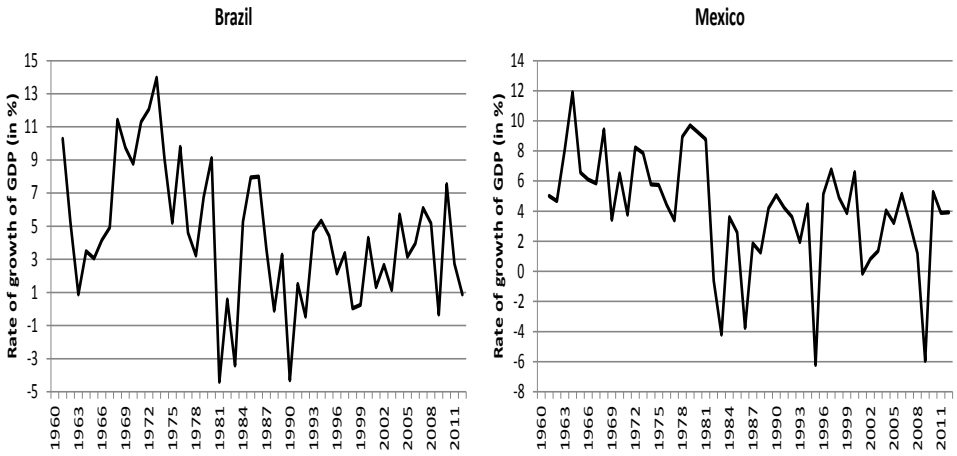


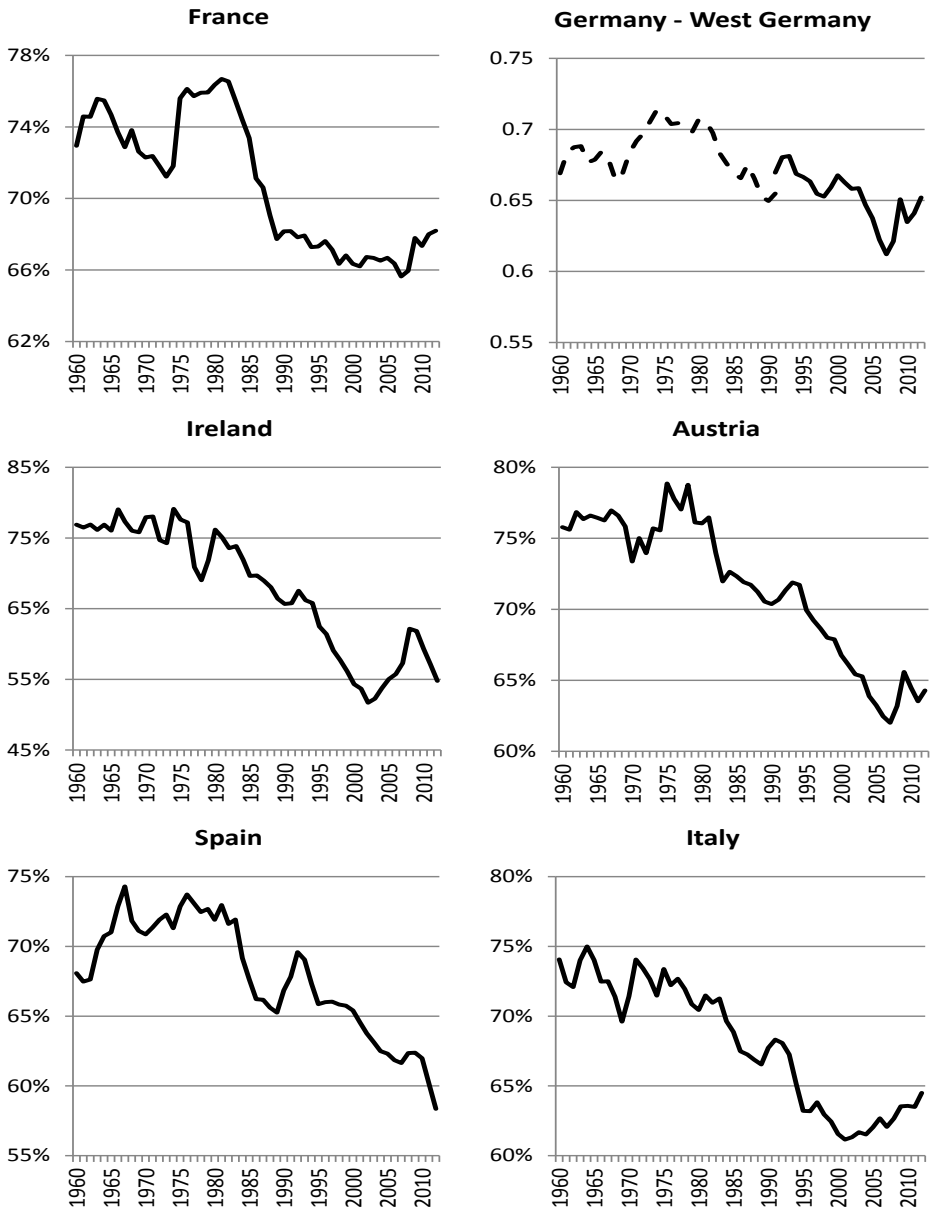
Source: World Development Indicators 2013, World Bank.

starting around the late 1970s and late 1980s. That change is found in countries with "strong" labour market institutions (such as France and Germany) as well as in those "less-regulated" labour markets (such as the USA and Ireland), but not in the UK, where there is no clear trend in the context of important fluctuations. Around that time, a decreasing trend is observable for the wage share. Those findings are corroborated by Jayadev (2005, p. 26-27), BIS (2006), IMF (2007), OECD (2007), Rodriguez & Jayadev (2010) and Storm & Naastepad (2012, p. 116-122).

This result holds not only for major developed countries. The European Commission (2007, p. 243) reports that since the mid-1990s, the labour income share has been on a decreasing trend for most new European Union member countries (Bulgaria, Estonia, Latvia, Poland, Slovenia, and weaker or increasing trends in the Czech Republic, Cyprus, Malta, Romania and Slovakia). Goldberg and Pavcnik (2007) affirm that "the evolution of various measures of inequality suggests that most of the developing countries experienced an increase in inequality during the past two decades" (p. 54). ILO (2011, p. 56) states that "since the early 1990s, the wage share (...) declined in nearly three-quarters of the 69 countries with available information. The decline is generally more pronounced in emerging and developing countries than in advanced ones". Stockhammer (2013, fig. 2) shows similar trends starting from an early period (roughly, early 1980s) for a number of developing countries, according to data availability.

These features also hold for different indicators of income inequality. Hein (2011, p. 8-9; and 2013) notes the worsening in the Gini coefficient before taxes for the US, Japan, the UK, Germany, Italy and other developed countries, and similar results hold for the Gini coefficient after tax. Regarding the top income shares, the seminal work of Atkinson, Piketty & Saez (2011) shows a clear increase in the share of income accruing to the top 1%, a trend starting in the early 1980s, in the US, UK, Canada, Ireland, Australia and

Figure 1.2: Wage shares



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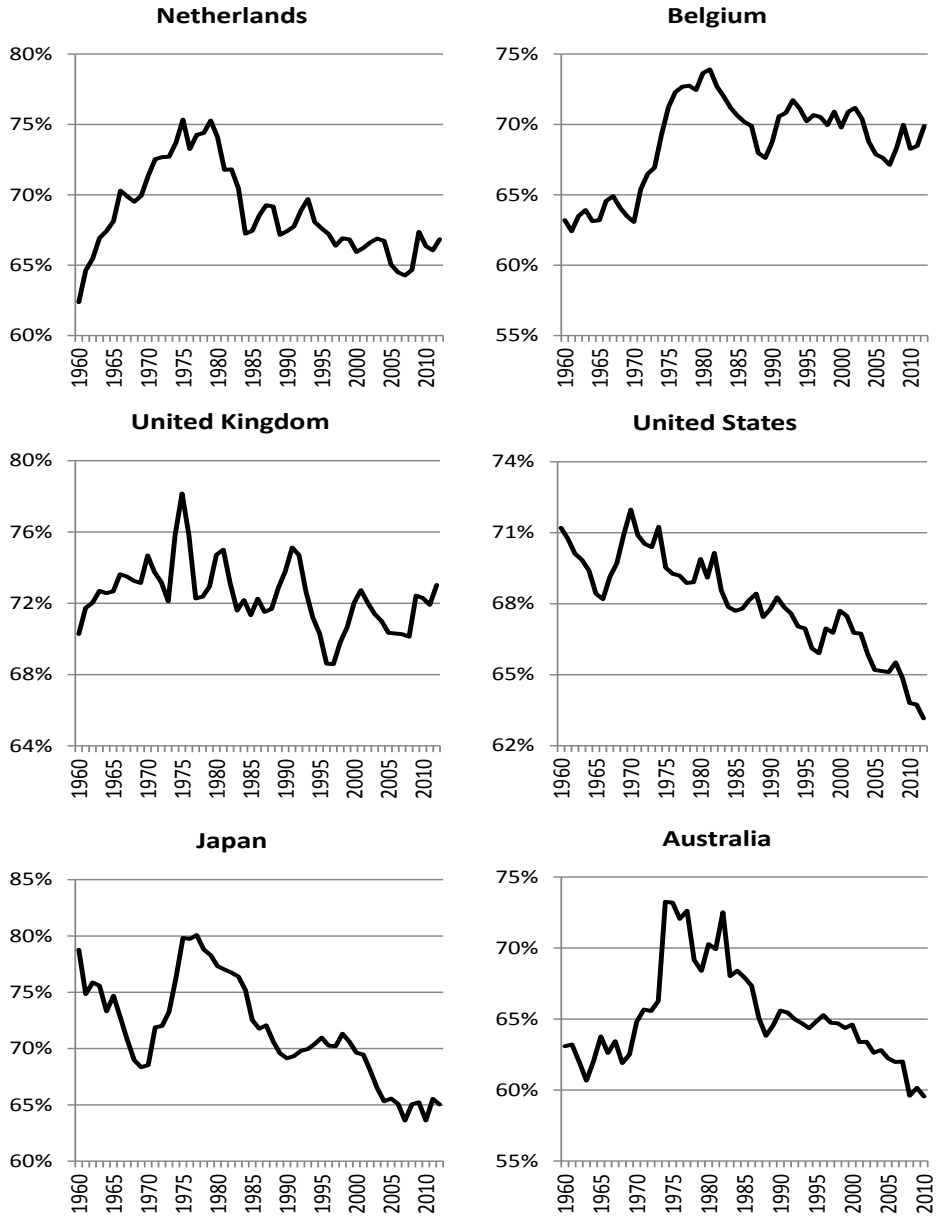

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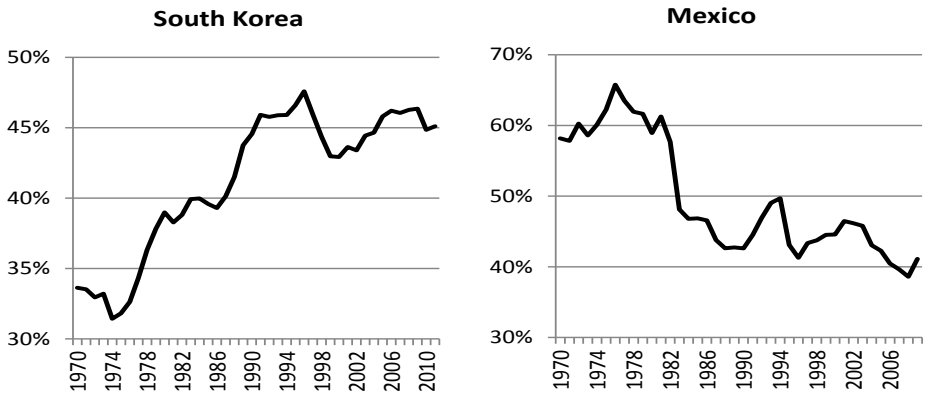


Source: AMECO Database (accessed on 8/7/2013) for France, West Germany/Germany, Ireland, Austria, Spain, Italy, Netherlands, Belgium, United Kingdom, United States, Japan and Australia; own calculations based on data from the Bank of Korea for South Korea, and from the OECD for Mexico.

New Zealand (all English-speaking countries); China, India and Argentina. The trend in continental Europe is more nuanced, as well as in Japan. OECD (2008) also finds similar patterns.

What arguments have been presented to explain these developments? Stockhammer (2009, 2013) carries through a thorough review of the literature, but we can present a sketch of the theories at stake, following his presentation. The explanations can be classified into four groups, with some degree of overlapping, and not necessarily mutually exclusive. Since in neoclassical economics income shares are determined by marginal productivity (Hicks (1966) is the classic on the topic), this approach says that skill-biased technological change represented by the development of information and communication technology (ICT) is the main driver of the increasing disparities in personal distribution, as well as on functional distribution, since it is a labour-saving technical development. Among other supporters of this argument, one can mention Bentolila & Saint-Paul (2003), Jaumotte & Tytell (2007), IMF (2007), EC (2007), and Rajan (2010, p. 24-26 and the references quoted there).

Other two key factors are globalization and bargaining power. On the first topic, emphasizing trade openness and capital mobility, the mentioned work by Goldberg & Pavcnik (2007) provides substantial empirical support, though they caution that "the particular mechanisms through which globalization affected inequality are country, time and case specific; that the effects of trade liberalisation need to be examined in conjunction with other concurrent policy reforms" (p. 78). Their results are in line with those of Wood (1997), IMF (2007), and ILO (2011), though in the latter case results are not so robust for Latin American countries when one takes into consideration labour market deregulation.

Globalization itself has diminished the bargaining power of labour, and coupled with labour market deregulation has affected negatively the labour income share. Globalisa-

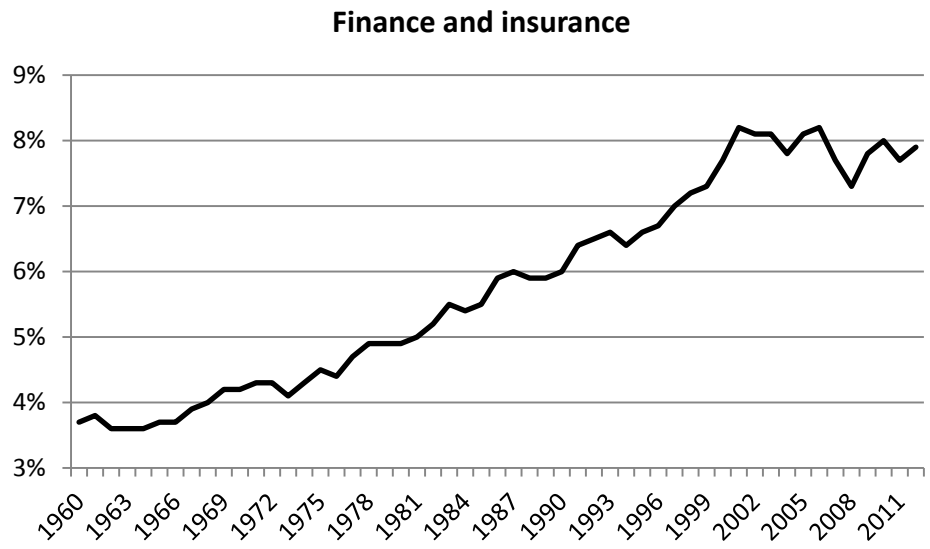
tion is not the only factor affecting bargaining strength, but the effect of labour market institutions is complex to measure. In general, a robust finding in most of studies is that greater wage bargaining (not at a firm level, but rather at a sectoral or higher level) increases the wage share (Checchi and García-Peñalosa (2005)). ILO (2011) finds a similar impact of union density, though EC (2007) and IMF (2007) do not get those results. The impact of labour market deregulation on income inequality has been defended, rather surprisingly, by the former Chairman of the Federal Reserve Board, Alan Greenspan, in his testimony before the US Congress, in 1997, though he also stressed the impact of technical change on the bargaining position of workers and their "job insecurity" (it can be obtained here: `http://commdocs.house.gov/committees/bank/hba38677.000/hba38677_0f.htm`). To quote in extent:

> "Atypical restraint on compensation increases has been evident for a few years now and appears to be mainly the consequence of greater worker insecurity, possibly owing to the rapid evolution of technologies in use in the workplace. Technological change almost surely has been an important impetus behind corporate restructuring and downsizing. Also, it contributes to the concern of workers that their job skills may become inadequate.
>
> Certainly, other factors have contributed to the softness in compensation growth in the past few years. The sharp deceleration in health care costs, of course, is cited frequently. Another is the heightened pressure on firms and their workers in industries that compete internationally. Domestic deregulation has had similar effects on the intensity of competitive forces in some industries. In any event, although I do not doubt that all of these factors are relevant, I would be surprised if they were nearly as important as job insecurity."

The fourth argument presented as an explanation of the declining wage share and the increase in personal income disparity, is financial deregulation, financial openness and the overall process of "financialization" of developed and developing economies. The arguments are summed up in Hein (2012, chapter 2) and extended in Hein (2013), where the author sketches the theoretical channels through which the wage share might be affected by the financialization process, defined as "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein: 2005, p. 3). A more detailed explanation of the concept, its bearing in the expansion of the financial sector and the process of debt accumulation by the private sector is provided in Palley (2008, 2013).

If the wage share of the financial sector is lower than in the non-financial sector, then a shift in the sectoral composition of the economy in favour of the former will tend to reduce the aggregate wage share. The increase in the size of the financial sector, along with its impact on real productivity, is treated in Cecchetti & Kharroubi (2012), who study the relation of different indicators of financial development (private credit growth, bank credit, financial sector share in total employment) with economic growth and productivity growth. They find that the relation is that of an inverted U-shape, which implies that too large a financial sector has negative consequences on the economic

Figure 1.3: Finance and insurance as % GDP USA



Source: Bureau of Economic Analysis.

performance, in their view due to a competing force with the real sector for scarce resources (Cecchetti & Kharroubi: 2012, p. 14). The next figure, shows the evolution of the value added by the finance and insurance industry as a share of the US GDP, with data taken from the Bureau of Economic Analysis (accessed on 29/07/2013, `http://www.bea.gov/iTable/index_industry.cfm`). Philippon (2012) reached similar results, and the same trend was found in the UK by Burgess (2011), at least since 1995.

In turn, Dünhaupt (2012) finds that actually the wage share of the finance industry is lower than in the non-financial sector, which coupled with the structural shifts recorded by Cecchetti & Kharroubi (2012) among others provides some support for that thesis. Stirati (2010b) also counts the development of the service sector (including finance) as a major factor in the change of income distribution in Italy and other European countries.

Another stylized channel through which financialization has affected the wage share, and income distribution in general, is through the substantial increase in top management salaries, and capital gains on financial asset holdings. Lazonick (2011, 2012) and Lazonick & O'Sullivan (2000) analyse the changes in the management of corporations and their increased appetite for stock buy-backs, and therefore share price increase as a significant source of income. Wolff & Zacharias (2009) affirms that returns from asset holdings and different types of wealth associated with rentiers' income play an important role in explaining the evolution of income inequality in the US. Epstein & Power (2003), Epstein & Jayadev (2005) and Hein & Schoder (2011) highlight the importance of interest payments as an increasing proportion of the profit share for OECD countries, lending more support to the importance of higher rentiers' income for earnings inequal-

ity. Other studies with results broadly in line with those presented above are ILO (2011) and Orhangazi (2008), in the latter case dealing with the US economy. Finally, Jayadev (2005, chapter 2), finds a significant negative impact of capital account liberalization on the wage share for over a hundred countries, using panel data from the United Nations National Accounts Statistics Database. These results match those from Stockhammer (2009) who also finds a negative effect of financial globalization on income distribution. It is turn then to see some characteristics of this "financial globalization".

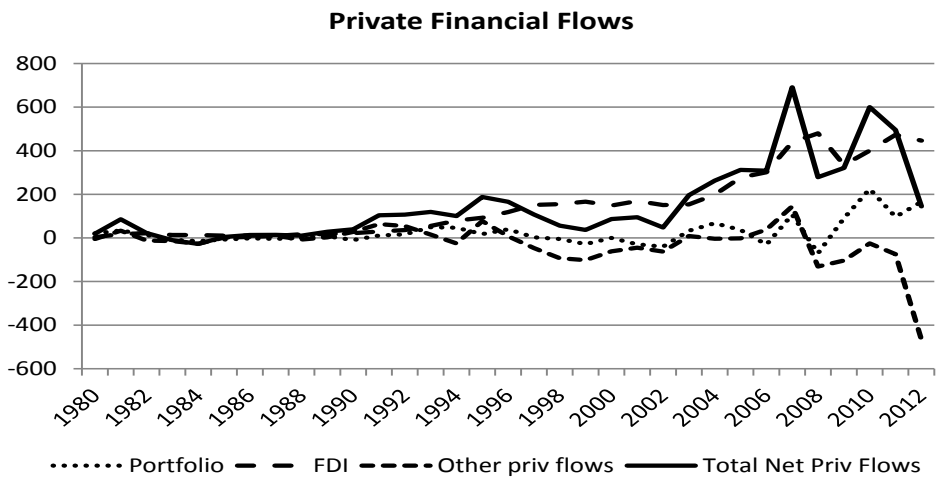
1.5. INTERNATIONAL CAPITAL FLOWS

With the demise of the Bretton Woods international payments system, there has been an upsurge in financial movements across the globe. The restrictive policies regarding the financial system that came up from the post war agreements slowly but steadily eroded, and what Keynes called a new orthodoxy was replaced by its opposite, namely the belief in and the pursuit of liberalized financial markets (Helleiner: 1994). The literature on the evolution of capital and financial flows in the last decades of capitalism is almost infinite, and so are the perspectives with which the subject is approached.

Orthodox analyses of capital flows, and in particular financial flows, can be found in the papers collected in Edwards (2007); Forbes & Warnock (2011) provide a cyclical analysis of the determinants of financial flows, while reviewing the literature on the topic. A more long-term historical analysis, though still within the mainstream, is found in Eichengreen (2003). The Bank of International Settlements (BIS) has devoted numerous conferences and meetings to the topic, and one can mention the series of papers of BIS (2008), in particular the piece by Mihaljek, with the exposition of many central bankers of developing countries regarding the experience of their economies with capital flows; and also the papers summed up in BIS (2012a, 2012b), about the management of capital flows in Latin American economies, or the studies on financial globalization, its impacts and its aftermaths on the financial crisis of 2008. Finally, Marone (2007) provides a "mapping" of capital flows, with a focus on emerging markets. From an heterodox perspective, we recommend the surveys of Ocampo, Rada & Taylor (2009), Palma (2009, 2012), Stiglitz et al (2006, especially chapter 10), and Chandrasekhar (2008), among others. In Chang et al (2001) there is an analysis on the impact of financial flows in the East Asian economies, while Correa & Vidal (2006), Ferreiro Aparicio et al (2007), Studart (2006), Agosin & Huaita (2011) and Marshall (2012), among others, study the cases of Latin American economies. However, in this section we present some charts that sum up the aggregate developments covered by those works, and two important characteristics are emphasised: the increase in financial flows and their volatility, focusing on emerging markets.

Taking data from the World Economic Outlook Database, the next graph shows net private financial flows for emerging countries, from 1980 to 2011, in billions of dollars. The components of that concept, as reported by the IMF, are net portfolio flows, net direct investment and other net private flows. We will explain the main driver of "other" net private flows in a moment, but first, we present the overall picture.

Figure 1.4: Net private flows to emerging countries

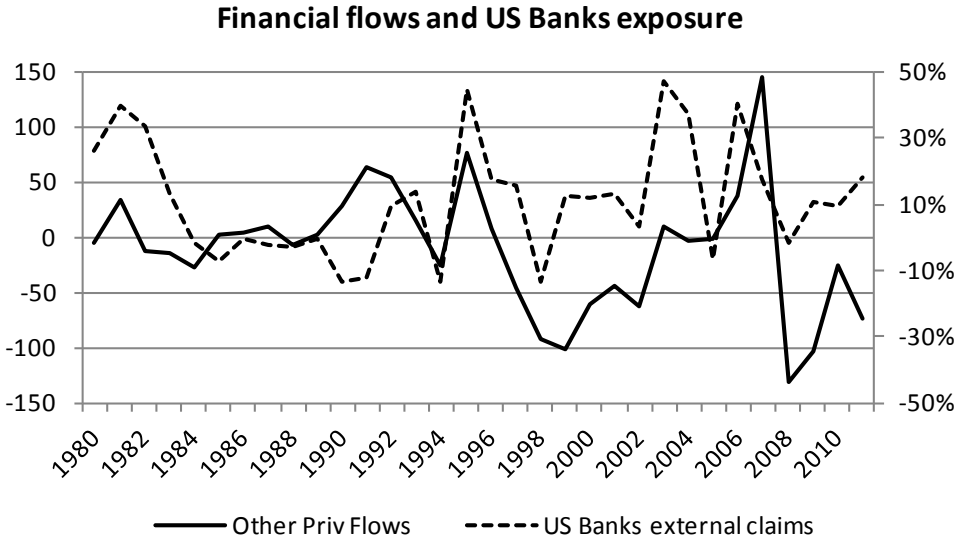


Source: World Economic Outlook 2013 Database, International Monetary Fund.

From the graph several conclusions can be extracted. First of all, private financial flows to emerging economies increased substantially, particularly in the last two decades. In second place, even though net direct investment seems to constitute the bulk of private flows, the other two components (portfolio and other private flows) have the most volatile behaviour, with fluctuations widening with the lapse of time. Third, it must be remembered that these are *net* flows. Though increased exposure in gross inflows might be hedged through other financial instruments, its importance is not reduced as long as counterparty risk remains in the picture so that a default chain might set in and hedging instruments become worthless, causing severe capital losses and disruption in capital markets. And finally, when we examine what those "other" net private flows are, we see that they are strongly correlated with periods of expansion and contraction of international bank lending. Figure 1.5 plots, again, "other net private flows", and the annual rate of change of the external non-bank claims of United States' banks vis-a-vis the rest of the world, as reported by the Bank of International Settlements (Appendix 2B of the Locational Banking Statistics, comparing the year-to-year change in the fourth-quarter statement). After a decade in the 1980s in which US banks were in difficulties due to the Latin American Debt crisis (we can see how the rate of growth of external claims falls abruptly in the middle of that decade), the expansion of US (and other developed countries') banks has been a major driver of the international liquidity, with the crises episodes clearly reflected in the data (Chandrasekhar: 2008, p. 9-11). The recent divergence between the claims of US banks on the rest of the world and the decline in other private flows is likely to be a reflection of the Eurozone crisis and the retraction of foreign lending by and to European banks.

Figures 1.6a to 1.6f, go a little deeper into the geographical distribution of the destinations of these flows. From the same WEO Database, we obtain the composition of

Figure 1.5: Financial Flows and US Banks



Source: World Economic Outlook 2013 Database, International Monetary Fund, and Bank of International Settlements.

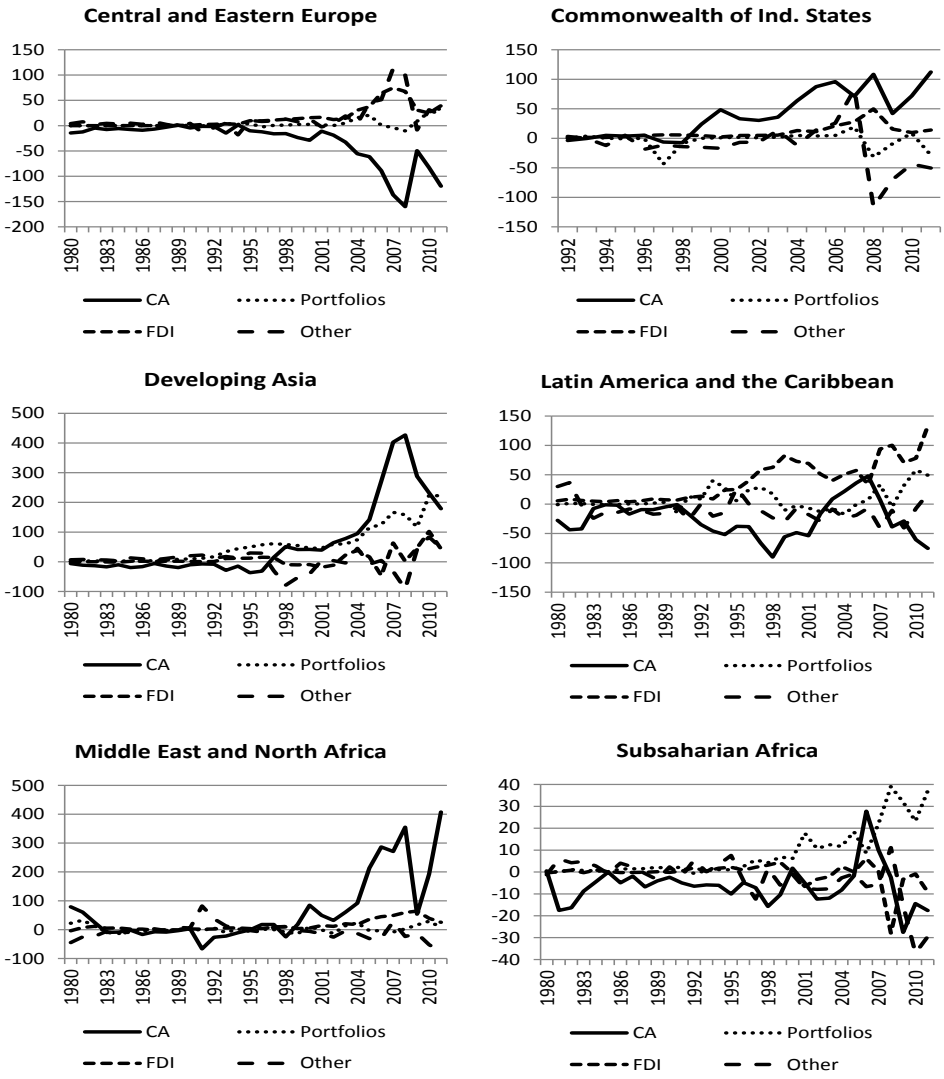
private flows between 1980 and their magnitude, in billions of dollars. We also include the current account balance (CA). In the case of the former USSR countries, grouped in the Commonwealth of Independent States (CIS), there is data starting only from 1992.

The first remarkable feature than can be observed is the widening in the fluctuations and the imbalances. In some cases, such as in the CIS and in the Middle East, the improvement in the CA in the last decade was mainly due to the increase in commodities prices. But that factor is not behind the improvement in the Asian current account, though there are divergent stories in all these cases. In any case, current account deficits and surpluses have reached magnitudes unseen in previous decades, both in nominal terms as in real terms, and in proportion to economic activity.

Another feature that can be inferred from the figures below is that private flows did not necessarily flow to countries that need the funds to equilibrate their foreign balance, but also to countries that do not require in principle foreign savings, since they are becoming net creditors (what a positive current account implies). That is clear in Asian countries but also in many Latin American and Middle East countries during certain periods.

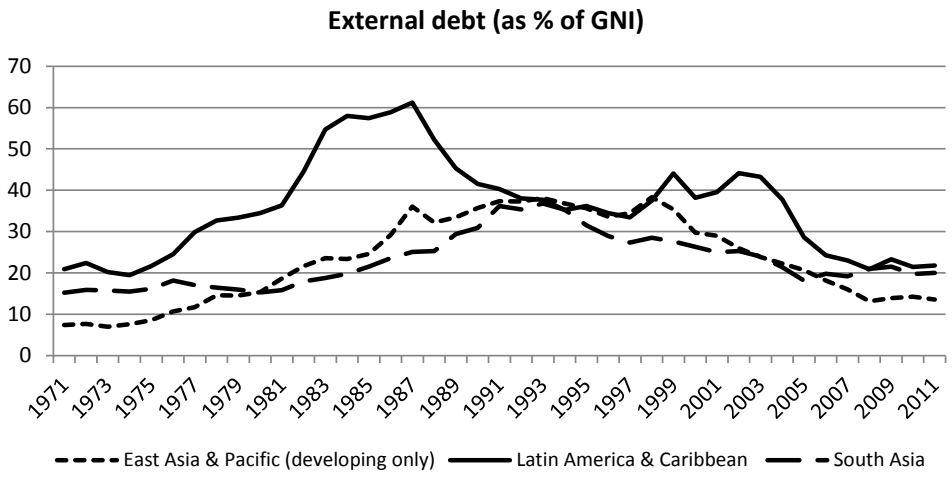
The opposite side of this explosion of financial flows, is an explosion of foreign debt. External debt peaked at different times in different regions, since the opening of the capital account and the internal financial deregulation process did not occurred at the same time everywhere, but the timing and the changes leave no place to doubts. Figure 1.7 shows the evolution of external debt as a percentage of gross national income.

Figure 1.6: Net private inflows



Source: World Economic Outlook 2013 Database, International Monetary Fund.

Figure 1.7: External debt in emerging countries



Source: World Development Indicators 2013, World Bank.

In the last decade, external debt has fallen as a share of GNI in the regions presented above. However, the debt build-up during the 1990s coincides with the integration to world financial markets, and that can also be seen in the East Asian countries and Latin American as well. The 1980s were a decade of economic stagnation for Latin America, and the increased foreign borrowing of the late 1970s (jumping from 22% of GNI in 1975 to 36% in 1981) was a major cause of such breakdown, and it was the ensuing long-lasting recession that kept the debt constraint at such high levels. In the East Asian case, something similar occurred during the 1990s, but the channels of transmission were different, something that will be mentioned later on in chapter six. The current account surpluses of the last decade helped to ease the burden of foreign debt. But the number of balance of payments crises in the last thirty years is too high to be ignored. Mexico in 1982 and 1994; Argentina in 1980-1982, 1995 and 1998-2001; Brazil in 1994 and 1998; Chile in 1981-1988; South Korea, Thailand and Indonesia among others in 1997, Russia in 1998; Turkey in 2001 and the list continues.

1.6. STRUCTURE AND PURPOSE

The objective of this thesis will be to integrate an analysis of international financial flows and foreign debt into an existing framework, the Kaleckian approach, and to prove the usefulness of such intent in empirical terms and for policy-making analysis. The main characteristic of the mentioned approach is the interactions it allows between different distributive patterns and economic growth, and therefore a review is in order of

different lines of argument in the literature regarding the relation between income distribution and economic activity, as well as a proper and thorough explanation of what the Kaleckian models are about.

An empirical study using the guidelines of this current of thought is performed for the Argentinean economy, replicating analyses and methods applied to numerous countries. However, we have not introduced at this stage the impact of financial flows. They will be included in the theoretical analysis carried out in chapter five and six, though with different methodologies in each case. In chapter five, we develop a stock-flow consistent model with two countries that trade goods and financial claims between each other, with a thorough and encompassing depiction of decision making by different institutional sectors, in different exchange rate regimes. With this model in hand, we perform several simulations which give us insight into the interactions and interdependence of distribution, savings and financial constraints of developing countries when faced with external debt accumulation in a foreign currency, as well as a more generally valid picture of fiscal performance, domestic savings, current account imbalances and financial flows.

There are solid theoretical reasons to adopt the stock-flow modelling methodology. A review is conducted in chapter four presenting its characteristics, origins, developments and pertinence for the aim of this thesis. And as an addendum, reinforcing the importance we attribute to previous ideas as a source of path-maker and as a basis upon which to build and develop knowledge, we review what John Maynard Keynes had to say about the (necessity of a) management of international financial flows, a survey not frequently performed.

In chapter six we develop a model more suitable for econometric purposes. It is in this model where the objective of the thesis sees the light, because it integrates the ebb and flow of international financial capital, expressed in the possibility of borrowing in international markets by domestic firms, into the decision making process of firms regarding not only their investment planning (taken into account aggregate demand and profitability as the drivers of capital accumulation) but also their pricing decisions, and through its impact on the exchange rate the income claims of other sectors of the economy such as workers. In other words, in this model we integrate international financial flows into the analysis of income distribution and economic growth.

After exploring some of the properties of this model, it is used as a theoretical backbone for a time series analysis of two developing economies which were exposed to external volatility, but which nonetheless went through different experiences in the last decades. We refer to South Korea and Mexico. The results reflect these different trajectories, showing the empirical relevance of the theoretical framework but also paving the way towards its enrichment.

2

INCOME DISTRIBUTION AND GROWTH

2.1. CLASSICAL, NEOCLASSICAL, MARXIST, KEYNESIAN AND (SOME) POST-KEYNESIAN PERSPECTIVES

This thesis adopts a Kaleckian approach to analyse the role of distributive conflict in economic growth. In this chapter we will explain the main contributions that Kaleckian economics has to offer to the topic at hand, and we will review some of the works that tried to extend the basic Kaleckian model in order to study different issues, ranging from monetary and financial problems to open-economy matters, among others. We will also highlight what is the specific contribution of this thesis to that line of literature, namely the study of foreign debt in a version of a Kaleckian model, with the tools and characteristics previously presented.

But Kaleckian economists are not the only nor the first to tackle the issue of the interaction between distributive conflict and economic growth, and its message needs to be contextualized with what other theories have said on the topic. This will be done in the first part of this chapter, when we survey the relevant literature, reviewing how Classical, Neoclassical, Marxist and (Post)Keynesian economics analysed the influence of income distribution and growth. In order to do that, we have selected "representative" writings or authors within each line, for otherwise this thesis would evolve into a whole treaty navigating exclusively in the history of economic thought. We trust that our selection reflects the main points and conclusions of each school, according to their analytical foundations and traditional assumptions.

2.1.1. CLASSICALS

The issue we are tackling in this Chapter, the impact of changes in the functional income distribution on economic growth, is one of the oldest and most controversial subjects of discussion in economic theory. Functional income distribution presupposes a framing of the society in terms of income classes, something that seemed quite natural to Classical economists. In wiser words than mine:

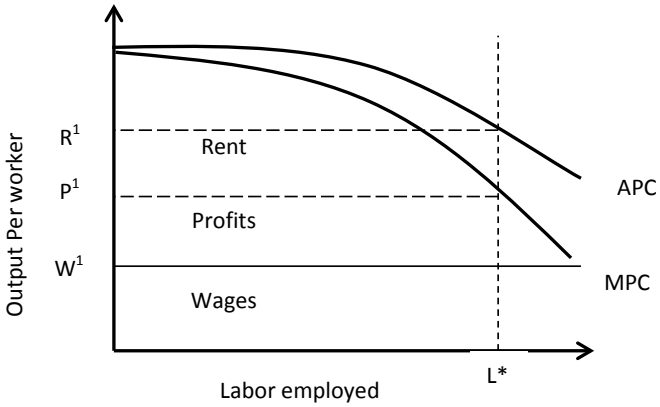
> "The produce of the earth – all that is derived from its surface by the united application of labour, machinery, and capital, is divided among three classes of the community; namely, the proprietor of the land, the owner of the stock of capital necessary for its cultivation, and the labourers by whose industry is cultivated.
>
> But in different stages of society, the proportion of the whole produce of the earth which will be allotted to each of these classes, under the names of rent, profit and wages, will be essentially different. (...) To determine the laws which regulate this distribution, is the principal problem in Political Economy" (Ricardo: 1951 [1821], p. 5)

It would have to wait till Keynes for that definition of the purpose of the economic science to include a study of the level of "the produce of the earth" and other things, what we call output. Even so, classical economists were far from unanimity on the specific mechanisms, conclusions and views, with wider differences than can be found today in the economic discourse and academics. As it cannot be otherwise, in Adam Smith we can find arguments that defend and uphold opposing positions.[1]

In the history of economic thought, the most echoed argument was the one which posits that an income distribution in favour of the interests of the capitalist class is a necessary condition for the process of capital accumulation and growth. This idea, that we will name "supply-led", can be identified in familiar expressions such as "saving is another form of spending"; it is already present in Adam Smith and its most elaborated form, within the Classical doctrine, is the work of David Ricardo, whose *"Principles of Political Economy and Taxation"* first appeared in 1817. Given his theory of rent and the labour theory of value, Ricardo affirmed that as accumulation progressed products that make up the consumption basket of workers tended to increase in price, at the same time as the amount payable as rent to landlords by capitalists rose due to diminishing returns to scale in agriculture. Therefore, capitalist' profits diminished, and so did the incentive to expand capital (investment) and production. The distributional conflict highlighted initially by Ricardo is a conflict between industrialists/the new capitalist class and landlords/the rentiers. This can be shown by presenting a graph depicted in Kaldor (1955, p. 85), in figure 2.1, which shows, in the vertical axis, output per worker in the *agricultural* sector (which was basically the one that produced most of workers' consumption basket) and in the horizontal axis, labour employed in that sector.

[1] The most recent and detailed analysis about the theory (or theories) of economic growth presented by Adam Smith is Aspromourgos (2009).

Figure 2.1: Ricardo's model



As accumulation proceeded, more labour was employed. But marginal returns were decreasing, as shown by the curve MPC, the marginal productivity curve. Average returns were decreasing as well. The story goes as follows: Initially, when few workers were employed in that sector, either because land was not entirely appropriated or because of its high productivity levels (reflected in a high level of output per worker), rent was low, and most of the product went to profits and wages. As accumulation proceeded and more capital had to be employed, or less fertile lands had to be cultivated, diminishing returns to scale set in. Capitalists in the first-cultivated lands earned much more that capitalists that worked less fertile fields, or that were farther away from the urban center. Competition made profits to fall to that lower level, and the difference between the average and the marginal productivity curve, was the landlord's share. So, rents increased and profits decreased in the agricultural sector as more capital was employed. Free competition assured the equalization of profits across industry.

In this graph, wages are taken as exogenously given at a certain level, commonly understood to be the subsistence level. This is taken for simplicity, but the reader should be aware that that was not Ricardo's position. Stirati (2010a) reviews the different interpretations on the topic. One can say, though, that as accumulation proceeded, and because of decreasing returns in agriculture, more and more labour had to be employed in order to produce the consumption goods for workers, even when the real wage remained constant. This provides a fuel for conflict between capital and labour. But it is not the only one.

Technical progress in the consumption good sector tended to increase output per worker, shifting the APC and MPC curves upwards in Figure 1, and rising therefore the profit share. However, in the third edition of his *Principles*, published in 1821, Ricardo added a chapter called "On Machinery". In his own words:

> "Ever since I first turned my attention to questions of political economy, I have been of opinion, that such an application of machinery to any branch of production, as should have the effect of saving labour, was a general good,

> accompanied only with that portion of inconvenience which in most cases attends the removal of capital and labour from one employment to another. It appeared to me, that provided the landlords had the same money rents, they would be benefited by the reduction in the prices of some of the commodities on which those rents were expended, and which reduction of price could not fail to be the consequence of the employment of machinery. The capitalist, I thought, was eventually benefited precisely in the same manner. He, indeed, who made the discovery of the machine, or who first usefully applied it, would enjoy an additional advantage, by making great profits for a time (...). The class of labourers also, I thought, was equally benefited by the use of machinery, as they would have the means of buying more commodities with the same money wages, and I thought that no reduction of wages would take place, because the capitalist would have the power of demanding and employing the same quantity of labour as before, although he might be under the necessity of employing it in the production of a new, or at any rate of a different commodity. (...) I am convinced, that the substitution of machinery for human labour, is often very injurious to the interests of the class of labourers. (...) It follows, if I am right, that the same cause which may increase the net revenue of the country, may at the same time render the population redundant, and deteriorate the condition of the labourer" (Ricardo: 1951 [1821], p. 386-388).

> "In this case, then, although the net produce will not be diminished in value, although its power of purchasing commodities may be greatly increased, the gross produce will have fallen from a value of 15,000l. to a value of 7,500l., and as the power of supporting a population, and employing labour, depends always on the gross produce of a nation, and not on its net produce, there will necessarily be a diminution in the demand for labour, population will become redundant, and the situation of the labouring classes will be that of distress and poverty" (Ricardo: 1951 [1821], p. 389-390).

We have therefore, another channel by which a conflict between labour and capital may occur. And in Ricardo's time, it was already happening, with several episodes of angry workers attacking and destroying modern factories. Many examples are quoted in the first volume of Marx's Capital. One can even say that Marx took up this idea (and others) from Ricardo and placed it at the center of a class-conflict theory. More on that below.

Coming back to our topic, we have shown that as accumulation progressed, profits decreased, in Ricardo's theory, and that would put a brake on accumulation itself. Underlying this proposition was the so called Say's Law, which is manifested by the fact that stagnation in production is not caused by stagnation in demand, it is caused by stagnation in supply. The following quote is as clear as can be:

> "M. Say has, however, most satisfactorily shown, that there is no amount of capital which may not be employed in a country, because demand is only limited by production. No man produces, but with a view to consume or

> sell, and he never sells, but with an intention to purchase some other commodity, which may be immediately useful to him, or which may contribute to future production. By producing, then, he necessarily becomes either the consumer of his own goods, or the purchaser and consumer of the goods of some other person." (Ricardo: 1951 [1821], p. 290)

In words of Joan Robinson (1980 [1978], p. 81): "Ricardo overlooked the possibility of effective demand; he supposed that both workers and landlords would spend all their incomes currently as they were received while capitalists would devote most of their profits to financing additions to stock. Thus he made saving govern investment". The limit to growth in Ricardo's theory was set by supply. However, as we mentioned, full capital employment did not meant full labour employment, at least in the last edition of his *Principles*.

The logical consistency of Ricardo's argument swept away any kind of opposition and "conquered England as completely as the Holy Inquisition conquered Spain" (Keynes: 1973 [1936], p. 33). But then, we have Marx. We include Marx among the "conquered". The law of the falling tendency of the rate of profits plays the same role that the theory of differential rent had in Ricardo, in order to justify the fall in investment. Quoting Foley (2008, p.123-124) aptly expresses this when he says "Marx also believes that the rate of profit tends to fall as capital accumulates but cannot accept Ricardo's model of diminishing returns because Marx, like Smith, believe that it is the inner nature of capital to overcome diminishing returns through technical innovations. He also believes that the rate of surplus value – the ratio of surplus value to variable capital, or of profits to wages – tends to rise with capitalist development (...) The rate of profit can fall with a rising surplus value per worker only if the capital invested per worker rises fast enough to offset the increase in the surplus value per worker". In Marx's writings, one can find passages such as this, in which he seems perfectly in agreement with Say's Law:

> "It is sheer tautology to say that crises are caused by the scarcity of effective consumption, or of effective consumers. The capitalist system does not know any other modes of consumption than effective ones, except that of sub forma pauperis or of the swindler. That commodities are unsaleable means only that no effective purchasers have been found for them, i.e., consumers (since commodities are bought in the final analysis for productive or individual consumption). But if one were to attempt to give this tautology the semblance of a profounder justification by saying that the working-class receives too small a portion of its own product and the evil would be remedied as soon as it receives a larger share of it and its wages increase in consequence, one could only remark that crises are always prepared by precisely a period in which wages rise generally and the working-class actually gets a larger share of that part of the annual product which is intended for consumption. From the point of view of these advocates of sound and "simple" (!) common sense, such a period should rather remove the crisis. It appears, then, that capitalist production comprises conditions independent of good or bad will, conditions which permit the working-class to enjoy that relative prosperity only momentarily, and at that always only as the harbinger of a

coming crisis." (Marx: 1885, Chapter XX, Part I.4)

Even more, we can find this theory of the business cycle in the first volume, in which a fall in profits causes accumulation to slow down, and a fall in wages gives it back its speed. Quoting again in extent:

> "In this case it is evident that a diminution in the unpaid labour in no way interferes with the extension of the domain of capital. — Or, on the other hand, accumulation slackens in consequence of the rise in the price of labour, because the stimulus of gain is blunted. The rate of accumulation lessens; but with its lessening, the primary cause of that lessening vanishes, i.e., the disproportion between capital and exploitable labour power. The mechanism of the process of capitalist production removes the very obstacles that it temporarily creates. The price of labour falls again to a level corresponding with the needs of the self-expansion of capital, whether the level be below, the same as, or above the one which was normal before the rise of wages took place. We see thus: In the first case, it is not the diminished rate either of the absolute, or of the proportional, increase in labour power, or labouring population, which causes capital to be in excess, but conversely the excess of capital that makes exploitable labour power insufficient. In the second case, it is not the increased rate either of the absolute, or of the proportional, increase in labour power, or labouring population, that makes capital insufficient; but, conversely, the relative diminution of capital that causes the exploitable labour power, or rather its price, to be in excess. It is these absolute movements of the accumulation of capital which are reflected as relative movements of the mass of exploitable labour power, and therefore seem produced by the latter's own independent movement. To put it mathematically: the rate of accumulation is the independent, not the dependent, variable; the rate of wages, the dependent, not the independent, variable. Thus, when the industrial cycle is in the phase of crisis, a general fall in the price of commodities is expressed as a rise in the value of money, and, in the phase of prosperity, a general rise in the price of commodities, as a fall in the value of money." (Marx: 1867, Chapter XXIII, section 1).

The conflict between labour and capital is plain to see, in that paragraph and in his whole work. Industrial capital was also in conflict with financial capital, because Marx also viewed interest as a deduction of profits (for an opposing treatment, see Pivetti (1991)). And the quotations previously presented point towards a rejection, quite explicitly, of underconsumptionists theories of capitalist crises (The first quotation actually ends with the words: "[Ad notam for possible followers of the Rodbertian theory of crises.—F.E.]",). However, many Marxist economists interpreted Marx's analysis precisely in terms of underconsumption. Sweezy (1942), especially in chapter 10, presents the case for the underconsumptionist version of the "fundamental contradiction of capitalism", by making use of one of Marx's best inventions, the scheme of reproductions. Sweezy (and Rose Luxembourg)'s case is solidly established over this quote from Volume III:

> "The conditions of direct exploitation, and those of realising it, are not identical. They diverge not only in place and time, but also logically. The first are only limited by the productive power of society, the latter by the proportional relation of the various branches of production and the consumer power of society. But this last-named is not determined either by the absolute productive power, or by the absolute consumer power, but by the consumer power based on antagonistic conditions of distribution, which reduce the consumption of the bulk of society to a minimum varying within more or less narrow limits. It is furthermore restricted by the tendency to accumulate, the drive to expand capital and produce surplus-value on an extended scale. This is law for capitalist production, imposed by incessant revolutions in the methods of production themselves, by the depreciation of existing capital always bound up with them, by the general competitive struggle and the need to improve production and expand its scale merely as a means of self-preservation and under penalty of ruin. The market must, therefore, be continually extended, so that its interrelations and the conditions regulating them assume more and more the form of a natural law working independently of the producer, and become ever more uncontrollable. This internal contradiction seeks to resolve itself through expansion of the outlying field of production. But the more productiveness develops, the more it finds itself at variance with the narrow basis on which the conditions of consumption rest. It is no contradiction at all on this self-contradictory basis that there should be an excess of capital simultaneously with a growing surplus of population. For while a combination of these two would, indeed, increase the mass of produced surplus-value, it would at the same time intensify the contradiction between the conditions under which this surplus-value is produced and those under which it is realised." (Marx: 1894, Chapter XV, section I).

We are of the opinion that ultimately, Marx referred to the falling trend of the rate of profit as the fundamental force behind the stagnation (and dismissal) of capitalism. And to that extent, his theory remains within the boundaries of supply-led accumulation framework, as much as Ricardo. Bellamy Foster (2013) is of the opposing opinion, developing the argument presented by Marx in Value, Price and Profit (1865), in the line of Sweezy's work, which Bellamy-Foster also relates to Kalecki, as we will show some pages below. A different path is followed by Shaikh, in some works that will be mentioned later. An exhaustive review of the literature is clearly beyond the scope of the thesis; we have limited ourselves to show what the contour of the discussion is, and provide the reader with some references if he wants to go deeper into the matter. For this thesis, we can extract two conclusions:

- There are elements in Marx that point towards a study of capitalism in which demand is not taken as given, and in which it plays a key role for accumulation and growth, being influenced by the state and evolution of income distribution.
- However, Marx puts the weight of his argument on a mechanism that plays the same role that diminishing marginal returns to agriculture in Ricardo's theory, namely

to justify the falling trend of the rate of profits as an argument for the stagnation of capitalism. This mechanism is in complete agreement with a supply-side story and with a Say's Law point of view about the role and importance of income distribution for economic growth.

2.1.2. NEOCLASSICALS, OLD AND NEW

Around 1870 a number of authors developed what came to be the origin of marginalist economics, defined by the generalisation in the use of the marginal principle (which Ricardo had only applied to the determination of rent) to the other factors, including a change of emphasis, approach and boundaries, as Dobb (1973) puts it[2]. In his own words:

> "As regards causal influences and determinants, emphasis shifted away from costs incurred in production, and hence rooted in circumstances and conditions in production; towards demand and to final consumption; placing the stress on the capacity of what emerged from the production line to contribute to the satisfaction of the desires, wants, needs of consumers. From this shift of emphasis derived a certain individualist or atomistic bias of modern economic thought – preoccupations with micro-analysis of individual market-behaviour and action and the rooting of economic generalisation on such micro-phenomena. (...)
>
> Secondly and consequentially, what one may call the boundaries of the subject, as well as its structure of causal links and dependencies, were altered significantly, to an extent that was little emphasised or commented upon at the time. The system of economic variables and their area of determination were virtually identified with the market, or with the set of interconnected markets that constitutes the sphere of exchange". (Dobb: 1973, p. 167-169)

Distribution should reflect technical conditions, blurring (or discarding) a social stratification analysis. Diminishing marginal returns are not solely agricultural, but also industrial. Wages and interest are the return for the labour and capital used in production; there is no "net surplus" for the *entrepreneur*. This version is not a caricature of early marginalists thinking: it is actually the clearest exposition of its time, in our view, presented by John Bates Clark (1899, especially chapter seven). To sum up the technical and efficient character of distribution in this theory, a small quotation will do: "A natural price is a competitive price. It can be realized only where competition goes on in ideal perfection – and that is nowhere. It is approximated, however, wherever prices are neither adjusted by a government nor vitiated by a monopoly" (Clark: 1899, p. 77).

[2] A good analysis of the break with previous "Classical" economics (mainly Ricardian) as perceived by the early marginalists themselves, such as Jevons, Walras, Pareto, Fisher, etc., can be found in Mirowski (1984). In essence, the argument is that these economists wanted to apply concepts and analogies from classical mechanics into the discipline. The sole exception was Menger.

There is no denial to the fact that crises could arise, but their explanation relied either on technological shocks, or government interference (or banking policy, somehow treated in a different way than every other capitalist enterprise) and the solution consisted in avoiding the latter and adjusting returns to the former. Examples of technologically-driven business cycles are Schumpeter and Wicksell (in spite of what Schumpeter said)[3]. Examples of monetary-driven business cycle theories are Mises, Hayek and Hawtrey. There is no denial that monetary matters did have a substantive role in the theories of the former, but they placed more weight on real factors. Solutions to the crises? One need to look no further than the economists Keynes was arguing with: Hayek, Robbins, Pigou. In each case, the policy advice was to lower the nominal (and real) wage so as to stimulate labour demand and employment. It was the fault of government and of trade unions that this did not happen.

Clark's formulation permeated into the canonical Neoclassical formulation on economic growth, Solow's growth model. The following quotation is a perfect example:

> "(...) we are assuming that full employment is perpetually maintained. (...) The labour supply curve is a vertical line which shifts to the right in time as the labour force grows according to (4) [the constant exogenous growth rate of population]. Then the real wage rate adjusts so that all available labour is employed, and the marginal productivity equation determines the wage rate which will actually rule" (Solow: 1956, p. 67-68).

Policy recommendations drawn from the Neoclassical approach seek to facilitate this real wage adjustment to what exogenous productivity is assumed to be. This explains the proposals aimed at a "flexibilization" of the labour market, a reduction in benefits to workers (such as subsidies through the welfare state and less labour protection) and taxes to employers, decentralization in wage bargaining in order to limit union power, etc. These policies look for an increase in labour supply, a decrease in the capacity of wages to rise, and a change in capital-labour relations within companies favouring labour mobility and firm organisation so as to boost productivity from an organisational point of view. In this sense, even though labour productivity is clearly the independent variable and the real wage the endogenous one in Solow's analysis, policies based on it try to affect both in a clearly and definite direction: distribution should be accommodated to what labour productivity determines, and real wage adjustment will take care of the level of employment.

As for savings, the work by Solow (joined on this point by the so-called "new theory of endogenous growth", which began with the work by Paul Romer (1986)) posits a positive relation between savings and growth rates[4].

[3] Some traces of a business cycle theory in Wicksell can be found in his Lectures, Vol. II, p. 209-214. A lecture given by him in 1907 on the issue of crises was printed for the first time in English in 2001 (Wicksell: 2001), with a short introduction by Hagemann (2001). A thorough analysis of Wicksell's writings on cycles and crises is Boianovsky (1995), and a review of theories of the business cycle in the German language area before 1930 can be found in Hagemann (1999). As for Schumpeter, a reading of his Theory of Economic Development (1934) will suffice, if the reader wants to avoid going through the two volumes of his *Business Cycles*.

[4] Dutt (2003) and Kurz & Salvadori (2003), among others, study how the so called "New Growth Theory" has (not) dealt with income distribution as a determinant of investment and growth, apart from its influences on the political field.

To be fair, there are some articles that focus on "the effects on growth of political consequences generated by a determined income distribution" (Perotti: 1992, p. 311). The channel by which a determined distributive pattern can negatively affect growth is clearly explained in the abstract of Alesina & Perotti (1996): "Income inequality, by fuelling social discontent, increases sociopolitical instability. The latter, by creating uncertainty in the politico-economic environment, reduces investment. As a consequence, income inequality and investment are inversely related. Since investment is a primary engine of growth, this paper identifies a channel for an inverse relationship between income inequality and growth" (p. 1203). In Alesina & Rodrik (1994) a different channel is explored, in which a higher inequality of wealth and income distribution leads to higher rates of taxation on capital, which hinder economic growth (p.465), and in support of that theory they present empirical results that show "a statistically significant negative correlation between inequality in land distribution (measured around 1960) and economic growth over the subsequent two and a half decades. [They] obtain the same kind of results for income distribution as well: initial inequality in income is negatively correlated with subsequent growth" (p. 467). The reader should not take the word "taxation" literally, it encompasses "any kind of redistributive policy that transfers income to unskilled labour while reducing the incentive to accumulate" (p. 466). Rajan (2010) also links inequality with lower growth and financial instability, though in his study income inequality is due to technological change biased against unskilled labour. In face of falling income households turn to debt in order to keep their consumption levels, but that cannot go on forever. This is also fuelled by financial deregulation and government-sponsored lending, especially low-income ones, according to the author (p. 9).

2.1.3. KEYNES AND THE POST-KEYNESIANS

We need to state first Keynes's theory of effective demand in order to see what role income distribution plays in it. One can find many elements of his theory in the Treatise on Money (we would claim that one can find *all* the elements there, the problem being that there is also a natural rate of interest in it), but obviously we will draw on his major work, *The General Theory of Employment, Interest and Money* (1973 [1936]). There are countless interpretations about what he said, what he tried to say, what he meant, what he didn't mean, etc. For this thesis, we think it is enough to reckon Keynes's presentation of his theory in chapter 3 (especially between pages 27 and 31) of the *General Theory*. It is a closed economy with no government activity, initially.

In our own words, the theory can be described like this: As income grows so does consumption albeit in a smaller proportion, measured by the propensity to consume. The amount of employment (and income) depends on the amount that entrepreneurs expect to be consumed, and the amount they expect to be invested, both quantities making up the *effective demand*. On the supply side, for each volume of employment there is a corresponding diminishing marginal productivity, which gives an *aggregate supply price*[5]. For a greater volume of employment, the gap widens between the consumption

[5] In 1939, Keynes recognized that the evidence did not support the hypothesis of diminishing marginal pro-

demand (and the level of employment associated to it) and the supply price associated to that volume, a gap that should be covered by the investment rate if employment is to increase or even reach the full employment level. Now, there is no automatic mechanism that brings investment to that level. "The insufficiency of effective demand will inhibit the process of production in spite of the fact that the marginal product of labour still exceeds in value the marginal disutility of employment [so that there are still unemployed people willing to work at the ruling real wage]. Moreover the richer the community, the wider will tend to be the gap between its actual and its potential production" (Keynes: 1973 [1936], p. 31).

The rate of investment is governed by the interplay of the rate of interest and the expected return of investment. The former is determined in turn by the supply of money and the *liquidity preference* curve, which measures the rate of interest at which people are willing to dispose of money[6]. The expected return is heavily depending upon expectations about future revenues and the rate of discount. Chapter 12 presents the case for the role of expectations in a way that no author has matched again, and the reader should read it time after time.

What about distribution then? On a practical matter, Keynes had some involvement in the most ambitious redistributive scheme elaborated in his time, the Beveridge Plan, though he was a staunch defender versus the attacks of the British Treasury[7]. On the theoretical side, one can make a *negative* argument and a positive argument about the role of income distribution and distributional variables in Keynes's analysis. The negative argument refers to what distribution *does not do*. Keeping in mind that in the *General Theory* the real wage is determined by the marginal productivity of labour, a fall in money wages does not necessarily stimulate production, and it might well have the opposing effect not only by diminishing consumption, but also by affecting negatively expected returns from investment.

Keynes was accused in his time of *not* making any positive argument regarding the importance of income distribution and its changes on output, to which he strongly objected:

> "In the very first paragraph where I first introduce and define the conception of the propensity to consume for the community as a whole (p. 90-91), I point out that this propensity 'obviously depends (i) partly on the amount of (the community's) income, (ii) partly on the other objective attendant circumstances, and (iii) partly on the subjective needs and the psychological propensities and habits of the individuals composing it and *the principles on which the income is divided between them (which may suffer modification as output is increased)*'. I could scarcely have been more precise or emphatic. The same point is further emphasised subsequently wherever it seemed to be relevant – for example page 92, line 9; page 121, line 3; and page 262."

ductivity.

[6] The liquidity preference curve is called the *state of bearishness* in the *Treatise on Money* (1973 [1930], p. 128-131). In that work, and in articles after the publication of the *General Theory*, Keynes withdrew the assumption of a given money supply, or at least its role as data and not a variable.

[7] About the relationship between Keynes, Beveridge and the welfare state, see Skidelsky (2003, p. 708-724) and Marcuzzo (2010).

(Keynes: 1973 [1939], p. 271, italics in the original; see also p. 272).

The most outstanding paragraphs on this issue, which convey his distributive philosophy and its interaction with his economic theory, are the following:

> "The outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and incomes. The bearing of the foregoing theory on the first of these is obvious. But there are also two important respects in which it is relevant to the second.
>
> Since the end of the nineteenth century significant progress towards the removal of very great disparities of wealth and income has been achieved through the instrument of direct taxation (...). Many people would wish to see this process carried much further, but they are deterred by two considerations; (...) mainly, I think, by the belief that the growth of capital depends upon the strength of the motive towards individual saving and that for a large proportion of this growth we are dependent on the savings of the rich out of their superfluity. [Our argument] may considerably modify our attitude towards the second. 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 (...). Moreover, experience suggests that in existing conditions saving by institutions and through sinking funds is more than adequate, and that measures for the redistribution of incomes in a way likely to raise the propensity to consume may prove positively favourable to the growth of capital.
>
> (...) Thus our argument leads towards the conclusion that in contemporary conditions the growth of wealth, so far from being dependent on the abstinence of the rich, as is commonly supposed, is more likely to be impeded by it. One of the chief social justifications of great inequality of wealth is, therefore, removed. I am not saying that there are no other reasons, unaffected by our theory, capable of justifying some measure of inequality in some circumstances. But it does dispose of the most important of the reasons why hitherto we have thought it prudent to move carefully." (Keynes: 1973 [1936], *CW VII*, p. 372-373)

The second paragraph is a clear example of what has been called the paradox of thrift: a more frugal attitude towards consumption might have the opposite effect as intended, by lowering what entrepreneurs expect to earn from demand and lowering the employment level and income. "Aggregate saving is governed by aggregate investment" (p. 110). The following paragraph is quite eloquent: "If there is no change in the liquidity position, the public can save *ex ante* and *ex post* and *ex* anything else until they are blue in the face, without alleviating the problem in the least – unless, indeed, the result of their efforts is to lower the scale of activity to what it was before" (Keynes: 1973 [1937], *CW XIV*, p. 222). These quotes show the path that the Post-Keynesian school has followed in its defence of the argument that demand plays a key role in economic growth, both in the short and in the long run. In the most familiar growth models of this line of thought, the

works of Joan Robinson (1956, 1962) and Nicholas Kaldor (1957), increases in the level of savings in the economy (the main concern of marginalist economics) lead to a lower growth rhythm due to the fall in demand[8].

Their models presented another solution to the instability issue in Harrod's growth model (1939), alternative to Solow's (who assumes, as we said, factor substitution). But we must first explain Harrod's approach. A central piece of his analysis is the "warranted" rate of growth, "that rate of growth which, if it occurs, will leave all parties satisfied that they have produced neither more nor less than the right amount. Or, to state the matter otherwise, it will put them into a frame of mind which will cause them to give such orders as will maintain the same rate of growth" (Harrod: 1939, p. 16). We need two equations, of which the first one is the warranted rate, and the other is the actual rate:

$$(i)\, G_w = \frac{s\Delta Y^*}{I^*}$$

$$(ii)\, G = \frac{s\Delta Y}{I}$$

I^* and ΔY^* stand for the investment required to produce the additional *desired* increment in output. Equation *(ii)* is an ex-post identity. If both equations are equal, we are in equilibrium. What if they are not? Suppose G is bigger than G_w: actual output exceeded what entrepreneurs desired, so that they drew on stocks or equipment. The system will be stimulated for further expansion, until we reach full employment; and will fall into a deep depression if the inequality is the opposite. An increase in the saving propensity will bring, *ceteris paribus*, the warranted (desired) rate above the actual one, because of the repercussion on actual growth (that is, in ΔY), causing a drag in economic activity (we do have a paradox of thrift in Harrod's model). One can think of the saving propensity in *(i)* as an *ex ante* desire for saving, and the parameter in *(ii)* as an *ex post* identity like we said, if that helps for the understanding (p. 21-23). "Departure from the warranted line sets up an inducement to depart farther from it. The moving equilibrium of advance is thus a highly unstable one" (p. 23). And we have not spoken about the natural rate yet, which measures the rate of growth of the labour force and productivity, the highest possible rate of growth if we assume full employment. The system cannot advance permanently higher than this rate, so if the warranted rate is above that one, then the system has a chronic tendency towards depression.

The warranted rate is determined by the interplay of the saving propensity and the desired incremental output/capital ratio. We saw that Solow's solution to the inherent instability of the model was to give to the latter the responsibility for the adjustment and equilibrium. The alternative developed by the Cambridge School is based on an analysis of distribution. They recognize the existence of different savings rates associated to different income categories (or social classes), and they hold for the long run the "paradox of thrift". Their distribution analysis is rooted in Kalecki's and Keynes analysis of profits, though not that of the *General Theory*, but that of the *Treatise*. Without bothering with definitions, the relevant paragraph is the following:

[8] Inside the same line of literature one has to mention Pasinetti (1962), who studies "the system of relationships required to reach full employment" (p. 267), without assuming it as given. Pasinetti introduces some changes and extends the model of Kaldor (1957).

> "If entrepreneurs choose to spend a portion of their profits on consumption (and there is, of course, nothing to prevent them from doing this), the effect is to increase the profit on the sale of liquid consumption goods by an amount exactly equal to the amount of profits which have been thus expended. (...) Thus, however much of their profits entrepreneurs spend on consumption, the increment of wealth belonging to entrepreneurs remains the same as before. Thus profits, as a source of capital increment for entrepreneurs, are a widow's cruse which remains undepleted however much of them may be devoted to riotous living. When, on the other hand, entrepreneurs are making losses, and seek to recoup these losses by curtailing their normal expenditure on consumption, i.e. by saving more, the cruse becomes a Danaid jar which can never be filled up; for the effect of this reduced expenditure is to inflict on the producers of consumption goods a loss of an equal amount. Thus the diminution of their wealth, as a class, is as great, in spite of their savings, as it was before. (...) Profits (or losses) are an effect of the rest of the situation rather than a cause of it" (Keynes: 1973 [1930], *CW V*, p. 125-126)

This also follows from Kalecki's theory about the short-period determination of profits, in which investment is taken as given due to decisions made in the past. At any given point, higher investment implies a higher profit share (Kalecki: 1971, p. 78-79), and that is what Kaldor and Robinson tried to model, and which provides the adjustment mechanism that solves the inherent instability in Harrod's model. However, for this mechanism to hold, a certain assumption must be made about a limiting capacity in output, either by saying "it is given" (such as the short-period case in Kalecki), by assuming full employment (as in Kaldor's 1955 paper), or by assuming a "normal" level of capacity utilisation (Robinson's case). Higher investment implies more workers in the investment sector, driving up the demand for consumer goods in a sector which already operates at "normal" capacity, leading to higher prices and lower real wages, generating in turn the desired amount of profits and the necessary change in savings and the "warranted" rate (Robinson: 1962, p. 58; Kaldor: 1955, p. 97; Asimakopulos: 1991, p. 174). However, it must be stressed that Robinson devised a whole range of possible paths, different types of "golden" and "platinum" paths, but in many cases the real wage might end up being a limiting factor (even without scarcity of labour, such as in the *galloping platinum* age, in which a lot of investment is directed towards that sector in order to build up capacity and profits rise) when workers do not accept a fall in the real wage. That is the "inflationary barrier". Like we said, in both Kaldor and Robinson's models, a higher accumulation rate is linked with a lower real wage rate.

A caveat must be made. Kaldor (1961) and Kaldor & Mirrlees (1962) introduce a "technical progress" function whose role is to increase the natural rate of growth, by affecting labour productivity (initially it affected output per man-hour of the workers operating newly installed equipment (Kaldor & Mirrlees: 1962, p. 176)). Later on, Kaldor (1966) would label this function as "Verdoorn's Law", about which more can be found in McCombie, Pugno & Soro (2002).

2.1.4. KALECKI

This thesis adopts a Kaleckian framework and the time has come to make a description of his work. Coming from very different theoretical backgrounds (Keynes was a product of Cambridge; Kalecki was an autodidact with experience analysing concentrated industries and with a reading of Marxian economists), they tackled matters with different approaches. Kalecki applied his theory directly into a study of the business cycle, with an emphasis on income distribution, and downplaying the importance of monetary variables[9]. We have seen already that in his work, by assuming a closed economy with no government activity and no savings on behalf of workers, profits are determined by investment and capitalist's consumption, and that by investing more capitalist will end up earning more. The similarities with the multiplier story are evident: one can replace the word "saving" in Keynes by the word "profit" in Kalecki and the result is pretty much the same (Kregel: 1989, p. 198). Even more, since Kalecki rejects any assumption about a long-run "normal" level of economic activity (least of all, full employment), we do not require a fall in real wages (like in Robinson or Kaldor's theories) from the multiplier to take effect: that is, a given income distribution might easily accommodate a higher level of output (and capacity utilization).

The main (economic) limit that Kalecki identifies for investment, besides the extent of the market, is of a financial character. His business cycle models are within the prototype of the accelerator-multiplier interaction, in which due to incomplete reinvestment of profits, demand fails to keep up with an increased capacity and the slump follows suit. The restriction on investment comes from the fact that firms would not be able to borrow more than a multiple of its own capital without increasing the risk they face (and therefore rising interest rates). Kalecki called his limit set by the gearing or the leverage ratio the *principle of increasing risk* (Kalecki: 1971 [1937], p. 105-106). Raising equity in the stock market would not be an attractive solution either since it would diminish the ownership of current shareholders. *Accumulated* profits, as they increase a firm's own capital and reduce borrowing risk, expands the financial capabilities and allows a higher level of investment, though in later Kaleckian literature there were discussions about exactly which measure of profits was the relevant for investment decisions (a discussion we will review below).

We said that a shift of wages to profits does not stimulate investment. We said that, at any given point in time, profits are determined by investment (and the budget deficit and trade surplus). But what about the *distribution* of profits and wages? Kalecki assumed a mark-up over unit variable cost theory of pricing for manufacturing products (agricultural prices were set to respond to supply and demand conditions), in the context of constant returns to scale and excess capacity. The mark up reflects the "degree of monopoly" in an industry, which can be affected by the concentration in that industry, by non-price competition, by overheads costs (not covered in variable costs), and trade unions (Kalecki: 1971 [1943], p. 50-51). The degree of monopoly not only influences the distribution of income between wages and profits but also it affects the inner distribu-

[9] For the reader interested in learning more about Kalecki, we recommend to read Sawyer (1985) and López G. & Assous (2010). Another good reading is the collection of essays in Sadowski & Szeworski (2004).

tion of profits itself. An increase in the price of raw materials will also have a detrimental effect on the wage share (p. 63).

Another point that is important to raise is that, besides the economic limits to expansion, Kalecki recognised that there were *political* limitations to growth (and full employment), arising from the business sector resistant to a steady level of full-employment (Kalecki: 1971 [1943], p. 50-51). On one side, automatic government spending in case of slumps and public investment expenditure removes a kind of "veto" power of the business sector, usually label "the investment atmosphere" or, nowadays, "the confidence fairy". Public nationalisations might indeed compete with the private sector. But the main objection is that a sustained level of full employment may bring about a more conflicted relationship with organised labour, both in terms of distribution, in terms of the production relations, and in terms of the impact of inflation on the rentier class.

Summing up, Kalecki extended to the long run an implication of Keynes' analysis in the short-run: lowering nominal and real wages will not necessarily stimulate growth. Kaldor and Robinson uphold the "paradox of thrift", but they still associated a higher level of investment with a lower real wage. Kalecki, even though he strongly influenced these authors (as has been shown in their theory of profits determination), rejected the negative association between wages and investment, with a clear macroeconomic understanding of the "circular flow" and interaction between income distribution and expenditure, just like Keynes. However different their approaches were, and in spite of other actual difference in some areas (such as interest rate determination, or expectation formation), the similarity in their conclusions justifies the inclusion of the Kaleckian stream within the post-Keynesian current of economic thought. Keeping in mind the conclusions we draw from Kalecki's vision and thought, it is turn to go deeper into what Kaleckian theory really means and what it proposes.

2.2. THE KALECKIAN MODEL: BASICS, EXTENSIONS AND DISCUSSIONS

Most of previous theories mentioned above link a higher growth rate with a lower real wage rate. Keynes does not discuss specifically the growth rate in the *General Theory*, but he stresses that, in what concerns savings, these are not a prior requirement for investment to occur (his strongest statement in this sense was a review of a study by the League of Nations, called 'The process of capital formation', 1973 [1939], *CW XIV*, p. 278-285). Kalecki associated savings to different social classes, and in that way he questioned the classical argument with their same social stratification. Post Keynesians adopted the 'paradox of thrift' to analyse long run growth, but retained the negative relation between investment and real wages. This was challenged by Kaleckian economists, starting in the early 1980s.

The main assumption that Kaleckian models questioned was the existence of a "normal" rate of capacity utilization rate (CU from now on) towards which the economy should tend in the long run. Instead, they assume that the CU is an endogenous variable, determined by aggregate demand, that only by chance will be in the long run at its

"normal" value. This allows the possibility that higher real wages increase the CU rate, which in turn may raise investment, growth and also the profit *rate*, due to an accelerator effect in the investment function.

In fact, in the original models (Rowthorn: 1981; Dutt: 1984), higher real wages increase the CU rate, investment, growth and also the profit *rate*. This is the so called *paradox of costs*. Starting from Bhaduri & Marglin (1990), the possibility of several growth and demand regimes has been acknowledged, according to the impact of higher real wages on demand, investment and the profit rate.

In this section we will explain the 'canonical' or basic Kaleckian model, the critiques it has received, the replies and following discussions that it has generated, the extensions it has endured in the last 25 years, some connections with other types of Post-Keynesian growth models, and what is the contribution of this thesis to the Kaleckian literature. We beg the reader to be patient and to go with us through this rather long journey. To start with, Table 2.1 reviews the relations between growth, savings (related to the paradox of thrift) and costs (related to the real wage) in the different schools that we have mentioned and that we will mention. The paradox of costs, as can be inferred from what we said above, postulates a *positive* relation between the real wage and investment, and the precise mechanisms will we explained right now. Table 2.1 is based on Lavoie (1996, p. 116):

Table 2.1: Paradox of cost and thrift

	Clasicals, Marx, Marglin, Duménil, Neoclassicals	Robinson, Kaldor	Kaleckians, modern Sraffians, Marxists (Bhaduri-Marglin)
Paradox of Costs	No		Yes or ambiguous
Paradox of thrift	No	Yes	

2.2.1. THE BASIC MODEL

Lavoie (1992, p. 297; 1995b, p. 790) traces the main results of the Kaleckian model (that we are about to show) back to a work in Italian by Del Monte, in the mid 1970s. The typical model, an extension of Asimakopoulos's (1975) was developed independently by Rowthorn (1989 [1981]) and Dutt (1984). While the latter deals with issues related to the development of India, Rowthorn's article criticizes conclusions we mentioned from the Cambridge School, in particular the inverse relationship between real wage and accumulation rate, and this is the work we will follow, in the version presented by Lavoie (1995b). We choose this paper because it sets the framework to interpret, integrate and answer the critiques.

The assumptions of this canonical model (that excludes any consideration about

technical progress and thus productivity, taxation, foreign trade, etc) are those of a closed economy without a public sector. Rowthorn includes direct taxes (on profits) but this is not relevant to our argument, and it is not present in the models that we will show and use.

Without state activity, GDP (prices times quantities) can be decomposed into the wage bill and profits, which leads to:

$$p = w\left(L/q\right) + r\,pK/q \quad (1)$$

with q equal Gross Domestic Product (in constant prices), w is the real wage rate, L represents employed labour, K is the capital stock and r is the profit rate. With fixed or overhead labour (administrative personnel, for instance) and variable labour (workers directly involved in the productive process), we introduce the following definitions in Table 2.2:

Table 2.2: Definitions

$L = L_v + L_f$	Employed labour force = variable work plus fixed work
$u = q/q_{fc}$	CU = output / full capacity output
$v = K/q_{fc}$	Capital / capacity coefficient
$y_v = q/L_v$	Labor productivity
$y_f = q_{fc}/L_f$	Fixed labour requirement (proportional to capacity)
$f = y_v/y_f$	Variable labour / Fixed labour relation.

With this, substituting in (1) and solving for the profit rate, we have:

$$r = (\tfrac{u}{v})\left[1 - \left(\tfrac{w}{p}\right)(1 + f/u)/y_v\right] \quad (2)$$

The model has two curves in the (u, r) space. The distributional relations are exogenous, so that the real wage and the mark up are given (Bhaduri & Marglin: 1990, p. 376; Blecker: 2002, p. 131). We will mention some extensions in which they are endogeneized.

What type of pricing do we adopt? The simplest way is to assume a mark-up over variable costs, which in a vertically-integrated sector reduces to:

$$p = (1 + \theta)\,w/y_v \quad (3)$$

Since the degree of monopoly or gross profit margin (or the profit share) is equal to $m = \theta/(1+\theta)$, we can get the following equation representing our first curve the profit-cost curve (PC)[10]:

[10]Another procedure, usually adopted, is a variant of normal prices or full-cost pricing, called target-return pricing. This implies a mark up over total costs with the aim of achieving a profit rate for a standard level of CU. The mark up is determined according to the investment and financing policies of the firm (see Lavoie: 1992, chap. 3; Harcourt: 2006, chap. 3). Therefore, and with us y rs representing standard levels, the price function becomes: $p = \left(\frac{u_s + f}{u_s - r_s v}\right)\frac{w}{y_v}$ (3′) Putting this into (2) and solving for r, we have the following linear

$$r = u(m/v) - (1-m)f/v \quad (4)$$

That curve shows the quantity of profits created at a given rate of CU. This should not be confused with actual profits, since its realization depends on effective demand. The latter is captured by our second curve, the *ED* curve, standing for *effective demand*. This shows the relation between saving and investment. The first is represented by a reinterpretation of the Cambridge equation as a savings function, so that

$$g^s = r s_p \quad (5)$$

With s_p representing the proportion saved from profits (we asume that workers do not save and/or the conditions of Pasinetti (1962) apply).

The investment function is the source of almost all controversies. The one proposed originally by Rowthorn was

$$g^i = \gamma + g_u u + g_r r \quad (6)$$

Investment depends on the current CU rate, of the current profit rate, and on γ , a parameter with different interpretations. Since saving and investment must be identical, we equalize (5) and (6), we solve for r and we get the *ED* curve:

$$r = \left(g_u u + \gamma\right) / \left(s_p - g_r\right) \quad (7)$$

The stability condition is that savings react stronger than investment to changes in the profit rate, which means[11]:

$$s_p > g_r + g_u v/m$$

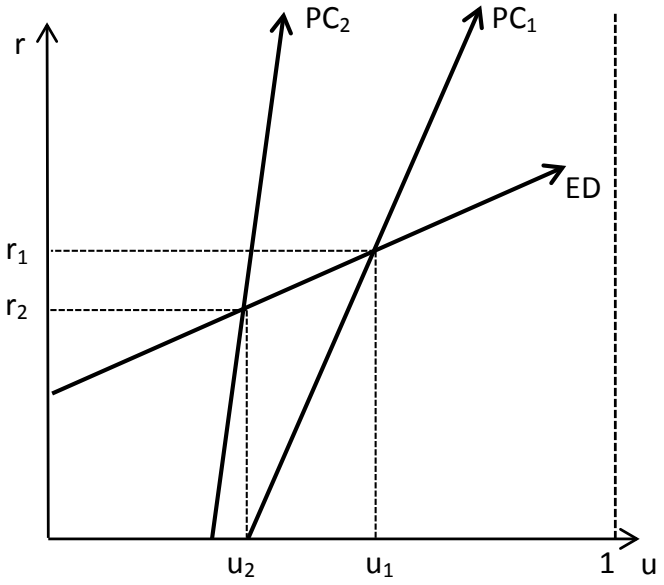
This condition is more stringent than the one of Cambridge models, $s_p > g_r$. The reason is that the term $g_u u$ adds an accelerator effect, making the economy more unstable.

In this model the paradox of thrift holds. An increase in the savings rate shifts the ED curve downwards, generating a lower accumulation rate and a lower profit rate. The main novelty, though, is the paradox of costs, as shown in Figure 2.2. The effect of a change in wages is captured, in the *PC* curve, through the derivative of r with respect to m, which is positive. An increase in the gross margin (and a decrease in the real wage) shifts the *PC* curve upwards, generating a lower CU rate, a lower profit rate, and a lower accumulation rate. These conclusions are in contradiction with almost all the existing literature, except for the underconsumption theorists. This is not surprising, since Kalecki was strongly influenced by the writings of Rosa Luxembourg (1913), who also

equation on u: $r = \left[(f + r_s v)u - (u_s - r_s v)f\right] / v(u_s + f) \quad (4')$

[11] The condition is that $^{dS}/_{dr} > ^{dI}/_{dr}$ evaluated on the ED curve. Below, we present some recent discussions about the stability of Kaleckian models.

Figure 2.2: Paradox of cost



inspired together with Kalecki Sweezy (1942; Baran & Sweezy: 1966) and John Bellamy Foster (2013, for instance). And it did not take long for critiques to appear. Let us see what they were about.

2.2.2. FIRST STRANDS OF CRITIQUES

There were two main waves of critiques to Kaleckian models, end of the 1980s and early 1990s, and between 2007 and 2010, and we will review them in a chronological order. The focuses of conflict were different: at first they referred to more conceptual issues, while later they dealt with the stability conditions of the models. At first, critiques came from Marxists and Sraffians, from authors such as Duménil and Lévy (1999), Kurz (1990), Bhaduri & Marglin (1990), Vianello (1989); afterwards they called themselves "Harrodian", such as Shaikh (2007, 2009) and Skott (2010, 2012); and in both times Marc Lavoie was on the defensive side, so to speak. Let us review both controversies separately.

The first critiques to these models were classified into two groups by Lavoie (1995b). The first one denies the CU rate any role in the determination of investment decisions, as shown in the following quotation:

"A current profitability exceeding (or falling short of) the general rate of prof-

> its as a result of productive capacity being over (or respectively, under) utilized – it will be submitted – is no reason why a producer should expect that the productive capacity of the equipment (embodying the dominant method of production) he will find himself endowed with in the years to come will be similarly over (or under) utilized, thus causing profitability to persist in standing above (or respectively, below) the general rate of profits. For such an expectation would imply – to put it shortly – that the producer in question is planning to endow himself with less (or respectively, more) capital equipment than he expects to need." (Vianello: 1989, p. 165).

The point is that current wage increases lower the expected normal profit rate, which is what capitalists look at, although the current rate of profit remains the same (because what is lost in higher costs is recovered with sales). Vianello affirms that in Sraffa's normal-price equations, "the rate of profits and prices corresponding to any given wage (or the wage and the prices corresponding to any given rate of profits, if one accepts Sraffa's suggestion of treating the latter as the independent variable (...)), can be affected only by a change in the methods of production" (Vianello: 1989, p. 172). At the end of the adjustment process, the CU rate will remain at the current level, with a lower profit rate. The investment function implied by this critique would be something as follows:

$$g^i = \gamma + g_r r_n \quad (6')$$

With r_n as the expected normal rate of profit. This means that the *ED* curve would be horizontal at the level of the normal profit rate r_n as in Figure 2.3. A wage increase shifts PC_1 to the right-hand side, increasing in principle the CU without touching the current profit rate. But firms expect a lower normal rate of profit, and they reduce their desired accumulation rate, lowering *ED*, up to the point where the new (and lower) normal rate of profits corresponds with a new (and lower) rate of CU, and a new (and lower) accumulation rate. Figure 2.3 in Lavoie (1995b, p. 796) will be useful to represent the changes. In this example, the actual rate of profits r_2 needs not be equal to the new normal rate, and the same goes for the utilisation rate.

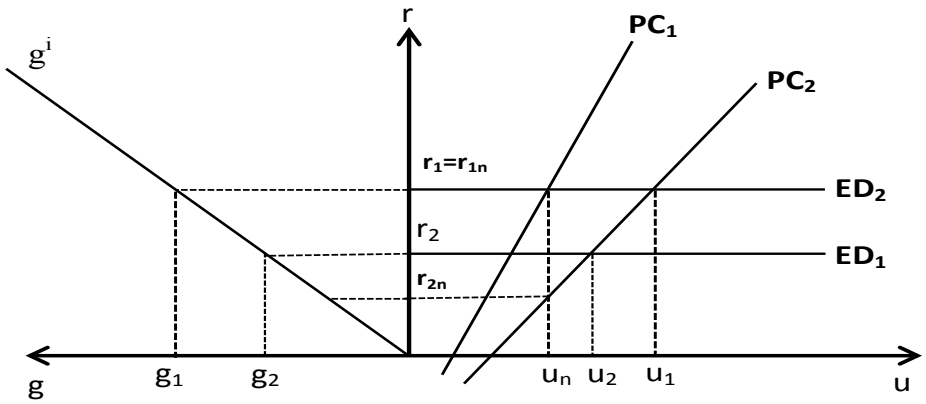
Kurz (1990) and Bhaduri & Marglin (1990) also question the investment function, but from another point of view. To understand what they are saying, we have to decompose the profit rate like this:

$$r = \frac{P}{\kappa} = \frac{P}{Y}\frac{Y}{Y_{fc}}\frac{Y_{fc}}{\kappa} = \frac{mu}{v} \quad (8)$$

The first term in the right hand side of the equation, $\frac{P}{Y}$, represents the profit share of income; the second term represents the capacity utilisation rate (Y_{fc} is the full capacity output or some normal level), and the last one is the inverse of the capital-full capacity output ratio. If we do this and insert (7) into (6), we obtain:

$$g^i = \gamma + g_u u + g_r \frac{mu}{v} \quad (6'')$$

Figure 2.3: Sraffian criticism



We can now see that the CU appears twice in the investment function. "The influence on the investment level of income distribution on one side and effective demand on the other is somewhat blurred" (Kurz: 1990, p. 220). As Bhaduri & Marglin (1990) show, if we accept equation (6), even when the CU increase is exactly compensated by a fall in the profit margin, investment would still increase. This imposes unjustified restrictions to the behaviour of accumulation, in the sense that the relative importance of a variable (capacity utilisation) is much greater than the other (profit rate), reverting its own effect.

What Kurz and Bhaduri & Marglin propose is simply to let the profit rate be the main determinant of investment, including both the positive effect of higher consumption demand and the negative effect of higher costs. This means that if we include the CU as an argument in the investment function, we must also include the normal rate of profit or some other variable that reflects the rise in costs, such as the profit share of income (assuming no fixed labour), as chosen by Bhaduri & Marglin and Kurz[12]:

$$g^i = \gamma + g_u u + g_m m (6''')$$

Here, the investment function is dependent on capacity utilization and the profit share. This investment function allows a wide typology of growth regimes relevant for our discussions, presented in Table 2.3, based on Blecker (2002, p. 134). The key to seeing which of all these regimes holds is in the reaction of investment to changes in the profit margin and the CU. The "exhilarationist" regime requires a strong effect of the profit margin on investment, overcompensating for the fall in consumption due to lower wages. If not, a higher profit share might stimulate investment and growth and even the

[12] Kurz (1990) does not have exactly this specification. In p. 221, instead of the profit share he has the wage rate times the inverse of labor productivity. That is tantamount to the wage share, which has a negative influence in that equation. Since we assume that productivity is constant and that there is no depreciation, his formulation and $(6''')$ are equivalent.

profit rate, but fail to stimulate aggregate demand, CU and employment (the conflictive stagnationism). The mentioned work by Blecker is important because it relaxes the restraint on savings by workers.

It might be useful to explain some features of Table 2.3. For a better understanding, u means capacity utilisation, m represents the profit share, r represents the profit rate, WN/P is the total wage bill deflated by the price label (it represents the total real labour income), and g represents the rate of growth of the capital stock. Consider the following two cases: conflictive stagnationism, and cooperative exhilarationism. In the first one, aggregate demand (with the CU as a proxy) is positive correlated with the real wage, but the profit rate is positive correlated with the profit share, represented by m (the rise in aggregate demand is not enough to compensate the fall of unit margin), so that companies will not be interested in the stimulation of demand through higher wages (as in the cooperative stagnationism), on the contrary: they would push for a secular stagnation.

Table 2.3: Typology of growth regimes

CONCEPT	**COLOQUIAL EXPRESSION**	**MATHEMATICAL EXPRESSION**
Stagnationism (wage-led aggregate demand)	CU inversely related to the profit share	$du/dm < 0$
Cooperative	Realized profit rate inversely related to the profit share	$dr/dm < 0$
Conflictive	Realized profit rate positively related to the profit share	$dr/dm > 0$
Exhilarationism (profit-led aggregate demand)	**CU positively related to the profit share**	**$du/dm > 0$**
Cooperative	Total real labour income positively related to the profit share	$d(WN/P)/dm > 0$
Conflictive	Total real labour income negatively related to the profit share	$d(WN/P)/dm < 0$
Wage-led growth	**Capital accumulation rate inversely related to the profit share**	**$dg/dm < 0$**
Profit-led growth	**Capital accumulation rate positively related to the profit share**	**$dg/dm > 0$**

In the case of a cooperative exhilarationism, even though aggregate demand is ruled by the profit share (through its impact on the profit rate and investment), there is the chance of a "concordance of interests" in the sense that the wage bill might increase without compromising the evolution of economic activity.

The second line of critique came from Marxists and Sraffians who have taken Vianello's point to an extreme by saying that in the long term, the effective CU rate should be equal to its normal or standard level, achieving a "fully adjusted position". In the Kaleckian model, the CU is endogenous and not necessarily equal to its normal value. As an example, we consider the model of Duménil & Lévy (1999) as a leading case in the Marxist tradition. The idea is that the macroeconomic consequences of individual behaviour are not as each investor wished, so that it cannot be called a long term equilibrium position. Then we have the problem of finding the mechanism that brings the short term CU to

its long term normal level. In Duménil & Lévy's opinion, when the actual CU is higher than the normal rate, inflation grows. Duménil and Lévy then reinterpret the parameter γ as a proxy of firms capacity to borrow, which is reduced in an inflationary context. This impacts negatively on investment, falling to a level lower than at the start. In the end, there is neither a paradox of thrift nor a paradox of costs, according to the Classical (and Neoclassical) view. In these models, both u_n as r_n are exogenous parameters, of a unique and unmodified value.

The reader might ask, after all, what are these 'normal' values? Regarding the normal rate of profit, the definition of Pivetti is very clear: "[the normal rate of profit] correspond to the rate of return on capital which would be obtained by firms using dominant or generally accessible techniques, and producing output at levels regarded as normal at the time the capacity was installed" (Pivetti: 1991, p. 20). As for the determination of the normal degree of utilisation (which need *no*t be a full utilisation level), there is much less agreement. Kurz (1990 [1986]) argues that it is a cost-minimizing degree; Steindl (1976 [1952]) argued that it was an expectation of the state of the economy in some future time; Auerbach and Skott (1988, p. 51) say that it is an optimal level that firms will try to achieve, while Skott (2012) includes a myriad of factors that affect it (habits and conventions; changes in the degree of competition, demand volatility, managerial constraints or bottlenecks, etc).

The criticism by Bhaduri & Marglin and Kurz about the a priori overshooted effect is well taken, since it cannot be logically rejected. Actually, that was Rowthorn' original point: capacity utilisation has an influence by itself and by its positive impact on the profit rate. The investment function they propose, however does not avoided criticisms. The main critiques were Mott & Slattery (1994, p. 72) and Lavoie (1995b, p. 799-800). On one side, when there is overhead labour, the profit margin might not necessarily correlate with the profit share. Second, the profit rate conveys more information than the profit margin or the profit share about the financial state of the company. The profit margin might reflect movements in the interest rate (an argument put forward by Pivetti (1991)), reducing its usefulness as a repayment indicator. But that does not answer to those that question the long-term divergence between the effective CU rate and profit rate with its normal values. Accepting it to be a long-term equilibrium requirement, Lavoie (1995b, 1996) explores the conditions for the models to converge to such a fully adjusted position without losing its distinctive Kaleckian features, the paradox of costs and paradox of thrift. He does that by endogeneizing the normal capacity utilisation rate through a process of hysteresis, in which "the new fully adjusted position depends *on the adjustment process during the transition*." (Lavoie: 1996, p. 132, italics in the original). Post-Keynesian characteristics are preserved in the long run as well as in the short run, in opposition to what, for instance, Duménil & Lévy hold.

Other "more radical" replies have been those by Chick & Caserta (1997) among others, who say that the behavioural parameters and norms are so variable that a long term analysis with fully adjusted positions, in which the CU equals its normal value, is not very relevant. Another interpretation is that of Hicks (1974, p. 19), Dutt (1990, p. 59) and Palumbo & Trezzini (2003, p. 128) in which firms do not target a particular rate but a range, in a conventional way, so that as long as the CU rate stays within that range, its discrepancy with some normal value is not a problem.

2.2.3. RECENT CRITIQUES

These extensions and modifications of the basic Kaleckian model have not convinced the critics, as expected. The heart of the debate about Kaleckian models of growth and distribution concerns the existence of the mere possibility of getting a certain parameter configuration under which we can obtain a stagnationist (or wage-led) regime. All critiques and arguments presented against Kaleckian models, discard this possibility, allowing only for a negative relationship between investment and the real wage (no paradox of costs). Without closing the front on the convergence of the effective rate of profit and/or capacity utilization towards its normal values, or the endogeneity of these, the new battle field refers to the issue of the stability conditions in Kaleckian models. The main critiques on both fronts has come from Peter Skott. Skott has spelled out his critique of the Kaleckian approach in the following detail (Skott: 2012, p. 110):

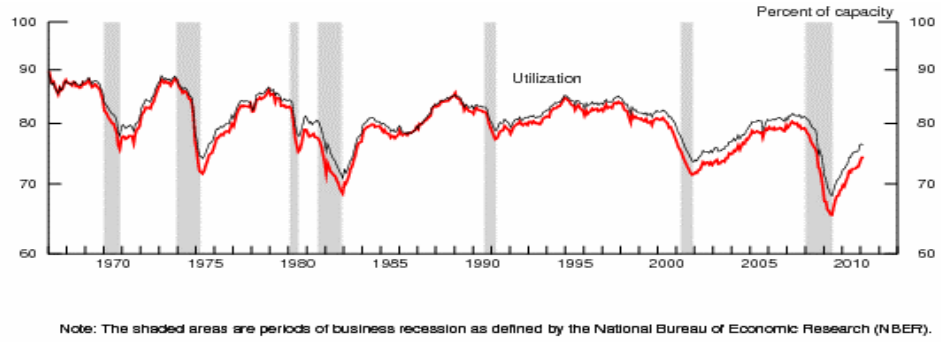
> "This paper challenges the Kaleckian approach. I shall argue (i) that there are good theoretical reasons to rule out steady-growth deviations between actual and desired utilization rates. (ii) that the theoretical case for (quantitatively significant) adaptative changes in desired utilization is weak. (iii) that the Kaleckian specification implies long-run variations in utilization rates that have no counterpart in the data, and (iv) that existing econometric studies have been badly misinterpreted."

As for Skott's point (i), I think that the matter is an ontological divide, a "vision" thing in the terms of Schumpeter (1954), over which no agreement is possible in my view, beyond the use or not of such convergence for purposes of debate, not for reaching consensus on the basic points. Hein, Lavoie & Van Treeck (2012, p. 145-148) highlight the fact that firms might actually be interested, not on one strict level of desired or normal capacity utilisation, but on a range of values, in order to take account of potential "surprises", so that there is a corridor of stability, in a sense. Dallery & Van Treeck (2011) argue that a firm and its stakeholders may have different objectives, which may be mutually incompatible (for instance, regarding accumulation and dividends policies between shareholders and managers, or regarding profits and wages between the two mentioned and workers), so that all objectives might not be realised even in a long run equilibrium.

As for Skott's point (ii), the following quotation reflects Skott's position, which in my view is quite weak: "Adjustment in the target [expected or normal utilization rate] would only be justified if the experience of low actual utilization makes firms think that low utilization has now become optimal, and neither Amadeo nor Lavoie present an argument for this causal link." (p. 118). In the case that such lack of convergence is due to random and non-systematic shocks, Skott goes on, these should not change the targets. Skott emphasizes that firms would change their investment decisions instead of changing the desired utilisation rate.

However, a strong rebuttal of his claim came from an unexpected side. Duménil & Lévy (2012) analyse the data of capacity utilisation in the manufacturing sector for the United States (more on this in the next paragraph) and concluded that we can observe a clear decreasing trend in its level. They use a Whittaker filter, and with unit root tests they

Figure 2.4: Capacity utilization in USA



reject the null hypothesis of stationarity, having evidence of a downward drifting trend, instead of a constant, as Skott argues. This trend is used as a new "center of gravitation", but not a constant one. The declining trend might reflect technical-organisational (or "institutional") transformations.

Referring to point (iii), Skott argues that small parameter changes lead to relatively large variations in capacity utilization rates that have no counterpart in the macroeconomic data. Skott is not alone in rising this point: Dallery (2007) also questions the empirical relevance of the Kaleckian argument by developing a simple model and evaluating the parameter configuration that would assure the stability, at its empirical relevance. That basic model is based on equations, (5), (6´´) and (8), without overhead labour. However, the findings by Skott as well as Dallery may be hard to generalize themselves, because these are based on extremely stylized models without a public sector, without a foreign sector, without a financial sector, without worker's savings, etc. Moreover, in order for the reader himself (or herself) to have an idea about the magnitude of the actual changes in the capacity utilization, we present Figure 2.4, extracted from the website of the Federal Reserve of the United States, which casts doubts on the alleged stability of the capacity utilization rate as argued by Skott. The findings by Duménil and Lévy (2012, figure 1) are also conclusive, in my view.

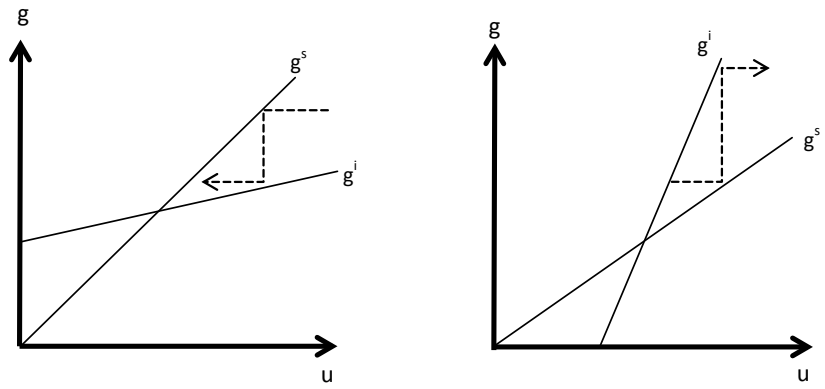
During the boom, industry seems to operate at stable levels, though there appear to be some considerable fluctuations. But that does not imply, in our view, that we can safely assume that the normal use is a target that companies have sustained in a prolonged way. On one side, the average utilization rates are not equal for all the boom periods, so it does not seem unreasonable to assume that firms are satisfied with a range, more than with a fixed determined utilization rate. Besides, cyclical fluctuations have not been stable, so that past cycles are not a precedent for future ones. There is also empirical evidence which goes against Skott's stylized fact. For example, Michalis Nikiforos (2012), while criticizing the economic rationale put forward by Kaleckian economists to defend the endogeneity of the capacity utilization rate, argues that by taking into account the existence of economies of scale at the firm level, "the normal rate of capacity utilization is endogenous and positively related to the level of the demand for the prod-

uct of the firm" (p. 18), a proposition for which he finds empirical support. Similar conclusions are reached by Schoder (2011) in his study of the US manufacturing sector and its subsectors.

The other front of attack to Kaleckian models opened by Skott is the stability issue, and short and long run effects. As in all critiques, "the economy is 'exhilarationist' and profit led in the long run" (Skott: 2010, p. 114). However, the stationary solution is unstable in the model presented, a "Harrodian" model in which investment as a share of capital is determined not only by the present and past value of the capacity utilization rate, but also by the own lagged values of investment. The main characteristic of the Harrodian approach is that investment has a low short term sensitivity to changes in aggregate demand, and a larger one in the long run (Skott: 2010, p. 120), being itself the only variable that reconciles the normal use of capacity. The author recognizes that in certain cases the instability of the steady state might be a reflection of more complex short-term, local, instability issues, representing fluctuations around a long-term path. To attenuate instability, Skott proposes adjustment mechanisms in which prices react faster than output to disequilibrium (in fact, he assumes a given output level, with firms focusing on the growth rate itself, without noting the apparent incompatibility of both in the long run), or mechanisms in which the employment rate is a relevant factor, since he assumes full employment.

The Kaleckian response points to different aspects. First, a distinction between different types of stability; second and more important, even in instability cases as contemplated in Skott's models, we can preserve the distinctive characteristics of Kaleckian models, such as wage-led growth and aggregate demand. The works of Hein, Lavoie and Van Treeck (2011, 2012) and Lavoie (2010) develop these arguments, and we are going to sum up what their lines of reply are, following their expositions.

Figure 2.5: Keynesian stability



(a) Keynesian Stability (b) Keynesian Instability

Kaleckians usually assume *Keynesian* stability, which requires that savings react stronger than investment to changes in the rate of capacity utilisation. In the space (u, g), it requires that savings be stepper than investment. Figures 2.5a and 2.5b exemplify Key-

nesian stability and instability. g^s and g^i are taken from equations (5) and (6), depicting the growth of savings and investment related to the capacity utilisation rate.

Harrodian instability, even though it might be very difficult to distinguish from the Keynesian, has a different theoretical underpinning. Repeating equations (5), (8), and a simple investment function in (9):

$$g^s = r\,s_p \quad (5)$$

$$r = \frac{mu}{v} \quad (8)$$

$$g^i = \gamma + \gamma_u(u - u_n) \quad (9)$$

For Keynesian stability to hold,

$$s_p = \frac{m}{v} > \gamma_u$$

Even if that condition is fulfilled, Harrodian instability might arise. What do we mean by Harrodian instability? It means that γ (reinterpreted as a sort of trend rate of sales growth) increases whenever the capacity utilisation rate is above its normal value. When the level of utilisation is consistently above the normal level, firms expect a higher trend of sales growth, and γ increases. So, even in the case of figure 2.5, the g^i is consistently shifted upwards. All the "solutions" to this instability problem proposed by Skott and others focus on reducing the value of γ.

Skott (2010, p. 115-126) mentioned several mechanisms for dealing with instability. Some of them are similar to the Kaldor and Robinson models described above, in which higher rates of utilisation go hand in hand with higher profit margins (thus giving rise to forced savings). That seems totally counterintuitive, since in those cases the bargaining power of labour should be strengthened, not weaker. Another mechanism is that, instead of rising margins, firms curtail their expansion plans in situations of full employment or near full employment, for the very precise motive we mentioned above: a more combative labour force and a more conflictive environment. In this variant, capitalists themselves are the ones that restrict employment. He refers (p. 120) to the "political business cycle" described by Kalecki, and even though that point is well taken, it seems very unlikely that this is the channel by which that cycle takes place. It is more likely to have rising wage shares, falling profit margins, and a chorus of business voices chanting for austerity and central bank intervention, than to see firms restricting their hiring plans. Hein, Lavoie & Van Treeck (2011, p. 604) note that Skott formulations seem to exclude Kaleckian results by assumption. And if we allow labour force growth (by encouraging immigration, for instance) the "near full employment" level at which firms reduce their hiring plans might not be relevant at all.

2.2.4. SOME EXTENSIONS

Next, we present some extensions in terms of issues tackled by using the Kaleckian model and trying to see if its main characteristics are preserved. Our summary cannot claim to be exhaustive.

First, the one-sector model analysis has been extended to a two-sector model, in which the profit margin of the consumption-goods sector depends, among other parameters, on the profit margin of the investment-good sector. Lavoie & Ramírez-Gastón (1997) show that an increase in the profit margin of any sector, as well as the desired profit rates, bring about a lower accumulation rate. However, the latter does not necessarily imply lower sectorial profit rates. Another work which also designs a two-sector model, in the context of a stock-flow consistent modelling, is Kim (2006), who finds that both the paradox of thrift and the paradox of costs might disappear according to the initial situation of income distribution and the monetary policy, reinforcing the concept of "path-dependency". When we introduce conflicting claims, the results are more complex. For instance, a push by workers for higher wages which does not bring about a fall in profitability expected by firms (meaning that firms do not lower their mark ups) reduces financial wealth, and as long their holders have an important propensity to consume (for instance, pensioners), that has an effect on consumption, output and employment. To quote Kim: "In conclusion, what has a positive effect on economic activity is not an increase in nominal wages in itself, but the strong bargaining position of labour unions to refrain the profit share" (p. 20).

Second, the Kaleckian model has been extended so as to include financial or monetary variables. The most important works on these issues have been Lavoie (1993, 1995a) and Hein, especially (Hein & Ochsen: 2003; Hein: 2006). Lavoie's articles have been among the firsts on the topic, and he tackles the issue of the influence of the interest rate on aggregate demand. Hein's work goes further in the topic, adding the importance of the debt/capital coefficient of firms, giving rise to other paradoxical conclusions (Hein: 2006, p. 347). To start with, we must take account of rentiers' propensity to consume and the dividend ratio of firms. If rentiers save a big proportion of their (interest) income, redistribution in their favour has dampening effects on activity and growth. If the mark up reacts to increases in the interest rate, firms might defend their profit share and might protect their internal source of funds for investment, but labour income will fall, and with it economic activity, in a wage led-case. But when we allow the debt/capital ratio to change, we have strange results. For instance, in the case described above, with rentiers saving a lot and firms reacting to interest rate changes, accumulation slows down, but with this the ratio becomes unstable (the denominator falls, or fails to keep up with the increase in the numerator). Firms raise their mark ups, but activity falls, investment falls, and debt burden increases. Hein & Stockhammer (2011), in turn, develop a macroeconomic model with conflicting-claims-spurred inflation and a significant role for monetary and fiscal policy which includes several Kaleckian features such as the investment function and the endogeneity of capacity utilization. The Kaleckian approach has further been extended into a Stock-Flow-Consistent modelling methodology by Godley & Lavoie (2007a) who develop an impressive model, incorporating firms' investment decisions, profit distribution, banking policy, unperforming loans reserve, public sector fi-

nancing policy, etc. We must also mention the literature dealing with "financialization", a phenomenon frequently used to explain the crisis of 2008 in the US and that spread globally. One of the first works along that line was Palley (1996), who revisited the subject in 2008, 2010 and 2013 (Palley: 2008, 2010, 2013). A summary can be found in Hein & Van Treeck (2010), while Hein himself has written more recently in 2012 and 2013, applying a number of the elements mentioned above (Hein: 2012 and 2013). The move towards shareholder-value orientation has given them more influence in dividends and investment policy, and also weakened the traditional "growth-oriented vision" of managers (Stockhammer: 2006; Hein: 2012, p. 39). And by hurting investment, it affects productivity. The same impact may have a greater power of shareholders vis a vis workers, since that would diminish the impact of the real wage on the diffusion of new technologies and labour-saving productivity (Hein: 2012, p. 73).

Third, the subject of technical progress has been present from the very beginning in this type of models. Rowthorn (1989 [1981]) spends a good deal of his article analysing the effects of technical progress, both when it is labour-saving as well as capital-saving, in line with the "Kaldor-Verdoorn Law". Kurz (1990) emphasizes the fact that among the effects of technical progress, in its various shapes, might be the change of distributive regime, as well as the deepening of expected patterns within each typology. Lavoie (1992, chapter 7), Cassetti (2003) and Ono & Oreiro (2006) do something similar. The first two studies also deal with distributive conflict, based on a theory of inflation originating out of conflictive distributive claims.

On a different vein, Naastepad (2006) and Storm & Naastepad (2012) distinguish between a demand regime and a productivity regime, which might render the picture more complex and rich. A similar path was taken by Setterfield & Cornwall (2002) and Hein & Tarassow (2010).

Allain (2013), in turn, brings forth the impact of autonomous public expenditures. In the short run, the wage-led characteristics can be retained. In the long run, as will be seen in the stock-flow model in this thesis further on, the economy will tend to grow at the rate of growth of public expenditures. And when public expenditure and taxation, instead of being exogenous, acquire the character of automatic stabilizers, distribution ceases to be an influential variable on the rate of growth, though higher real wages do have an impact on the *level* of variables (output, capital stock, etc). You & Dutt (1996) present another model of public deficit, debt and income distribution. Government debt may positively impact output via the receipt of interest payments, and an expansionary fiscal policy might not worsen public debt sustainability in the presence of a large multiplier effect. The rise in output, in turn, can reasonably counteract the increased inequality due to higher interest rates payments. In general, income distribution worsens when debt grows faster than output, because workers are assumed to not receive payments in debt service concept, while capitalists are.

Blecker (2002) makes a summary of different topics tackled by Kaleckian models up to that date. He includes topics such as tax policy and progressiveness in the taxation structure, the implications of workers' savings for the model, and international trade, an aspect that he discussed on other occasions (such as Blecker: 1999) as well as Missaglia (2007), who adapts the determinants of the mark up to adjust it to international competition. Blecker (1999) manifests that the fulfilment of Marshall-Lerner conditions for

a devaluation that improves the balance of trade, makes the economy to behave more likely like an exhilarationist regime. Cassetti (2012) goes into detail on the matter, by analyzing under which conditions that proposition holds, when we add the possibility of wage and profit claims. Blecker also argues that, in a Kaleckian context, the effectiveness of a devaluation in regards to an improved trade balance might undermine the other typical role of a devaluation, that is the rise in national income and employment.

2.2.5. A LINK, A LACK AND A PATH

Blecker's (1999) model is important in a particular sense: he integrates the Kaleckian model of growth for an open economy with the main Post-Keynesian tradition on growth theory in an open economy: the balance-of-payments-constrained approach, developed initially by Thirlwall (1979). These types of models (a thorough review is given in McCombie & Thirlwall: 2004) posit that the balance of payments is the main constraint to economic growth. These demand-led growth models are quite diverse in the subjects they deal with, from financial flows to debt sustainability to foreign aid. However, an implicit assumption in the way they are presented is the existence of the relative version of the Purchasing Power Parity (PPP). In this model, the real exchange rate is basically fixed and prices do not affect the trade performance. By integrating the two, Blecker cleared the way to cover what is one of the main neglected issues in Kaleckian growth models: the omission of foreign debt.

It is not the case that Kaleckian economists have not said a word about the topic, a claim that can be easily dismissed by simply looking into the work of Bhaduri (1987, 2004), for instance. But it is the case, though, that the interaction of foreign capital inflows and foreign debt with income distribution and domestic economic activity has not been dealt with. We have made a summary of why income distribution matters for economic activity and growth in many of the streams of economic thought. And we hope it is clear why we emphasize the Kaleckian framework to study the issue: it is a framework that rejects the negative association in the long run between real wage and investment, allowing for the possibility of a positive relation. And having shown in the previous chapter the importance that financial flows have had in the last four decades and the impact they have had in developing countries, the Kaleckian model provides us the flexibility to integrate this feature into a comprehensive economic model, able to deal with distribution, grow and foreign debt. In chapters five and six, we present different ways to do so.

3

KALECKIAN GROWTH MODEL ANALYSIS FOR ARGENTINA

3.1. INTRODUCTION

In the last three decades there has been a dramatic change in income distribution in developed countries. A macroeconomic outlook that favoured wage restraint and lower wage shares was adopted in developed countries, with the alleged objective of stimulating economic, productivity and employment growth. These policies were successful in their immediate targets, since wages have stagnated and labour's share has fallen in most OECD countries (Stockhammer: 2009; Storm & Naastepad: 2012, p. 117-122; Hein: 2012, p. 8-21, and the literature surveyed in chapter one). However, these changes have not had the effect that their proponents forecasted on growth and employment: the overall macroeconomic performance in this period has been poorer than that in the previous decades, when higher rates of labour productivity and economic activity growth coexisted with high levels of labour shares in national income.

These issues have been dealt with by several articles that adopted a Kaleckian approach to economic growth, in which the effect of lower real wages on economic growth is not (negatively) predetermined. Instead, a range of outcomes are possible, where a higher real wage, or a lower profit share, can have a positive impact on economic activity and capital accumulation. There have been both theoretical and empirical contributions to this branch of the literature. As we have shown in the previous chapter, in the pioneering works of Rowthorn (1989 [1981]) and Dutt (1984), higher real wages had unique (positive) effects on capital accumulation and economic growth. However, the work of Bhaduri & Marglin (1990) has proven to be the most influential, certainly when it comes to econometric applications, since it allows for a variety of macroeconomic regimes. In general terms, it is assumed that higher wages impact positively on consumption, and have a priori an undetermined impact on investment: though profit margins may fall, capacity utilisation may rise, and the overall effect depends on the relative weight of

these two developments. Its impact on the balance of trade is assumed to be negative, so we cannot say beforehand that a higher profit share may encourage investment and economic growth. That is the task of econometric work, and in recent times empirical work on the topic has flourished, with a number of studies that have used one version or another of the Kaleckian growth model to analyse the nature of the demand regime of developed countries[1].

Our plan is to do the same for a developing economy, Argentina, which has experienced dramatic and sudden changes in the last sixty years, the period of time under investigation in this chapter. In the first decades of the post-war period, a development strategy based on the expansion of the manufacturing sector coexisted with higher labour shares (though not at the same level as in industrialised economies). But starting from 1976, there began a complete turn in the economic orientation, with a deindustrialisation process which went hand by hand with regressive developments in income distribution. Given the relatively closed character of the economy during the first of those periods, an argument was always made that a greater competitiveness was required to improve economic growh, and with that idea in mind trade liberalisation (and also capital account reform) was adopted in the latter span of time. We want to analyse if indeed a higher competitiveness, translated in higher profitability indicators (and the profit share is one of them), had the impact its proponents suggested, not only on the balance of trade, but also on investment and economic activity.

The structure of the chapter is as follows: first, we present an overview of Argentina's economic development in the period covered by this chapter, including a small survey of the literature about distribution and growth; in the following section, we will present two variants of a Kaleckian model of growth which have been widely used in the empirical literature and that we will apply to Argentina. We are referring to the works of Hein & Vogel (2008), and Onaran & Stockhammer (2004; 2006). In the fourth section, we summarize previous studies over different countries, all adopting the same type of approach. That is followed by a description of the studies that have dealt, in one way or the other, with topics similar to ours regarding. After a brief exposition, in section five, of the econometric methods and the data that we will use, we present the results of the tests carried out. Section seven concludes the chapter.

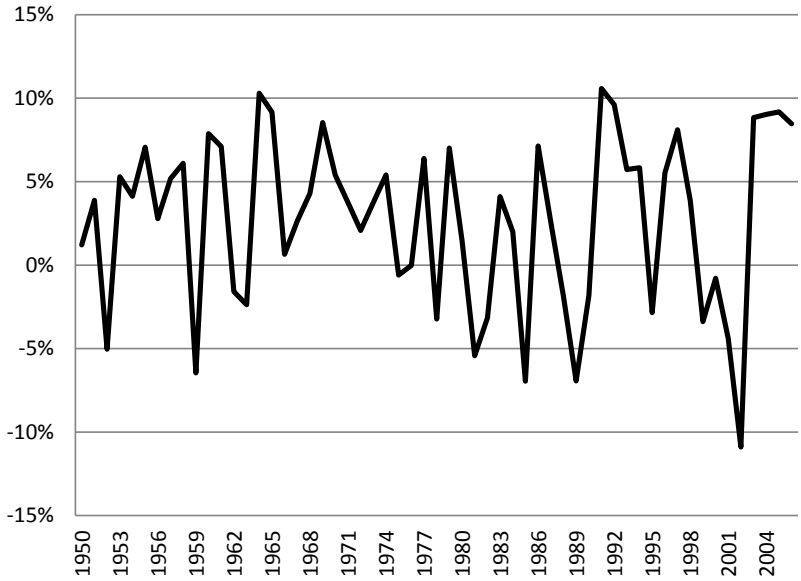
3.2. SOME ARGENTINEAN HISTORY

The best way to introduce the reader into the economic history of Argentina in the period cover in this chapter (from 1950 to 2006) is to present the following graph, depicting the rate of growth of GDP. The reader may rest assured that this is not the electrocardiogram of any person nor the result of some lies detector or the register of seismic movements in a fault line, or at least it has not been copied from there.

Based on this figure, one can say that growth rates were not far above 5% in the fifties, with some recessions here and there; some acute fluctuations in late fifties and early sixties; a period of sustained growth, in spite of the fluctuations, up to 1974; and then,

[1] In Table 3.2 we present a survey of these articles.

Figure 3.1: Growth rate in Argentina



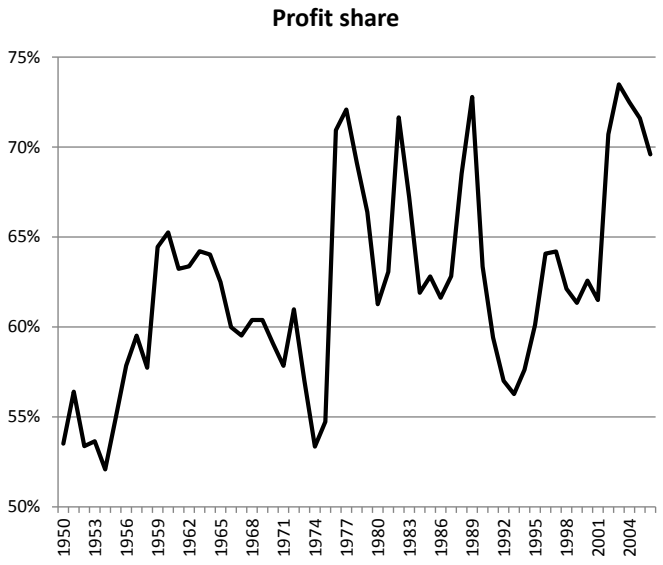
Source: Coremberg et al (2007) for 1950-1992; Dirección Nacional de Cuentas Nacionales for 1993-2006.

starting from 1976, a widening of the cycle and an acceleration of its frequency. Before that year, the average rate of growth was 3.48% (1950-1975), while between 1976 and 2001 (the last year of the currency board) the average was 1.50%, in the context of higher volatility (the standard deviation of the growth rate increased 50% in the last period). In 1976, a new dictatorship opened the financial account of the balance of payments.

When we look at (functional) distribution, 1976 is also a striking year. During the early Peronist years (1950-1955) the profit share fluctuated between 52 and 56% (in the year after a disastrous harvest). It took 19 years, till the next Peronist government (Perón's third and last term, followed by his wife and vice-president for almost 2 years before the 1976 coup) to reach that level again. And in 1976, everything blew up. The profit share increased from 54 to 71% in one year, a rate of increase of 30%. After that, it remained above the 60%, in spite of some fluctuations, for the whole period except the early years of the currency board period (starting in 1991, which stopped a couple of hyperinflationary episodes). In 2002, when Argentina abandoned the currency board and the peg to the dollar, it jumped again above 70%, and started to decline Figure 3.2 shows these fluctuations.

The early Peronist government gave impulse simultaneously to a redistribution of income in favour of workers and an industrialisation process (Gerchunoff & Llach: 2000, p. 181-187; Basualdo: 2006, p. 34-37). In its last years, inflation started to pick up, and the diagnosis differed according to the interpretation. The official line, in accordance with the guidance of the IMF, was that there was an excess demand that required tight

Figure 3.2: Profit share in Argentina



Source: Graña (2007).

monetary and fiscal policies coupled with a devaluation to improve the trade balance (Basualdo: 2006, p. 56). These policies were directly aimed at lowering the real wage and domestic demand. We can see then, that from early on a more equal distribution of income (that never got even close to the values of developed countries in terms of its progressiveness) was seen as an obstacle to the economic development of the country. The "Stabilization program" of the Frondizi presidency (1958-1962) contained many of these measures (Gerchunoff & Llach: 2000, p. 260-262), coupled with other measures aimed to the creation of "investment conditions" for foreign capital that could solve the external sector constraint. Not all governments acted in the same vein: the Illia government (1963-1966) recognised higher real wages (Diamand: 1973, p. 185); the dictatorship of Ongania (1966-1970), even though devalued significantly the exchange rate, also adopted taxes on agricultural exports to compensate the likely increase in imports and food prices (Diamand: 1973, p. 186; De Pablo: 1975, p. 64), and expanded public investment (Basualdo: 2006, p. 59). The manufacturing sector grew at high rates, especially from 1964 to 1974 (Gerchunoff and Llach: 1975, p. 10)[2]. The third Peronist government (1973-1974) tried to implement wages and prices agreements (Gerchunoff and Llach: 2000, p. 343-345) and it succeeded, initially. Real wages, output and even the trade balance increased altogether. The political situation, though, deteriorated quickly, and combined with a recessive program implemented by Celestino Rodrigo (finance minis-

[2]The article from Gerchunoff & Llach: 1975 was co-authored by Juan José Llach; the book Gerchunoff & Llach: 2000 was written by Lucas Llach, Juan José's son.

ter from Maria Estela Martínez de Perón, Perón's widow and president between 1974 and March 1976), inflation broke loose and the country descended into stagflation. The dictatorship of Videla took over, and it lasted for seven years, although in the last two years different (de facto) presidents took over, such as Roberto Viola, Leopoldo Galtieri and finally Roberto Bignone, the last military president.

Figure 3.2 shows the impact of the dictatorship on income distribution. That took place through political repression, trade and financial openness, exchange rate policies, deindustrialisation, etc. (Basualdo: 2006, chapter 3; Canitrot: 1981; Feldman & Sommer: 1986). Many of these economic policies (in particular, trade and financial openness), and others such as the privatisation of vast parts of the productive structure, continued until 2001[3]. The adoption of a "profit-led" strategy can be clearly seen when we analyse the deregulation of the labour market, including the reduction of costs associated with the licensing of workers, a decentralization in wage bargaining, more flexibility in terms of allocation of working hours, etc., measures that impacted strongly on income distribution (Beccaria & Galin: 2002).

This profit-led strategy was maintained for a period of 25 years. Was it effective in fostering economic growth? Is a more unequal income distribution a requirement for achieving and sustaining higher investment rates for longer periods? Did it improve the performance of the trade balance in a significant way? This chapter deals with this topic, analysing a country that experimented with this strategy, after decades of higher wage and living standards.

3.3. KALECKIAN MODEL: TWO VERSIONS

There are two distinguishable strands in the literature when it comes to corroborate empirically the validity of the Kaleckian model of growth. The first one, more popular, takes income distribution as exogenous, and evaluates how changes in distributional parameters affect the components of private GDP (consumption, investment and the balance of trade). Differences arise because of differences in the explanatory variables in each function, but a specific direction of causality can be established a priori. This is what Hein & Vogel (2008) have done, and it will be presented next.

The other strand applies what has been termed a "system's approach", in which the determination of income distribution is equally endogenous. Usually, it is corroborated via a VAR model, or a VEC, in case there is a cointegration relationship between some or all the endogenous variables. That was the method adopted by Onaran & Stockhammer (2004; 2006).

[3] A study about market deregulation can be found in Azpiazu (1999), while Damill & Keifmann (1991) analysed trade liberalization in the late eighties and early nineties.

3.3.1. EXOGENOUS DISTRIBUTION

This model does not include financial markets, nor technical progress[4], so that labour productivity and the capital – potential output ratio are constant. It depicts an open economy with no government, that depends on imported inputs for production purposes and produces a single tradable product, apt for consumption and investment. Finally, the nominal exchange rate is determined by the monetary policy, so we can treat it as an exogenous variable.

Kaleckian models assume that prices are composed by some form of cost-plus pricing rule[5]. In our case, firms add a mark-up over unit variable cost (labour and imported inputs), which is determined by the degree of monopoly in the goods market and by the relative power of workers and firms in the labour market (Kalecki 1971). Thus, with a little bit of algebra, we can build the following price equations, each equal to the other:

$$p = (1+\theta)\left[\frac{w}{y} + p_f e\mu\right] \quad (1)$$

$$p = (1+\theta)\frac{w}{y}\left[1 + \frac{p_f e\mu}{{}^{W}/_{y}}\right] = (1+\theta)\frac{w}{y}(1+z) \quad (1)'$$

In these equations, θ describes the mark-up rate, W is the nominal wage rate, y is output per unit of labour, p_f is the foreign price level, e is the nominal exchange rate, and μ represents unit imported inputs. z, in turn, expresses the ratio between unit material costs (composed of imported inputs) and unit labour costs:

$$z = \frac{p_f e\mu}{{}^{W}/y}$$

It can be shown that, with the previous definitions, the profit share of aggregate income is given by:

$$m = \frac{1}{\frac{1}{(1+z)\theta} + 1}$$

A higher ratio between material costs and unit labour costs implies a higher profit share, for a given mark up. And a higher mark-up also implies a higher profit share, given the aforementioned ratio. The same holds for a higher (more depreciated) nominal exchange rate. What about the *real* exchange rate?

The real exchange rate is:

$$e_r = \frac{e p_f}{p}$$

In dynamic terms, we have

$$\hat{e}_r = \hat{e} + \hat{p}_f - \hat{p}$$

[4] In the mentioned book edited by Setterfield (2010), the works by Hein & Van Treeck provide a survey of articles and works on how to include financial variables into Kaleckian models, while the chapter written by Naastepad & Storm deals with technical change.

[5] Among others, see Lee (1998) , Downward & Reynolds (1996) and Downward & Lee (2001).

If we take the derivative of e_r with respect to the profit margin θ and the nominal wage w, we can see that each is negative, so the overall derivative $\frac{\partial e_r}{\partial m}$ is a priori undetermined.

All these parameters are exogenous, so in actual terms we must speak of a constant profit share; and when we perform the simulations, it will be assumed that the parameter that moves is the mark up, except in the case of the trade balance where the effect is undetermined, as we said.

In order to analyse the effect of changes in income distribution on economic activity we must study the equilibrium in the goods market of an open economy. The equality between savings and investment plus net exports is an identity, but they have different determinants. For a steady state to be achieved, we must make sure that the saving rate (normalized by the capital stock, σ = S/K) be equal to the sum of the accumulation rate (g = I/K) plus net exports (b = NX/K).

Savings comes both from profits and wages, though the saving propensity out income of the former (s_p) is higher than that out of the latter (s_w). With u representing capacity utilization, v being the capital-output ratio, Y symbolising income and P being gross profits, we have the following:

$$\sigma = \frac{s_p P + s_w (Y - P)}{\kappa} = [s_w + (s_p - s_w)m]^u / v \quad (2)$$

The investment function is the one presented in Bhaduri & Marglin (1990). Even though there are critics of that type of specification , it allows for a variety of demand regimes to occur, and that's why it has been extensively used in the empirical research. It runs as follow:

$$g^i = \gamma + \gamma_u u + \gamma_m m \quad (3)$$

In this formulation, γ represents autonomous investment, due perhaps to some assessed sales trend, or "animal spirits". Investment reacts to capacity pressures (measured by capacity utilization) and profitability. We need now to check the balance of payments, for which we adopt a very simple formulation, in which the balance of trade (the only element included in this model) depends positively upon the real exchange rate (as a measure of competitiveness) and negatively on capacity utilization (representing demand). The real exchange rate, in turn, also depends on distributive variables, which are captured here by the profit share. We have thus equation (4):

$$b = NX/K = \psi e_r(m) - \phi u, \quad \psi and \phi > 0 \quad (4)$$

Stability conditions require that savings react strongly to variations in demand (represented by capacity utilization) than investment and net exports, combined. Otherwise, with investment reacting stronger than savings to changes in demand, there would be a never-ending self-reinforcing expansion or depression, with no possibility of achieving a macro equilibrium. Referring to what we expressed in the previous chapter, we need to assume *Keynesian* stability, which in mathematical terms, requires that the parameters fulfil the following inequality:

$$\left[s_w + (s_p - s_w)m\right]^1 / _v - \gamma_u + \phi > 0 \quad (5)$$

The equilibrium values of capacity utilization and accumulation rate, in turn, are:

$$u^* = \frac{\gamma + g_m + \psi e_r(m)}{\left[s_w + (s_p - s_w)m\right]\frac{1}{v} - g_u + \phi} \quad (6)$$

$$g^* = \gamma + \frac{\beta\left[\gamma + g_m m + \psi e_r(m)\right]}{\left[s_w + (s_p - s_w)m\right]\frac{1}{v} - g_u + \phi} + g_m m \quad (7)$$

This study tries to analyze the effect of income distribution on economic growth. The independent variable in this model is m, and its impact of a change in it on the equilibrium levels of utilisation and growth are:

$$\frac{\partial u^*}{\partial m} = \frac{g m - (s_p - s_w)\frac{u}{v} + \psi\frac{\partial e_r}{\partial m}}{\left[s_w + (s_p - s_w)m\right]\frac{1}{v} - g_u + \phi} \quad (8)$$

$$\frac{\partial g^*}{\partial m} = \frac{g_m(\frac{s_w}{v} + \phi) + (s_p s_w)(g_m\frac{m}{v} - g_u\frac{u}{v}) + g_m\psi\frac{\partial e_r}{\partial m}}{\left[s_w + (s_p - s_w)m)\right]\frac{1}{v} - g_u + \phi} \quad (9)$$

Stability conditions require that the denominator be positive. The effects shown in equations (8) and (9) might go in one way or the other, depending on the sign of the numerator. Regarding the impact on capacity utilization, the increase in the profit share has a positive effect through its impact on investment (g_m), a negative impact through consumption ($(s_p - s_w)\frac{u}{v}$) and an undetermined effect on the balance of trade ($\psi\frac{\partial e_r}{\partial m}$). The latter depends on the source of change: it is assumed that lower wages favour net exports, while higher profit margins decrease them. The effect on accumulation is equally undetermined, and it crucially depends on the relative size of the coefficients g_m and g_u. It may well be possible that the sign of equation (8) be positive, while equation (9) be negative.

3.3.2. ENDOGENOUS DISTRIBUTION

A different route was followed by Onaran & Stockhammer (2004; 2006). In their papers, Onaran and Stockhammer question the exogenous character of distribution, and argue instead in favour of a simultaneous approach to analyze these matters, where distribution, demand and capital accumulation are all endogenous variables. In order to do so, they perform a Structural VAR approach (SVAR). However, they do not try a non-theoretical econometric model, quite on the contrary. What characterizes the SVAR approach, i.e. what gives it the character of "structural", is that one can impose contemporaneous restrictions on the interaction of the variables and then execute hypothesis testing in order to corroborate or reject their empirical pertinence. These restrictions are based on a theoretical model, and in Onaran and Stockhammer they serve the purpose of estimating many of the same hypotheses included in the work of Hein and Vogel. Onaran and Stockhammer emphasize that, even if one imposes contemporaneous restrictions on the behaviour of the variables, in the long run one can still observe, in this methodology, values opposed to the contemporaneous effects.

Table 3.1: List of equations of the Onaran & Stockhammer (2004; 2006) model.

A. Investment	$g_t = a_0 + a_1 u_{t-1} + a_2 m_{t-1} + a_3 nx_t$
B. Capacity utilisation	$u_t = b_1 g_t + b_2 m_t$
C. Profit share	$m_t = c_0 + c_1 u_t + c_2 L_{t-1}$
D. Net exports	$nx_t = d_1 u_t + d_2 m_t$
E. Employment	$L_t = e_0 + e_1 g_t + e_2 \Delta u + e_3 L_{t-1} + e_4 m_t + e_5 nx_t$

The restrictions imposed on the contemporaneous interactions of the variables represent the theoretical core of the model. A full list of these is presented in Table 3.1, though it will not be possible to test them all, due to data characteristics and other econometric problems that will be explained in due time.

Equation A is similar to equation (3), with lagged variables to reflect an accelerator process, and it includes net exports as an explanatory variable. The rationale of this specification, according to Onaran and Stockhammer, is to test the relevance of an export oriented strategy for investment growth (in the 2006 article, they test this model for South Korea and Turkey). Accumulation, in turn, also affects capacity utilization, as well as the profit share, though in the latter case the sign of b_2 is a priori undetermined: if it is positive, one can say that the demand regime is profit-led (a much simpler expression than the original denomination "exhilarationist"): if it is negative, then one can characterize the system as wage-led.

Even though it is not the objective of this chapter to explore in depth the determinants of income distribution, the SVAR approach forces us to take a look at them, and the variables we have chosen do not seem unreasonable. In equation C, higher capacity utilization is assumed to impact positively, and the employment level in a negative way, due to increased bargaining power of workers. The equation for net exports is a standard one, in which they are explained by capacity utilization (a higher level may imply higher imports) and the profit share, in order to reflect the competitiveness of the economy, so that one expects in principle that d_2 be positive. In case it is not, or if it turns out to be not significant, there are grounds to sustain that devaluations and income transfers that these carry along with them are not sufficient (or must be exceedingly large) to impact positively the trade balance.

The equation E, finally, explains the movement in employment, and use as explanatory factors the lagged values of that variable (in order to reflect an hysteresis process), accumulation, change in capacity utilization, and two variables that might capture the effects of an export-oriented development strategy: the profit share and net exports. The former also pretends to represent the neoclassical hypothesis according to which a regressive income distribution is a requisite for stimulating employment.

3.4. PREVIOUS ARTICLES ON DIFFERENT COUNTRIES

Table 3.2 presents a survey of previous studies that applied some version of the Kaleckian growth model to different countries. This table is inspired and based on Hein & Vogel

(2008, 488-489), but more recent studies have been added. We include the econometric techniques, the periods, the functional specification, and the results. A more exhaustive survey in terms of countries, but less detailed in terms of techniques is found in the Appendix D of Onaran & Galanis (2012). We can see that the methodology adopted by Hein and Vogel was the most common, even though the exact specification varied across the studies.

Results differ considerably across studies, depending on the specification of the regressions, the period under analysis, the frequency of the observations, etcetera, though in general terms they found a majority of wage-led countries. Perhaps one exception is the USA, where most of the studies (though not all) found it to be profit-led, but these studies did not include measures of consumer indebtedness, for example, that may blur the clear-cut picture between profit-financed investment and wages-financed consumption.

Onaran & Galanis (2012) adopt a somewhat novel approach, asking a somewhat novel question. They perform the same tests as Hein and Vogel for consumption and investment, while for net exports they follow Ederer, Onaran & Stockhammer (2009). They developed, however, a "global multiplier", which takes account of a point usually forgotten in the austerity recipe aiming at "gaining competitiveness" for countries in crisis (and one can safely say that there are many in that situation nowadays): that if all (or many) countries lower their wages at the same time, even though some might react positively by themselves, that effect is nullified by the aggregate impact of global austerity. That result holds for the Euro Area and for 15 out of 20 members of the G20. As they put it, "the most novel finding of this paper is that even if there are some countries, which are profit-led, the global economy is wage led. Thus, a simultaneous wage cut in a highly integrated global economy leaves most countries with only the negative domestic demand effects, and the global economy contracts. Furthermore some profit-led countries contract when they decrease their wage-share, if a similar strategy is implemented by their trading partners." (Onaran & Galanis: 2012, p. 42).

The last strand of literature that should be mentioned is the work by Julio López Gallardo, in particular López G. (2012a and 2012b). He estimates similar models for six developed economies, using Vector Error Correction (VEC) models, taking account of the wage share, world output, the interest rate, some proxy for the state of liquidity of the economy, and government spending. In the latter work, he applies a similar model to the Mexican economy, adding the negative impact of taxes on GDP. This latter work is of great significance since it is among the first to analyse a Latin American economy with a similar theoretical perspective.

3.5. PREVIOUS ARTICLES ON ARGENTINA

We have given a succinct depiction of the interplay of growth and distribution. We are not the first ones to do that for Argentina, Argentinean economists have long been interested in the effects of income distribution on economic activity. However, only recently there have appeared studies that deal with this question in a more formal econo-

Table 3.2: Survey of empirical applications of the Kaleckian growth model, based on Hein & Vogel (2008, 488-489)

Author	**Countries**	**Period**	**Econometric method**	**Consumption/ Saving**	**Investment**	**Exports/ Imports**	**Closed economy**	**Open Economy**
Bowles & Boyer (1995)	Fr., Ger., Jap, UK and USA	1961-1987 (savings and net exports); 1957-1961 investment	OLS with AR (1) adjustment	$S/Y = f(m)$	$I/K = f(r, L)$	$NX/Y = f(r, L)$	All wage-led	Fr., Germ., Jap: wage led; UK & USA: profit-led.
Gordon (1995)	USA	1955:1-1988:4	OL2S (with ARMA adjustment)	$S^a = f(u, r, i)$	$I^a = f(u, r, i)$	$NX = f(u, r, i)$	Profit-led	Profit-led
Onaran & Stockhammer (2004)	Fr., UK and USA	1972:1-1997:1 (Fr,);1966:1-1997:2 (USA), 1970:1-1997-2 (UK)	SVAR	Variables: $I, u, m, u, \widehat{y}$ Contemporaneous effects: $I \rightarrow u, u, \widehat{y}; u \rightarrow m, u, \widehat{y}; \widehat{y} \rightarrow u, m$. Investment: $g = I/K = f(u, m, \widehat{y})$			Not estimated	Not significant*
Onaran & Stockhammer (2006)	Turkey and South Korea	1965-1997 (Turkey); 1970-2000 (South Korea)	SVAR	Variables: $I/Y, m, X/Y, M/Y, u, L$ Contemporaneous effects: $I/Y \rightarrow u; m \rightarrow X/Y, M/Y, u; X/Y \rightarrow u; u \rightarrow M/Y, E$. Inversión: $g = I/K = f(u, m)$			Not estimated	Wage-led, Turkey in short term, South Korea in long term
Naastepad (2006)	Netherlands	1960-2000	OLS (with AR(1) adjustment)	$S/Y = f(m)$	$\widehat{I} = f(\widehat{m}, Y)$	$\widehat{X} = f(\widehat{Y}_{world}, \widehat{ULC}_{relative})$	Wage-led	Wage-led (but only marginally)
Naastepad & Storm (2007)	Fr., Germ., It., Jap., NL., Spain., UK, USA	1960-2000	OLS (with AR or ARIMA adjustment)	$S/Y = f(m)$	$I/Y = f(m, Y)$	$\widehat{X} = f(\widehat{Y}_{world}, \widehat{ULC}_{relative})$	Fr., Ger., It., Sp., NL., UK: wage-led; Jap., USA: profit-led.	Fr., Ger., It., Sp., NL., UK: wage-led; Jap., USA: profit-led.
Ederer & Stockhammer (2008)	Austria	1960-2005	OLS (estimated as ECM)	$\widehat{C} = f(\widehat{W}, \widehat{Y})$	$\widehat{I} = f(\widehat{Y}, \widehat{P}, \widehat{i})$	1) $NX/Y = f(\widehat{Y}, \widehat{Y}_{com}, e, (1-m))$ 2a) $\widehat{X} = f(\widehat{Y}_{eu12}, \widehat{e}, \widehat{p}_x/\widehat{p}_m)$ 2b) $\widehat{p}_x = f(\widehat{p}_m, \widehat{p}$ 3a) $\widehat{M} = f(\widehat{Y}, \widehat{e}, \widehat{p}/\widehat{p}_m)$ 3b) $\widehat{p} = f(\widehat{p}_m, \widehat{ULC}, \widehat{Y})$	Wage led.	Wage-led in 1960, profit-led in 2005.
Hein & Vogel (2008)	Austria, Fr., Ger., NL., UK and USA	1960-2005, except consumption UK: 1970-2005	OLS (with AR(1) adjustment, others estimated as ECM)	$C = f(W, P)$	$I = f(Y, m, , i)$	$NX/Y = f(m, Y, Y_{mundo})$	Austria, Fr., Ger., UK and USA: wage-led.; NL: profit-led	Fr., Ger., UK and USA: wage-led; Austria and NL: profit-led.
Ederer, Onaran, and Stockhammer (2009)	Euro Area	1962-2006 (consumption and net exports), 1968-2005 (investment)	OLS (with AR(1) adjustment)	$C = f(W, P)$	$I = f(Y, P, i)$ (estimated as ECM)	1) $NX/Y = f(\widehat{Y}, \widehat{Y}_{com}, e, (1-m))$ 2a) $\widehat{X}? = f(\widehat{Y}_{com}, \widehat{e}, \widehat{p}_x/\widehat{p}_m)$ 2b) $(\widehat{p}_x = f(\widehat{p}_m, \widehat{p})$ 3a) $\widehat{M} = f(\widehat{Y}, \widehat{e}, \widehat{p}/\widehat{p}_m)$ 3b) $\widehat{p} = f(\widehat{p}_m, \widehat{ULC})$	Wage-led.	Wage-led.
Stockhammer and Stehrer (2011)	Australia, Can., Ger., Fin., Fr., Ir., Jap., Lux., NL, Swe., UK and USA	1970:1-2007:2	OLS (estimated as ECM)	$C = f(W, Y)$	$I = f(W, Y)$		Ger., Fin., Fr., Irl., Lux., NL., Swe.: wage-led; Australia, UK: profit-led; Jap., USA: not signif.	
López G. (2012a)	France, Germany, Japan, Spain, UK and USA	1980:1-2008:3, except Fr. 1980:1-2007:1, Germ. 1990:1-2008:3 and Japan 1988:1-2008:3	VEC	$Y = f(\omega, Y_{oecd}, M_s, i, G)$			Not estimated	France, Germany, Japan, Spain, UK and USA: wage led.
López G. (2012b)	México	1988:3-2006:4	VEC	$Y = f(\omega, Y_{oecd}, M_s, i, G, T)$			Not estimated	Wage led.

Notes: C = real aggregate consumption, e = nominal Exchange rate, g= accumulation rate, G= government spending, i= real interest rate, I= real gross investment, In = real net investment, K = capital stock, L = employment rate, m = profit share, M = real imports, Ms= money supply, NX = trade balance, p = domestic price level, pm = imports prices, px = exports prices, P = gross profits, r = profit rate, S = real gross savings, Sn = real net savings, T = taxes, u = capacity utilization, ULC = unit labor costs, ULCrelat = unit labor costs relative to commercial partners, ν = unemployment rate, W = real wages, ω= wage share, X = real exports, y = labor productivity, Y = GDP, Ycom = GDP of main commercial partners, Ymundo = rate of growth of global trade, Yoecd= OECD GDP.

metric manner, in particular Lanata Briones & Lo Vuolo (2008; 2011). Notwithstanding, in a more informal way, one can trace articles back to late 70s, starting with a discussion between Lavagna (1978a and 1978b) and De Pablo (1978). Lavagna's point is that the investment rate during "populist" governments (basically Peronist governments) was pretty much the same as during "liberal" governments (unlike in the US and Europe, in South America "liberal" governments are mainly composed of dictatorships), even though the wage share was on average 6% higher in the former than during the latter's terms. Using other definitions of investment (net instead of gross) De Pablo (1978) finds opposite arguments, though he does not refer explicitly to income distribution.

Panigo et al (2007) have found a significant and positive influence of the wage share on private investment for the period 1970-2005. However, in a larger macroeconometric model, a study published by the Ministry of Economy and Production (in which Panigo also took part, (Panigo et al 2009)), they found that both capacity utilization and the profit share were significant and positive explanatory variables of private investment for the period 1970-2007, though the *profit* share had a negative impact on private consumption, as expected. Lindenboim, Kennedy and Graña (2005; 2006; 2011), in turn, find a constant (on average) investment rate (but not stable), for long periods of time, amid substantial shifts in the wage-profit income distribution, in particular starting in the late 1970s, and during the 1990s. The profit share rose through big jumps (especially in 1976, 1989 and 2002), without experiencing such abrupt falls, but the investment rate did not rise in the same fashion.

This explanation is not incompatible with the story told by Basualdo (2006). During Peronist governments and up to around 1962, the business cycle was dictated by the movements in the wage share, the only source of demand in a rather closed economy, with a industrialization process oriented towards consumption goods. After the government of Frondizi (a president debunked in 1962, that is the explanation of the date), the dominant class could rely more on the growth of intermediate goods producers and manufactured exports. In the typology developed by Bhaduri & Marglin (1990) and summed up by Blecker (2002, p. 134), it would be a profit-led regime with cooperative features (though the social unrest of the period does not reflect that).

With the dictatorship and the dependence on foreign indebtedness as the main relief to the foreign exchange constraint, there occurred a shift in the demand regime, according to Basualdo. Profitability was disengaged even more from domestic demand, by a reliance on financial investment more than real investment, in a context of severe deterioration of income distribution (the wage share fell from 50% to 30% in one year alone). Domestic demand stagnated, and what flourished was fuelled by foreign debt, not by investment. This could configure a conflictive wage-led regime, in the aforementioned typology.

Last but not least, it is time to make a reference to Lanata Briones & Lo Vuolo (2008, 2011), especially the latest work, since it elaborates upon the previous, adding some years to the data (1960-2008). The writers find that the Argentinean economy had during that period a wage-led demand regime, but its characteristics were not homogenous during the period. In the first one, which goes from 1960 to 1981, the propensity to save out of wage income was way below the propensity to save out of profits, so that the wage share drives private consumption and it created an important accelerator effect driving

as well investment.

For the second period, the results also indicate a wage-led demand regime, but with much nuanced characteristics, up to the point that one could say they are not significant. The propensities to consume of both classes are very similar, but at the same time, there is a strong decoupling between the profit rate and the accumulation rate. Both factors are interpreted in a similar fashion as Basualdo (2006). There occurred a change of regime, based on the openness of the capital account and the deregulation of the financial sector, in which financial valorisation took over as the main profit source mechanism, a process recently identified in the developed world and known as financialisation, in which consumption is driven by debt (which is why the propensity to consume out of profits rises so much) and in which the surplus is channelled to the financial sector and, in the Argentinean case, foreign assets such as holdings of dollars and deposits in global financial centers as Switzerland. Cibils & Allami (2008) reach similar conclusions regarding the period 1990-2007. We will try to corroborate those findings with the data available (much of Lanata Briones and Lo Vuolo data was elaborated by themselves based on several sources; we will rely on those primary sources, as explained later).

Finally, Onaran & Galanis (2012) found that domestically speaking (that is, looking only at consumption and private investment) Argentina was a wage-led economy for the period 1970-2007, but the positive impact of an increase in the wage share on net exports was of a magnitude enough to turn the country into a profit-led economy. However, they do mention (like we did before) that if we include the effect of a simultaneous global contraction, the economy recovers its wage-led characteristics, and the same holds if only its trading partners (and not the whole world) follow the same path.

3.6. ECONOMETRIC APPROACHES AND THE DATA

3.6.1. THE ECONOMETRICS

If we are going to perform Ordinary Least Squares (OLS), we must check for the non-stationarity of the variables, to check their integration order, and if there is a cointegration relationship between the variables involved. If we omit that relation, we would be omitting a relevant variable, and Hein and Vogel take care of not making that mistake. In their model, they test an equation for every component of GDP, except public expenditure. For private consumption, they use real labour compensation and real gross profits as independent variables. For the balance of trade, one usually includes some other exogenous variable such as world GDP growth (we will use world GDP), as well as in the investment function. In a VAR approach, that separation between exogenous and endogenous variables gets blurred.

What Onaran and Stockhammer do, is to test a Structural Vector Autorregressive model (SVAR) for five countries, including two developing ones. What makes a VAR "structural"? Consider the following model:

$$y_t = b_{10} - b_{12}x_t + \gamma_{11}y_{t-1} + \gamma_{12}x_{t-1} + \epsilon_{yt} \quad (10)$$

$$x_t = b_{20} - b_{21}y_t + \gamma_{21}y_{t-1} + \gamma_{22}x_{t-1} + \epsilon_{xt} \quad (11)$$

Rearranging and in matrix notation we have:

$$\begin{bmatrix} 1 & b_{12} \\ b_{21} & 1 \end{bmatrix} \begin{bmatrix} y_t \\ x_t \end{bmatrix} = \begin{bmatrix} b_{10} \\ b_{20} \end{bmatrix} + \begin{bmatrix} \gamma_{11} & \gamma_{12} \\ \gamma_{21} & \gamma_{22} \end{bmatrix} \begin{bmatrix} y_{t-1} \\ x_{t-1} \end{bmatrix} + \begin{bmatrix} \epsilon_{yt} \\ \epsilon_{xt} \end{bmatrix}$$

Or:

$$Bx_t = \Gamma_0 + \Gamma_1 x_{t-1} + \epsilon_t \quad (12)$$

If we premultiply by B^{-1} we get to (13):

$$x_t = A_0 + A_1 x_{t-1} + e_t \quad (13)$$

Where

$A_0 = B^{-1}\Gamma_0$

$A_1 = B^{-1}\Gamma_1$

$e_t = B^{-1}\varepsilon_t$, the error term.

Equation (12) is a primitive or "Structural" VAR, while equation (13) is a standard VAR. Matrix B captures the contemporaneous effects among endogenous variables, and it is assumed that the errors of (10) and (11) are independently distributed and white noise, with standard deviation σ y and σx. The errors of vector e have zero mean and constant variance, but are correlated between themselves. The stability of the system, or its stationarity, requires that the inverse of the eigenvalues of matrix A_1 be smaller than one, or in case they are complex, to have a real part smaller than one.

The usual procedure to estimate that model, the one we will follow, is to start estimating (13) by OLS, obtaining matrix A_1 and the error vectors. With that information, we estimate the elements of B by maximum likelihood. The problem that arises immediately, is the evident case that (12) has more parameters to be estimated than (13), so that a number of restrictions has to be imposed on the values of B. The number of restrictions has to be equal to or smaller than $(k^2–k)/k$, with k = number of variables.

It should be pointed out that Onaran and Stockhammer do not follow exactly this procedure, because it requires to differentiate the variables in case they have a unit root. What they do is to add an intercept and a time trend to cope with the unit root. Onaran and Stockhammer side with Sims (1980) on this matter. Sims emphasizes that the objective of VAR analysis is to analyze the relationship between the variables and not the parameters themselves. However, Enders (2010, p. 322) argues strongly against this, especially if we want to estimate a structural model. What we should do, analogously to

the one equation case, is to estimate a VECM, if there are cointegration relationships between the variables. The formal expression of a VECM is the following:

$$\Delta x_t = \pi_0 + \pi x t - 1 + \pi_1 \Delta x t - 1 + \pi_p \Delta x t - p + \epsilon_t \quad (14)$$

Where π_0 is a vector with a number of rows equal to the quantity of variables k, matrices π_i are kxk, as well as matrix π, which must have one or more elements different than zero (representing the cointegration vectors) and ϵ_t is a vector with errors ϵ_{it}, that might be correlated with ϵ_{jt}. In the Engel-Granger methodology, the term $\pi x_{(t-1)}$ is replaced by the residuals of regression 13. This is the methodology we will apply, if we find a cointegration relationship between the variables.

3.6.2. THE DATA

The data have been collected from different sources and we have taken care in ensuring their consistency. We excluded the years 2007 and 2008 from our sample period, due to well-known manipulation of the data carried on in the institute that gather and presents the information (INDEC). Fernandez et al (2008) and Scialabba & Navarro (2008) provide an early analysis of the damage to the statistics. The following statement from the IMF World Economic Outlook database of 2013 is also revealing (obtained in `http://www.econstats.com/weo/CARG.htm`): "Figures are based on Argentina's official GDP data. The IMF has called on Argentina to adopt remedial measures to address the quality of these data. The IMF staff is also using alternative measures of GDP growth for macroeconomic surveillance, including data produced by private analysts, which have shown significantly lower real GDP growth than the official data since 2008." However, we still found severe inconsistencies in other reports. For instance, the Direction of National Accounts of the Ministry of Economy (`http://www.mecon.gov.ar/peconomica/basehome/infoeco.html`, the file "Nivel de actividad) estimates the trade deficit in 1996 of 3.5 billions of dollars, while the Direction of International Accounts, dependent of the same Ministry (`http://www.mecon.gov.ar/cuentas/internacionales/series_anuales.htm`, file "Cuadro 1") estimates it was $1.8 billions... And we found other mistakes elsewhere. In a publication of ECLAC (1986), the sum of the current account balance, capital account, and movements in monetary gold and SDR is *different* from the variation in foreign reserves by up to 10%. We have chosen the following data believing that it is the *most* reliable to perform these tests, with the mentioned apprehensions in mind. The variables and the sources are the followings:

The work of Graña & Kennedy (2008) updates and corrects the series about income distribution and employment presented in Graña (2007), which was the source used in previous versions of this chapter.

We already show the evolution of the profit share in Figure 3.2. Figures 3.3a to 3.3d show the evolution of GDP, private gross fixed investment, trade balance and employment. GDP, investment and employment level seem to have a growing trend with unit root, while the profit share seems to have a pure random walk behaviour. The trade balance seems to be stationary during the first decades of the period, but later on it looks

Table 3.3: Data sources

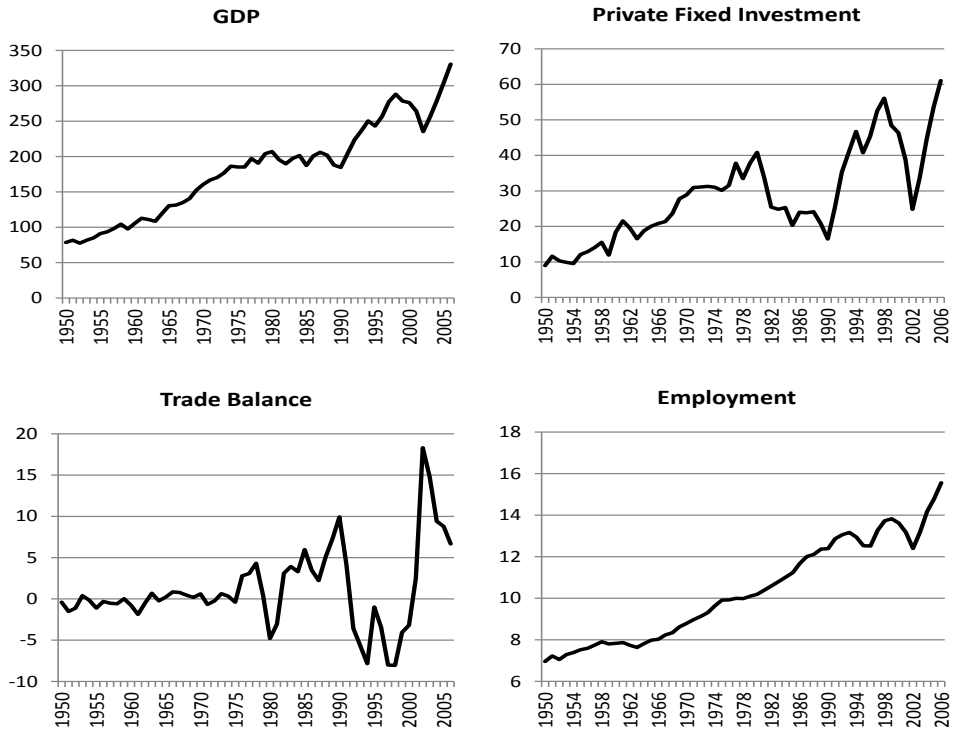
Variable	Unit	Source
GDP	Millions of pesos	Coremberg et al (2007) for 1950-1992; Dirección Nacional de Cuentas Nacionales for 1993-2006.
Private consumption	Millions of pesos	Coremberg et al (2007) for 1950-1992; Dirección Nacional de Cuentas Nacionales for 1993-2006.
Private gross fixed investment	Millions of pesos	Coremberg et al (2007) for 1950-1992; Dirección Nacional de Cuentas Nacionales for 1993-2006.
Trade balance	Millions of pesos	Ferreres (2005) for 1950-1992; Dirección Nacional de Cuentas Nacionales for 1993-2006.
Wage and profit shares		Graña & Kennedy (2008).
Employment		Graña & Kennedy (2008).
World GDP	Millions of 1990 dollars, converted at Geary Khamis PPP	Conference Board Total Economy Database.

like it adopts a behaviour compatible with a random walk. The jumps in the profit share indicate that Argentina is a good candidate to assess whether changes in distributive policies favourable to profit income affect private investment in the direction supposed by the mainstream or not.

Table 3.4 shows the results of unit root tests of the variables. The tests used are the Augmented Dickey-Fuller (the number of lags was chosen according to the lower Bayesian Information Criteria) and the Phillips-Perron. They did not always yield the same conclusions. But we can infer from these results the following: the variables do not have the same integration order, neither in general nor during the same periods. The profit share is not an integrated variable, but real gross profits are, as well as real labour compensation. Both variables were deflated by the GDP price deflator. The logarithms of the employment level is I(1), though its level is I(2). The balance of trade, in turn, was found to have different behaviour according to which period we talk about. Some of the tests performed with the lowest Bayesian Information Criteria reject the null hypothesis of unit root for the period 1950-1981, but none reject it for the period 1982-2006. An explanation why that year must be treated as a landmark in the behaviour of the series will be offered below. An asterisk in the table represents significance at the 90% of confidence.

Overall, the results concerning the presence of unit roots in the variables mentioned are consistent with previous estimations. For instance, Sosa-Escudero (1997) analysed GDP for 1900-1993, and concluded that one cannot reject the null hypothesis of unit root. Carrera, Feliz & Panigo (1999) found similar results for the GDP, trade balance, employment rate and investment, for the period 1980-1998 with quarterly data. Fiorito

Figure 3.3: Data about Argentina



Source: For GDP and Private Fixed Investment: Coremberg et al (2007) for 1950-1992, and Dirección Nacional de Cuentas Nacionales for 1993-2005; for Trade Balance: Ferreres (2005) for 1950-1992, and Dirección Nacional de Cuentas Nacionales for 1993-2005; for employment: Graña & Kennedy (2008).

(2009) finds that both investment and GDP are integrated of order 1. Last but not least, the work of Lanata Briones and Lo Vuolo shares those conclusions.

3.7. RESULTS

3.7.1. THE MODEL OF HEIN AND VOGEL

All equations were estimated using the variance-covariance matrix of White that provides consistent standard errors and correlations even in the presence of heteroskedasticity, avoiding therefore the pernicious effect of that econometric anomaly.

The proxies to measure distribution used in different specifications change in different equations according to different authors, as showed in Table 3.2. Hein and Vogel uses

Table 3.4: Unit-root tests

Variable	ADF	Phillips-Perron
Log(Priv. Inv.)	-2.738658	-2.796128
D(Log(Priv. Inv.))	-7.398887*	-7.411334*
Log(GDP)	-2.277453	-2.127428
D(Log(GDP))	-6.289574*	6.204729*
Log(Profit Share)	-3.644979*	-2.738023*
Log(Employment)	-3.458071*	2.579722
D(Log(Employment))	-5,180338*	-4.849029*
Log(Priv. Cons.)	-2.046322	-2.044508
D(Log(Priv. Cons.))	-8.181970*	-8.076686*
Net Exports	-5.198181*	-3.105646
D(Net Exports)	-6.089349*	-6.043961*
Log(Wage Comp.)	-1.263231	-2.316776
D(Log(Wage Comp.))	-11.67320*	-14.11344*
Log(Real Profits)	1.435049	6.367711
D(Log(Real Profits))	-11.57621*	-26.98484*
Log(World GDP)	-1.692615	-1.859402
D(Log(World GDP))	-4.606323*	-4.606323*

for the consumption function both compensation of real employees and gross operating surplus, adjusted for the compensation of self-employed. Onaran and Galanis (2012) adopt a similar specification, and we will follow on their lead. However, our data has some difference with them, in particular for the period 1993-2005 in which they adjust real gross profits for the compensation of the self-employed. However, when it comes to the investment function and net exports, most studies tend to use the profit share.

Private Consumption

Following Hein and Vogel (2008) and Onaran and Galanis (2012), the effect of a change in distribution on aggregate consumption was estimated according to the following equation:

$$C = f(W, \Pi) \quad (15)$$

Where C_t is private consumption, W_t is real labour compensation and Π is real gross profit. The (logs of the) three variables were found to be I (1), and we could not reject the existence of a long-run relationship between them, so we estimated an Error Correction Model with the following specification:

$$d[log(C_t)] = c + \beta_1 d[log(W)_t] + \beta_2 d[log(\pi_t)] + \beta_3 d[log(W_{t-1}] +$$
$$\beta_4 d[log(\Pi_{t-1})] + \beta_5 d[log(C_{t-1})] \quad (16)$$

In order to obtain the long run elasticities of consumption with respect to real wage

Table 3.5: Consumption function

Parameter	Coefficient	t statistic	Probability
c	0.014485*	1.930572	0.0595
β_1	0.105177**	2.013342	0.0497
β_2	-0.008530	-0.161158	0.8726
β_3	0.065466	1.523126	0.1343
β_4	0.032052	0.531002	0.5979
β_5	0.085675	1.290225	0.2032
R^2	0.350979		
$R^2_{adjusted}$	0.269852		
F		4.326262	0.00145
DW		2.03032	

compensation and real profits, we have to divide the coefficients β_1 and β_2 by one minus the coefficient of the lagged dependent variable, β_5.

Real wage compensation was found to be a significant explanatory variable of private consumption at a 95% of confidence, but that was not the case of real gross profits. Even more, the coefficient β_2 was very small and negative, though the short run impact was positive (but equally unsignificant). The Wald test showed that the coefficients were jointly significant, with an adjusted R^2 of 0.2776. A dummy variable for the year 1993 had to be included in order to control for the normal distribution of errors. Table 3.5 summarizes the findings:

In order to calculate the direct partial effects of changes in distribution on consumption, coefficients β_1 and β_2 were divided by one minus β_5 in order to get the long run elasticity of consumption with respects to profits and wages. After that, the direct partial effects of changes in the wage share were calculated in the same way as Hein and Vogel (2008) and Onaran and Galanis (2012), according to the following condition:

$$\frac{\frac{\partial C}{Y}}{\partial m} = \beta_2 \left(\frac{C}{\Pi}\right) - \beta \left(\frac{C}{W}\right)$$

With the mentioned adjustments, β_2 is worth -0.00933, while β_1 is worth 0.115032. For the terms in parenthesis, we used the average value of each ratio during the period, which was 1.289 in the case of $\frac{C}{\Pi}$ and 1.939 in the case of $\frac{C}{W}$. Based on this data, **a 1% increase in the profit share would lower GDP, considering only its impact on consumption, by 0.23508%**.

Private Investment

Which specification would be suitable to analyse the impact of the profit share on private investment? Hein and Vogel relate the change in investment with the previous *level* of the profit share and the previous logarithm of GDP, as a measure of capacity utilization. Onaran and Galanis use the contemporaneous logarithm of the profit share and GDP. In both cases, though, they use an Error Correction Model. In that way, Onaran

Table 3.6: Investment function

Variable	Coefficient	t statistic	Probability
c	0.140563	0.567686	0.5729
α_1	2.5320720***	8.357637	0.0000
α_2	-0.314988	-0.878394	0.3841
α_3	0.057361	0.182769	0.8557
α_4	0.375582*	1.746825	0.0871
α_5	-0.016998	-0.720802	0.4745
R^2	0.709715		
$R^2_{adjusted}$	0.673429		
F		19.55912	0.0000
DW		1.866924	

and Galanis for instance incorporate contemporaneous and previous effects of GDP and profit share on investment.

Given the fact that both investment and GDP are I(1), in our formulation, changes in investment are related to (contemporaneous and past) changes in the profit share, and to contemporaneous and past changes in GDP. The logic is that changes in GDP *accelerate* (or deter) investment. This is not the accelerator principle per se (since it relates the *level* of investment to the *change* in GDP), but it comes close. One can assume that there is a necessary level of investment in order to cover for depreciation of the capital stock, and that investment above that level is stimulated by how fast the economy is growing. The contemporaneous and lagged effect of the profit share is included to reflect the Keynesian idea that expectations are formed on the basis of today circumstances, if there are no reasons to expect a change, and to allow previous profitability expectations to materialize in the investment decisions of firms. The specification of the investment function is as follows:

$$d[log(I_t)] = c + \alpha_1 d[log(GDP_t)] + \alpha_2 d[log(m_t)] + \alpha_3 d[log(GDP_{t-1})] + \alpha_4 d[log(m_{t-1})] + \alpha_5 d[log(I_{t-1})] \quad (17)$$

In this case, α_2 does *not* represent the long run elasticity of investment with respect to the profit share, because the profit share is not an integrated variable. The total impact of the profit share is given by the sums of α_2 and α_4, divided by one minus the coefficient of the lagged endogenous variable, α_5. But first, Table 3.6 shows the results of the regression, which was jointly significant, with a high R^2. A dummy variable for the year 1991 was used in order to control the normality of errors.

The effect of GDP on investment was as expected. There is a significant long run relationship between GDP and investment. But when we look at the coefficients measuring the impact of the profit share, only past changes seem to have a significant impact (at 90% of confidence) on investment. More recent changes actually impact negatively, according to the sign of α_2, though it is not a significant coefficient, and smaller in value than α_4. Remembering that we have to correct for the value of the lagged endogenous variable, The direct partial effect on investment is given, then by:

$$\frac{\frac{\partial I}{Y}}{\partial m} = \frac{\alpha_2 + \alpha_4}{1 - \alpha_5}\left(\frac{I}{Y}\right)$$

The average value of the ratio $\frac{I}{Y}$ during the period was 0.154171. The ratio of the coefficients is 0.059581. Therefore, **the impact on GDP through higher investment would be 0.009186%**.

Trade balance

In the presentation of the model we mentioned that, theoretically speaking, the effect of a higher profit share on net exports was in principle ambiguous, since both a higher profit margin and a higher nominal wage impact negatively on the real exchange rate. However, changes in the nominal exchange rate cause an improvement in the profit share and also on international competitiveness. In this case, the profit share would affect positively the trade performance. Domestic demand is expected to have a negative influence on net exports, and world economic activity is expected to affect positively.

As we mentioned, the behaviour of net exports varies according to the period we select, since starting in 1982 we can identify the presence of a unit root. Therefore, we will run two regressions, one for 1950-1981 and the other for 1982-2006. For the first, we use the following specification, including a term to correct for autocorrelation in the first period:

$$\frac{NX_t}{GDP} = c + \varepsilon_1 d[log(GDP_t)] + \varepsilon_2[log(GDP_t^f)] + \varepsilon_3 m_t + \varepsilon_4 AR(1) \quad (18)$$

While for the second period we follow Hein and Vogel (2008: 499) and include the lagged values of net exports and the profit share:

$$\frac{NX_t}{GDP_t} = c + \gamma_1 d[log(GDP_t)] + \gamma_2[log(GDP_t^f)] + \gamma_3 m_t + \gamma_4 m_{t-1} + \gamma_5 \frac{NX_{t-1}}{GDP_{t-1}} \quad (18')$$

Why have we found a change in 1982? One reasonable explanation is that it was only with the debt crisis in the early 1980s that the new character of the foreign constraint became evident. The current account was no longer the dynamic and autonomous factor of the balance of payments, it was rather the capital and the financial account.

The results are shown in tables 3.7 to 3.9.

It seems that during the first period the profit share was a (positive) significant influence on the balance of trade. The coefficient of the GDP has the expected sign, but it is strangely not significant.

However, these results should not be taken at face value, since we detected a structural break in the regression in 1976 (the Chow test gives as a probability of 0.00031, and no breaks were detected in 1964), so if we run again the regression for the period 1950-1976, the profit share is no longer a significant variable, and the results are much less robust. The equation itself is not significant. These results are shown in table 3.8, and will be the ones considered for the total estimation, with the mentioned caveat.

Table 3.7: Trade balance period 1950-1981

Variable	Coefficient	t statistic	Probability
c	-0.0540703**	-2.392924	0.0245
ε_1	-0.031147	-1.037436	0.3095
ε_2	0.116603	0.885204	0.3845
ε_3	0.000686**	2.063790	0.0496
ε_4	0.540703***	3.125719	0.0045
R^2	0.414841		
$R^2_{adjusted}$	0.321215		
F		4.43085	0.007626
DW		1.639746	

Table 3.8: Trade balance period 1950-1976

Variable	Coefficient	t statistic	Probability
c	-0.033014	-1.468786	0.1574
ε_1	-0.027767	-0.74540	0.4647
ε_2	0.025185	0.224809	0.8244
ε_3	0.000569	1.28270	0.2143
ε_4	0.459642*	1.94089	0.0665
R^2	0.275489		
$R^2_{adjusted}$	0.130586		
F		1.901203	0.14964
DW		1.915557	

Table 3.9: Trade balance period 1982-2006

Variable	Coefficient	t statistic	Probability
c	-0.064417*	-1.983845	0.0627
γ_1	-0.278540***	-6.699556	0.0000
γ_2	-0.029837	-0.126280	0.9009
γ_3	0.001049	0.939697	0.3598
γ_4	0.000147	0.208151	0.8374
γ_5	0.806507***	12.38438	0.0000
R^2	0.918982		
$R^2_{adjusted}$	0.896477		
F		40.83451	0.0000
DW		2.104011	

As for the second period, the profit share is not significant and the impact is also very reduced. The GDP is the most relevant variable, with the expected sign. A Johansen cointegration test could not be corroborated at 1%, and we did not find structural breaks in the expected years (1989 and 1992; there were too few observations to test for a break in 2002). However, the regression has a strangely high R^2.

Without forgetting about the low significance level of the variable that interests us, we can point out that on average, **during the period 1950-1976 the increase in the GDP (through an improved trade balance) given a 1% increase in the profit share would have been only 0.000569%.**

For the second stretch of years analysed, we have to adjust the impact of the profit share (given by γ_3 and γ_4) by one minus the value of the endogenous variable. **The effect increases substantially but still small, around 0.006181% of GDP**. Even though the results showed the expected signs, we do not have evidence to sustain that a regressive income distribution (a restraint on labour costs) had been a requirement to improve the export position in an economically significant way.

Summing up

To conclude with the testing of the Hein and Vogel model, let's sum up our findings: **an increase of 1% in the profit share would reduce GDP 0.23508% through its impact on consumption; would increase GDP 0.009186% through its impact on investment; and would increase it again 0.006181% (using the most recent values) through its impact on net exports. In total, it would have a negative impact of 0.219713% of GDP**. However, we should keep in mind the low significance of the estimations, particularly in the investment and net exports equations. It is turn to perform the Structural VAR.

3.7.2. THE MODEL OF ONARAN AND STOCKHAMMER

Given the mentioned characteristics of the data about the trade balance, we refrain from including it in the VAR, so we are left with a system of four variables: investment, GDP, profit share and employment. The first two variables and employment are estimated in logarithms, which are all I(1), while the profit share is stationary. We worked with the first difference in the integrated variables, and left the profit share untouched. The number of (yearly) lags used (one) was chosen based on the tests of table 3.10.

We will estimate equation 12, that we repeat here for convenience:

$$Bx_t = \Gamma_0 + \Gamma_1 x_{t-1} + \epsilon_t$$

Matrix B captures the contemporaneous effect of interactions between the variables, but is not estimable in a straight way, since restriction must be imposed on its parameters. In other words, we must assume that several elements of that matrix are equal to zero, so that it can be identifiable. According to the manual of the software we used, Eviews (QMC: 2004, p. 721), we cannot put restrictions on the elements of the diagonal

of B, i.e. we cannot assume they are equal to 1. The contemporaneous effects we chose to test are represented in the following matrix:

$$B = \begin{bmatrix} b_{11} & b_{12} & b_{13} & 0 \\ 0 & b_{22} & b_{23} & 0 \\ 0 & 0 & b_{33} & 0 \\ 0 & b_{42} & b_{43} & b_{44} \end{bmatrix}$$

This matrix regulates the contemporaneous effects, but there are no restrictions on the long term behaviour, so that we could observe behaviour opposed to that postulated. The expected sign of the coefficients outside the diagonal are:

- $b_{12} > 0$, representing an accelerator effect;
- $b_{13} > 0$, representing the impact of profit over investment (if negative, it would imply that investment and profit share are inversely related, adding strength to the wage-led hypothesis);
- b_{23} ambiguous: if negative, it implies a wage-led demand regime, if positive a profit-led.
- $b_{42} > 0$, this hypothesis implies that the labour market is ruled by what happens in the goods market. If not, labour market (de)regulation would be more relevant as a determinant of the employment level. The former view is in agreement with Panigo, Toledo & Agis (2008), the latter with Gasparini (2005).
- $b_{43} > 0$, to test for the neoclassical hypothesis about the labor market, in the sense that a greater profit share is a stimulus for increasing employment.

The procedure is as follows: first we estimate a standard VAR, obtaining residuals and coefficients on the lagged variables. These residuals are used to estimate the coefficients of matrix B. Both groups of coefficients are used, later, to calculate the impulse-response functions of the system to external shocks. We have estimated the VAR with

Table 3.10: Lag order selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	97.21777	NA	3.04e-07	-3.655599	-3.504083*	-3.597700
1	128.4716	56.37938*	1.67e-07*	-4.253786*	-3.496208	-3.964293*
2	142.2352	22.66958	1.85e-07	-4.166087	-2.802446	-3.644999
3	150.4439	12.23246	2.59e-07	-3.860543	-1.890839	-3.107861
4	162.4775	16.04488	3.21e-07	-3.705000	-1.129233	-2.720723
5	171.6589	10.80169	4.65e-07	-3.437606	-0.255775	-2.221734

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Table 3.11: Results contemporaneous interactions

Coefficient	Sign	Probability
b_{12}	+	0,0000
b_{13}	-	0,0010
b_{23}	-	0.0016
b_{42}	+	0
b_{43}	-	0.0919
Log Likelihood	130.086	
Test LR of overidentification: Chi square (1)	0.024047	0.8768

Table 3.12: Summary SVAR results for Argentina

Hypothesis	Results
$\frac{\partial L}{\partial g}$	Positive and significant in the short run, insignificant in the long run
$\frac{\partial L}{\partial u}$	Positive and significant in the short run, insignificant in the long run
$\frac{\partial g}{\partial m}$	Negative and significant in short run, not significant in the long run
$\frac{\partial u}{\partial m}$	Negative and significant in short run, not significant in the long run
$\frac{\partial m}{\partial L}$	Negative in short and long run, though not significant
$\frac{\partial L}{\partial m}$	Negative in short run and positive in long run, though not significant

a constant term, to capture long term effects. Since some of the variables are in difference we present the results of the contemporaneous effects according to the sign and the significance of the coefficients.

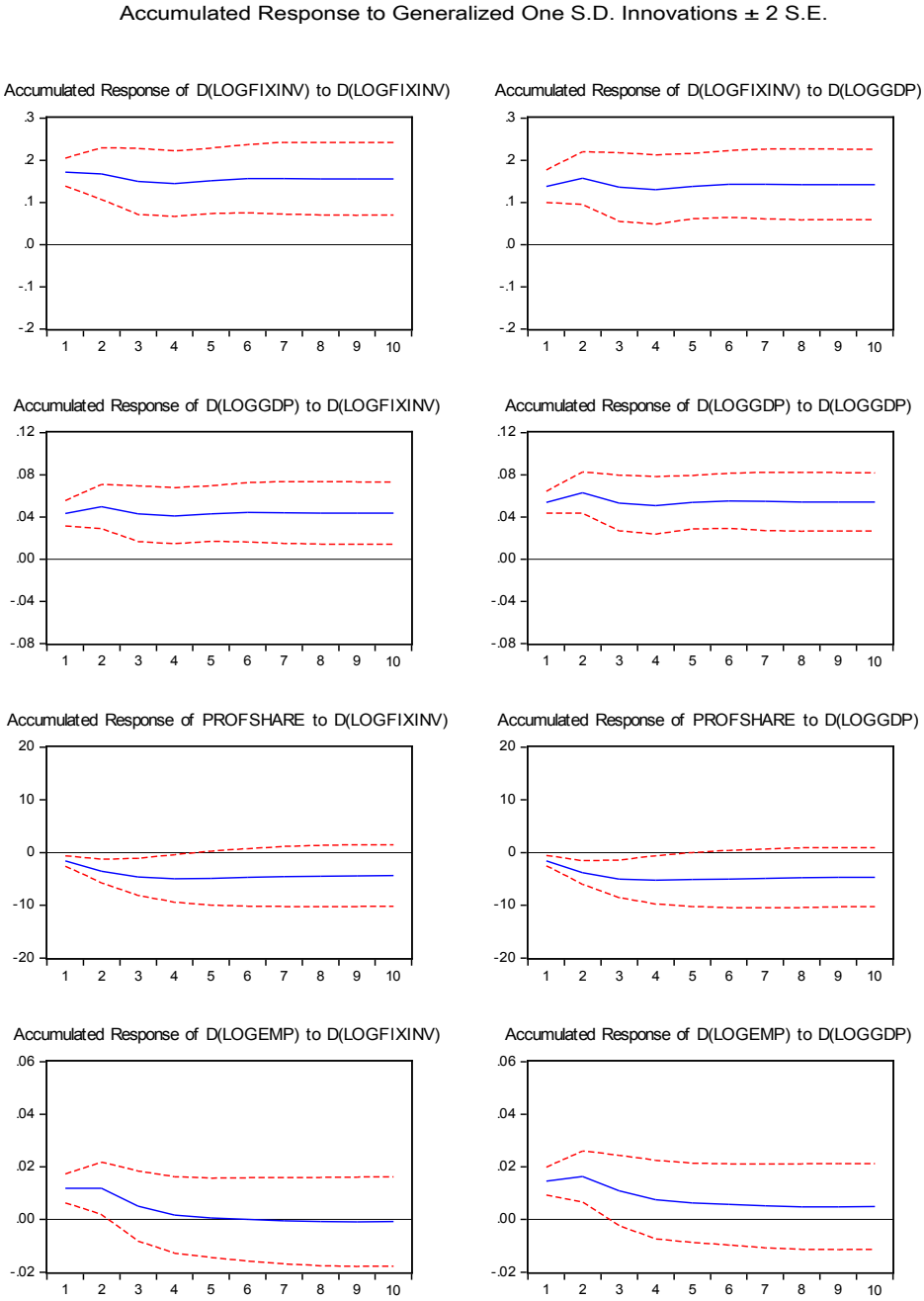
The results are significant. Almost all coefficients have the expected sign expect for b_{43}, though it is the least significant of all the coefficients.

Figure 3.4 shows the simulations based on the impulse response functions, and table 3.12 sums up the results of the hypotheses. The coefficients of the VAR have not been significant. The residuals were controlled for autocorrelation, and for normality. The absolute value of the eigenvalues of the systems are smaller than 1, assuring the stability of the VAR.

3.8. COMPARISONS AND CONCLUSIONS

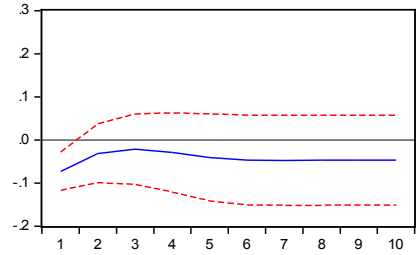
To sum up the results of both models, the main conclusion is that for Argentina the relationship between growth and distribution during the period 1950-2006 (and in particular the causality running from the latter to the former) is neither systematic nor significant from an economic point of view, though the wage share seems to exercise an important influence particularly in the short run. The discussion about the convenience of one or other distributive regime adopts a political character. Given the low significance of the structural VAR model, we conclude that both estimation methods yield the

Figure 3.4: Impulse-response functions

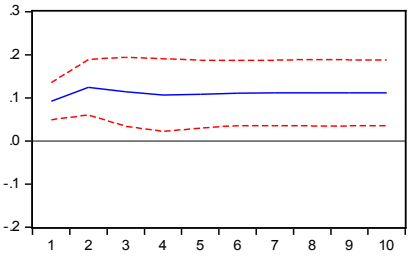


(... continuation)

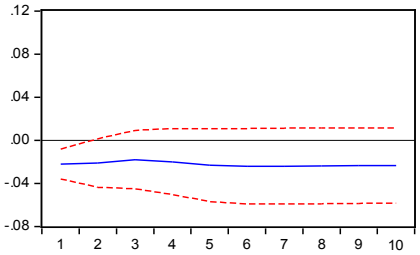
Accumulated Response of D(LOGFIXINV) to PROFSHARE



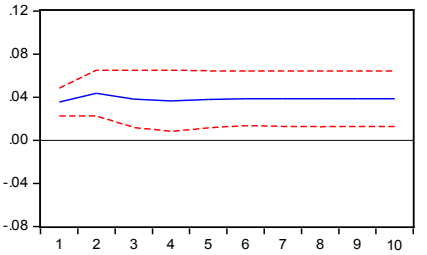
Accumulated Response of D(LOGFIXINV) to D(LOGEMP



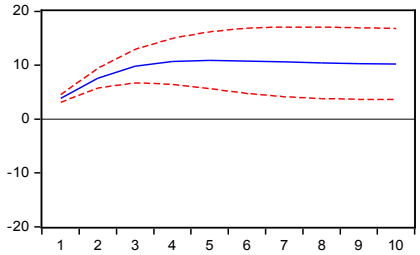
Accumulated Response of D(LOGGDP) to PROFSHARE



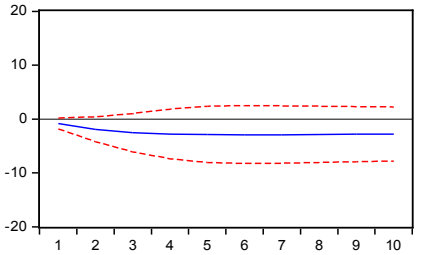
Accumulated Response of D(LOGGDP) to D(LOGEMP)



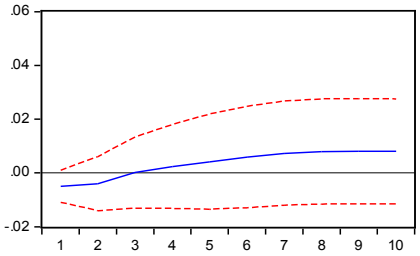
Accumulated Response of PROFSHARE to PROFSHARE



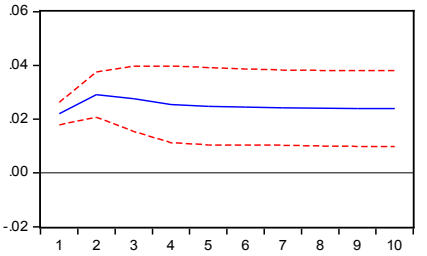
Accumulated Response of PROFSHARE to D(LOGEMP)



Accumulated Response of D(LOGEMP) to PROFSHARE



Accumulated Response of D(LOGEMP) to D(LOGEMP)



same results, though if any, the wage-led nature of domestic demand seems more plausible given the substantial impact of the wage share on consumption. These are compatible with the conclusions of Lavagna (1978a and 1978b), and Lindenboim, Kennedy and Grana (2005, 2006). Just as these authors, we do not find a significant and relevant relationship between profit share, investment and growth. We also find, as Carrera, Feliz & Panigo (1999) and Lanata Briones & Lo Vuolo (2008, 2011) unit roots in GDP, private investment, employment level and (for a certain period) the trade balance.

The change in the character of the foreign constraint (after 1982) is perhaps the main coincidence with the work of Basualdo (2006) and Lanata Briones and Lo Vuolo, and it would add some similarities with the results of Onaran & Galanis (2012). In the latter study, domestic private demand was wage-led but the impact on the foreign sector was substantial. Their time period overlaps mostly with our second one, and our results perhaps do not distinguish the global impact of austerity (it is worth remembering that during the eighties, for instance, the whole of Latin America endured a stagnation period). In any case, it does not seem unreasonable to assume that in the last three decades covered in this study the balance of trade is no longer a factor restricting short-term growth in Argentina. But we could not find structural breaks in the investment function. We also did not find a strong wage-led regime, in particular for the period 1960-1980, as Lanata Briones and Lo Vuolo suggest.

The non-binding character of the balance of trade points towards an inclusion of other elements in the analysis. In particular, we believe that to be more productive, research should include factors linked to the financial deregulation and openness that is already showing its effects in a reduced model as ours, particularly in the behaviour of the trade balance. The global simultaneity and the timing of changes coincident with a tendency towards a change in the regulation of financial markets and a push for loosening capital controls indicates that developments have had a major impact, and in future chapters we will develop models that include these factors. So far, the results presented in this chapter lead us to the following conclusion: it is not through real wage and wage share repression that the economy will find a path of sustainable and equitable growth.

4

SOME NOTES ON STOCK-FLOW CONSISTENT (SFC) MODELLING, AND SOME WISE WORDS FROM JOHN MAYNARD KEYNES

4.1. INTRODUCTION

In the chapter five of this thesis we will develop a Stock-Flow Consistent, two-country model, in which both countries exchange goods and a diverse array of financial assets. Even though during the last, say, five years, there has been an explosion in the literature of SFC models, the mainstream of academic economics remains largely ignorant of it, or has not adopted, discussed and worked with it as thoroughly and widespread as it deserves. If this thesis ever reaches a sympathetic reader with no knowledge on this topic, and who is interested in learning something about the history, aim, scope and width of the SFC literature, we hope that this chapter serves as a useful introduction for that purpose. We also recommend Godley & Lavoie (2007a, chapter 1), Dos Santos (2002), and Caverzasi & Godin (2013). The latter is the most recent survey that covers many relevant areas for the proper understanding and application of this *methodology*. This chapter draws a lot from these works. There is one issue into which we enquire: the adding-up constraint and Walras's Law.

We will first navigate through the origins of SFC models, review their development, and perform a brief survey of issues that have been tackled using this methodology. We will review how well these types of models predicted the global financial crisis of 2008, and how it is used nowadays for empirical work and for policy purposes.

Beyond that point, we hope it is already clear that this thesis dwells around the impact of financial flows on income distribution and economic growth, adopting a Kaleck-

ian perspective. Kaleckianism, in turn, can be considered a branch of a larger community within economic thought, called "Post Keynesianism". We find of some importance then, to review shortly what Keynes himself wrote about the issue and the need for controls on capital and financial movements around the globe. There is a huge literature on Keynes' proposals for an international financial and currency system, but we have not seen an analysis of what he actually said regarding the issue of capital controls, with a few exceptions that will be duly noted. We will dedicate a section to that short review, a section that will conclude this chapter, with a small addition applicable to the present conditions of the Eurozone.

4.2. ORIGINS, DEVELOPMENT AND THEMES REGARDING SFC MODELLING

Caverzasi & Godin (2013, p. 5) and Godley & Lavoie (2007a, p. 23) date the roots of SFC modelling to the work of Morris Copeland (1949) which was the basis for the Flow-of-Funds Account provided by the Federal Reserve ("Federal Reserve Bureau Z.1 Release"). Copeland's intention was to track the origin and destiny of money used in the purchase of national production. This is the backbone of SFC modelling: the integration of real and financial flows in a single comprehensive framework (the formulation of a "monetary theory of production", in terms of Keynes (1933)). The tool can be called "Luca Pacioli squared", in the sense that it relied not on double-entry bookkeeping (an invention more important for mankind than the wheel, according to Davidson (1982, p. 287)), but quadruple-entry bookkeeping: to each transaction corresponds both a seller and a buyer, and also an asset and a liability, a key event that was not taken into account in the original presentations of the United Nations' System of National Accounts (1952).

Copeland's plea to integrate the financial and the real analysis fell on deaf ears in the mainstream. It was the work of a research project in Yale and a group of economist in Cambridge that responded to that call and developed a type of modelling that fulfils the following requirement according to Tobin (the leader of the Yale or "pitfalls" approach):

> "(i) Precision regarding time... (ii) Tracking of stocks... (iii) Several assets and rates of return... (iv) Modelling of financial and monetary policy operations... (v) Walras's Law and adding-up constraints" (Tobin: 1982, p. 172-173).

These definitions make up the core of SFC modelling nowadays. The "pitfalls approach" owes its name to Brainard & Tobin (1968). These models (one can include Tobin & Buiter (1976) and Backus et al (1980)) present in different versions a detailed account of equilibrium wealth allocation and disequilibrium adjustments, after households made their consumption decisions. Their important innovation in fact is the integration of saving and portfolio decisions (Tobin: 1982, p. 187). These are models of flows *and* stocks equilibrium, and can be seen as general SF equilibrium models (Dos Santos: 2002, p. 64). However, production and financing decisions by firms are not explicitly included in

these sorts of models, while the public sector deficit is exogenous, and those are omissions the other strand of pioneering SFC works dwelled into.

It is associated with the work by Wynne Godley and the Cambridge Economic Policy Group or "New Cambridge School", in the late 1970s. Examples of this line of research are Cripps & Godley (1976) and Godley & Cripps (1978, 1983). Their work theorized directly over macroeconomic aggregates, usually conflating the private sector, splitting it from the government and the foreign sector, with the objective of deriving robust empirical regularities from the most aggregate possible level, and with fewer required behavioural hypotheses (Dos Santos: 2002, p. 71-72). This aggregative level led them to propose a stable private expenditure to wealth ratio, a stock-flow norm, which established an association between public deficit and foreign trade, the so called twin deficits. It is worth to mention that in New Cambridge models the budget deficit is endogenous to the state of economic activity. They were also quite explicit in the financing role of banks. But they did not go into the portfolio allocation decisions, since when you put together households, banks and firms, the only real debt is government debt. They also downplayed the role of monetary policy.

It looks natural, then, to look at the development of current Godley-type models, the modern version of stock-flow models. Seminal articles are Godley (1996, 1999a), while the major oeuvre is Godley & Lavoie (2007a). Why the emphasis on stocks and flows? Because this provides the dynamic link to integrate finance and the real economy as they evolve through time: a stock of wealth, capital and liabilities determines a flow of output, money, assets and liabilities given behavioural assumptions, affecting different prices (and therefore distribution), and end up at the end of the period with another stock.

This requires a water-tight accounting, which Tobin interpreted as Walras's Law. It is not the case, however. Walras' Law states that excess demand across all markets must be equal to excess supply, and usually a price mechanism is inserted which assures a market clearing in those markets, in the Arrow-Debreu style. SFC models do not go so far, they just claim that there cannot be any black hole in the system-wide accounting. To better explain what they mean, we must first say that SFC models start by presenting the balance sheet of the economy, with one sector's liability being another sector's assets. The sole exception is usually the capital stock (and housing, in models that contemplate it). They proceed next by depicting the transaction and revaluation matrix that tracks all flows occurring in the economy during a certain period, as well as the capital gains due to asset price changes. The system-wide accounting implies that the accounts of the n-th sector of the economy are completely determined by the accounts of the other n-1 sectors.

This matrix also provides us with the "sectoral budget constraints". "While consistency is required at the accounting level, it is also required at the behavioural level" (Godley & Lavoie: 2007a, p. 14). These budget constraints are important in a number of senses, the most relevant here being that they remind us not only of things that cannot happen, but also of things that should not or are not likely to happen. In other words, they can help to identify unsustainable processes, deviations of long-term norms, leverage build-up, etc.

The accounting is indispensable but not sufficient, obviously. Budget constraints are

part of the equations, but not the only part. Behavioural relations are postulated like in any other model. That is why the SFC framework is called a "methodology which will make it possible to start exploring rigorously how real economic systems, replete with realistic institutions, function *as a whole*" (Godley & Lavoie: 2007a, p. 4, my italics). The specific behaviour of the sectors, institutions and actors involved are left for the modeller to decide, but there is something which is always present in SFC models, and which Godley emphasized consistently: the presence of *buffers*. Inventories, banking deposits, bank discounts, central bank advances, Treasury bills. I still do not think that this has anything to do with Walras's Law. For instance, what is an excess supply in the checking accounts "market"? In the inventories market? Walras Law is interwoven with the Neoclassical visualization of markets, which requires a market-clearing price, with agents having initial endowments, with complete future markets (in the Arrow-Debreu version), etc.

How does one usually proceed with SFC models? After defining the level of aggregation, and the behavioural relations, the model is solved. We follow here the presentation of Caverzasi & Godin (2013, p. 8-9), by saying that the model can be solved analytically and numerically, and in this author's experience, both go hand in hand. The latter is achieved in a tiring but simple way: values of parameters and exogenous variables are calibrated, either through econometric studies, by empirical regularities, or by steady-state requirements. However, there are some requirements that need to be fulfilled and that provide a guide to the calibration: in a steady state all flows and stocks grow at the same rate. This implies the existence of stock-flow norms which should be respected and which are of invaluable help in the calibration. Dos Santos & Zezza (2008) is an example of analytical solutions. Kinsella, Godin & Tiou Tagba-Aliti (2012) and Kinsella & O'Shea (2010) develop algorithmic methods to solve SFC models, in the latter case by means of the Gauss-Seidel method.

The level of aggregation in SFC models depends on the nature of the problem to be tackled. Recently in the social media SFC models have been described as a system of linear equations for macro aggregates. This is not entirely true, but it does have a point. First of all, SFC models can accommodate non-linear behaviour. The model presented in chapter 5 has a non-linear Phillips curve, for example.

However, the point about macro aggregates has some validity. From the very beginning (and that beginning is with Tobin, to say the least) "economy-wide structural equations are an amalgam of individual behaviour and aggregation across a multitude of diverse individuals" (Tobin: 1982, p. 174). New Cambridge models, as we said, aggregated households, banks and firms into one sector. In recent times, however, the level of sectoral differentiation tends to follow, at the most basic level, the institutional design of National Accounts, in which there are households, firms, banks and government (and a central bank, usually separated from the former). Beyond that point, the researcher can split households (Zezza (2008) between the top 5 and the bottom 95%; or different households owning different assets; or different expectations about asset prices as Lavoie & Daigle (2011)); firms (Kim (2006) splits a consumption good and a capital goods sector); Valdecantos (2012) develops a model with "Agricultural and non-agricultural" production plus a third one; Caiani, Godin & Lucarelli (2012) also uses three sectors, more on that paper later); banks (Fontana & Godin (2013) model a commercial

bank and two investment banks to analyse the impact of securitization); and the rest of the world (one, two, or more countries).

It is true, though, that SFC models do not usually deal with microeconomic issues, and theorize about aggregates. This is in full accordance with Keynes (1973 [1936]), for whom "the division of economics between the theory of value and distribution and the theory of money is (...) a false division. The right dichotomy is (...) between the theory of the individual industry or firm and the rewards and the distribution between different uses of a *given* quantity of resources on the one hand, and the theory of output and employment *as a whole* on the other hand" (p. 293). Post-Keynesian approaches are not homogeneous in terms of their viewpoints regarding micro foundations, and a recent and thorough review of the topic, going well beyond the subject of this thesis, can be found in King (2012). However, the aggregation level in SFC models and direct theorizing about macro aggregates reveals a conviction in the relevance of *emergent phenomena*, novel properties that arise when individual agents interact (Hodgson: 2007, p. 220). As Lawson (2007, p. 257) puts it: "A strata of reality can be said to be emergent, or as possessing emergent powers, if there is a sense in which it (1) has arisen out of a lower strata, being formed by principles operative at the lower level, and (2) remains dependent on the lower strata for its existence but (3) contains causal powers of its own which are both irreducible to those operating at the lower level and (perhaps) capable of acting back on the lower level."

Notwithstanding what has just been said, there is a recent line of research that tries to bring SFC models closer to agent-based modelling, adopting microeconomic behaviour from the former (though not necessarily optimizing, in the mainstream sense). That is the plea of Bezemer (2011), to combine models of agents interaction with a thorough description of sectors' balance sheets. For a review of agent-based modelling, the interested reader might check Tesfatsion & Judd (2006) and Borrill & Tesfatsion (2010), among others. Among the articles that can be mentioned are Cincotti, Roberto & Teglio (2010), which investigates the interplay of credit and firms dividends with output and prices; Kinsella, Greiff & Nell (2011), in which the authors replicate empirical regularities of income inequality arising out of competition and innovation; and Seppecher (2012a, b), in which by developing a software named JAMEL, the author aims to show the possibility to account for gross intrasectorial flows and stocks.

4.3. BROADENING SCOPE

The literature on SFC modelling is expanding at an exponential rate. The author has counted close to 100 papers that use the SFC methodology, so there is no point in pretending to be exhaustive. Therefore, we have chosen to do a review of subjects tackled by SFC models, mentioning some relevant articles on the topic, some of the conclusions and the ways explored. The selection is admittedly arbitrary, and the reader can find another survey in Caverzasi & Godin (2013, p. 16-27), though there will be some inevitable overlap with this one.

To start with, there are two very interesting articles by Godin, writing alone or as

co-author, besides all the ones we have already mentioned from this prolific author. In Godin (2012) he mixes employment policies such as Employment of Last Resort (see Wray (1997, 2000) and Papadimitriou (2008) for an introduction to the subject) with savings in energy consumption. The Employment of Last Resort (ELR) is an employment program which offers a job for anybody willing to take it at a certain wage, somewhat lower than the one ruling in the market. When the jobs offered corresponds to productive activity which reduces energy consumption, effective demand rises by effect of the ELR program, but not only that, it also increases more in the consumption-goods sector, while diminishing the energy demand.

In Caiani, Godin & Lucarelli (2012), in turn, he models the introduction of an innovative sector financed with borrowing in a Schumpeterian fashion, and is able to reproduce the dynamics postulated by Schumpeter (1934), with an initial period of inflation and later disinflation (and deflation), and a displacement of all capital goods by new and more productive equipment, both in the capital goods sector and in the consumption goods sector.

Since almost by definition SFC integrates the real and the financial side, it is no surprise that there are a myriad of models analyzing different aspects of banking and financial markets. We will name just a few. Dafermos (2012) analyses different channels through which liquidity preference (by households, firms and banks) affects the real economy, according to different asset allocation, credit rationing and uncertainty. Le Heron (2009) analyses banking behaviour adopting a Taylor Rule and a New Keynesian Phillips curve, and two government fiscal rules: one concerned with public expenditure, and the other concerned with a balanced budget. It is shown that in the presence of more prudent and cautious bank lending in the context of increasing borrower and lender risk, a policy rule concerned with public expenditure acting as an automatic stabilizer actually fulfils its purposes, while a policy that aims at balancing the budget exerts a destabilizing impact on the economy. This result also holds in Le Heron (2012) were he models a generalized crisis in the state of confidence of banks, firms and households. Monetary policy has a limited stabilizing effect in a normal Taylor rule, but even less when the central bank is only concerned with inflation and not with employment (or the output gap).

Lavoie (2008) provides a framework, built on the basis of chapter 11 of Godley and Lavoie (2007a) to analyse the impact of different developments associated with the rise of "financialization", defined as an "increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein: 2005, p. 3). An intention of firms to finance investment through retained profits (achieved through an increased mark-up) instead of equity financing, leads the economy to an inflationary path, which causes losses to the holdings of financial assets of households, bringing down economic activity. Similar effects are achieved if firms decide to increase their dividends payments: there is an ulterior increase on inflation which reduces consumption out of wealth. Van Treeck (2009) goes further into the issue of shareholder value orientation, affirming that actually firms' investment decisions are tempered by dividends claim of shareholders. It takes into account rentiers' propensity to consume and to borrow against financial wealth so that, when dividend payments are increased for example, economic activity might experience

some stimulus but at the expense of a more fragile financial system, because firms have a deteriorated balance sheet and rentiers are more indebted. Hein (2009) distinguish several "growth regimes" according to the impact of higher rates of return demanded by shareholders, and whether they are transmitted into prices, the response of investment to firms' own source of finance, among other motives. Other models that deal with financial fragility in a SFC framework are those of Dos Santos (2005), Kinsella (2011) and Passarella (2012), who provides a survey of past literature as well.

Distributive conflict is modelled in Dallery & Van Treeck (2011). They model a firm and its stakeholders that may have different objectives, which may be mutually incompatible (for instance, regarding accumulation and dividends policies between shareholders and managers, or regarding profits and wages between the two mentioned and workers), so that all objectives might not be realised even in a long run equilibrium.

Dafermos & Papatheodorou (2011) present a SFC model to study the increase in inequality in both personal and functional income distribution observed in the last decades, by distinguishing "classes" within the household sector, such as supervisory workers (and unemployed), non-supervisory workers and capital owners. The model includes government transfers for the unemployed, but also rent payments for housing purposes on houses of different quality (high and low). Through simulations, they track how changes in functional distribution (a rise in wages of non-supervisory workers, for instance) and in rental variables (rent, interest rates) translate into changes in personal distribution, by developing inequality indexes. Zezza (2008) integrates distributive analysis with the development of the housing sector to model the trajectory of the US economy in the last decades, by distinguishing between the top-5 and the bottom-95% of households in terms of income. This is another example of the flexibility in terms of sectoral aggregation that SFC models offer.

The housing bubble in the US was related with the change to "originate-to-distribute" in banking strategy and with securitization. Fontana & Godin (2013) include a commercial and two investment banks to analyse derivatives inflation and banking fragility, according to relative portfolio preference of banks and household income distribution (the authors distinguish between workers and capitalists, that have claims on both types of banking). An expected increase in house prices, for instance, leads initially to a decrease in household leverage (since the value of their net worth increased) but later that fosters more borrowing. Eatwell, Mouakil & Taylor (2008) also depict, in a SFC model, mortgage-based securities (MBS) in the broader context of shadow banking to analyse the crisis of 2008, and by comparing the results they get with stylized facts of that event, they reach the conclusion that the chain of events resembles more a story in which the leading factor was *not* the interaction of housing price expectation with household leverage, but with *banking* leverage, because higher housing prices, and higher securities prices, encourage them to continue to extend mortgage lending and to produce more mortgage-based securities in an "inflating balloon", as the authors quote approvingly of Shin (2009). This has the important conclusion of putting the focus not on mortgage lending, but on the financial innovations associated with the development and exponential growth of mortgage-based securities and generally asset-based securities markets in the last decade. Pilkington (2008) develops a SFC framework to understand the interaction of shadow-banking institutions, outside the regulatory powers of central bank, with

the other sectors of the economy in order to clarify the potential (and actual) fragilities that might arise.

We mentioned Le Heron (2009) as a paper that compares the relative efficacy of monetary and fiscal policy as stabilizing forces. Models depicting the implications of different fiscal policy regimes are Godley & Lavoie (2007b), Martin (2008) and Ryoo & Skott (2013). The first two papers are quite similar, and extend the conditions under which the debt to GDP ratio is stable in the long run, even in the presence of a NAIRU. In this model "fiscal policy is, in theory, capable of achieving full employment at some target inflation rate" (Godley & Lavoie: 2007b, p, 96). Ryoo & Skott (2013) present a more general paper in which capital accumulation is accounted for, and with different tax rates according to source of income (wage, corporate or property income), though they do not go into discussions of inflation. They still hold, though, that fiscal policy is a preferred instrument to achieve full-employment growth without exerting destabilizing influences on the dynamics of public debt, since it is (in a closed economy) a private sector asset which renders interest services and therefore can sustain demand (to some extent, think of pension funds).

Godley (1999c) set the benchmark in SFC models to analyse matters of open economies. The world is comprised of two countries which trade goods and financial assets (government bonds). Chapter 12 of Godley & Lavoie (2007a) extends this model to allow for flexible and fixed exchange rates, a simple version is in Godley & Lavoie (2006). The results question many established views regarding monetary policy in open economies, such as the Mundell-Fleming model. For instance, the so called trilemma, which says that it is not possible to have stable (or fixed) exchange rates, control of the interest rate and free movements of capitals, actually does not hold in theory. The key to understand this is to remember that, even when capital may flow freely between countries, assets are not perfect substitutes between each other, so that a country might be able to have a fixed exchange rate and still control its interest rate, as long as it has foreign reserves. It also posits that what is a violation of the 'rules of the game' in fixed exchange rate Mundell-Fleming models, i.e. sterilization of foreign exchange purchases, are actually *required* for the central bank to keep the interest rate at the level of choice. Lavoie (2006a) develops a SFC model of a currency board, dwelling deeper on the subject. Finally, Lavoie & Daigle (2011) extend chapter 12 of Godley & Lavoie (2007a), modelling exchange rate expectations according to the post-Keynesian literature. More on that paper will be said in the next chapter.

Regarding the treatment of open economy matters, there are three lines of research that we want to highlight here: models about Euroland; models about economic structure issues in an open economy; and models about the international financial system. On the Euroland case, Godley and Lavoie (2007c) develop a model of three countries, of which two have a fixed exchange rate regime, akin to the arrangements in the Eurozone. The conclusions are as relevant now as then (remember that around that time Spain and Greece were still growing): "There is, in the end, only one lasting solution to this problem within the existing structure—to endogenise the fiscal policy of the deficit country. Faced with rising imports, unable to devalue and trapped by an unaccommodating central bank, the 'weak' country would have, in the end, no alternative but to operate a restrictive fiscal policy that would have strong negative effects on output and

employment. The only alternative is to modify the structure of the eurozone arrangements, either by forcing euro countries enjoying surpluses to pursue expansionary fiscal policies or by expanding the spending power of the European Union government, so it can engage in induced equalisation payments that transfer fiscal resources from surplus to deficit countries." (Godley & Lavoie: 2007c, p. 2).

Lavoie & Zhao (2010), in turn, study what effect might have a diversification of China's foreign reserves, currently hold mostly in US Treasury bonds. The model contains a fixed exchange rate (ER) (between China and the US) and two flexible ERs: Europe with China and with the US. If China chooses to build up reserves in Euro-denominated bonds instead of dollars (though unlikely nowadays, there was a debate about that topic years ago), the economic activity of the Eurozone might actually get hurt, since the euro would appreciate substantially against the two currencies. In a similar model, Mazier & Tiou-Tagba Aliti (2012) argue in favour of a more flexible exchange rate of the yuan in order to realign current account imbalances.

Regarding the issue of economic structure, Perez Caldentey (2007) develops a model used to analyse the performance of the Caribbean economies. The conclusion reached is that if the fiscal stance (government expenditure divided by the marginal tax rate) is above the income elasticities ratio of exports and imports, the economy will certainly hit the foreign constraint, ending up in a balance of payments crisis due to an increased external debt. The result is similar to the balance-of-payment constrained growth models of Thirlwall (see McCombie & Thirlwall (2004) for a collection of essays on the topic). The mentioned work by Valdecantos aims at showing the implications of such conditions in a model resembling the economic structure of Argentina, with an agricultural sector driven by supply constraints and in which prices are market-clearing (in the real world, commodities prices are determined at world market level, so the assumption is not unreasonable). Finally, Valdecantos & Zezza (2012) develop alternative closures representing different alternatives of reform of the current international financial system, according to whether a greater preponderance is given to Special Drawing Rights (SDR) of the IMF in settling imbalances, or whether a reform akin to Keynes's original BANCOR Plan is adopted, which implies that no national money plays the role of international payment means. Their results show that in that setting more room is given to national governments to pursue expansionary domestic policies, while the BANCOR mechanism (that essentially penalises creditor countries) prevents in fact the pursue of export-led, or beggar-the-neighbour growth strategies.

4.4. EMPIRICAL WORK AND CRISIS PREDICTION

We finish this survey by mentioning a couple of empirical SFC papers, even though most (perhaps all) have been developed to tackle stylized facts of recent times. One can mention here the work of Kinsella & Tiou Tagba-Aliti (2012), who estimate the recessionary impact of austerity in Ireland; the Levy Institute of Bard College has a macroeconomic SFC model of the US economy, described in Zezza (2009), and a macroeconomic model for Greece (a report is found in Papadimitriou, Zezza & Nikiforos (2013));

while Reyes, Clevenot & Mazier (2012) develop a SFC model to analyse matters of financialization in the French economy, and perform simulations using parameters obtained through econometric testing.

It should be remarked that the Levy model of the US economy was developed by Wynne Godley, and it proved accurately in predicting the occurrence of a recession with the characteristics of the one which happened in 2008. In 1999, Godley (1999b) wrote: "This examination shows that current growth is associated with seven unsustainable processes in the United States: (1) the fall in private saving into ever deeper negative territory, (2) the rise in the flow of net lending to the private sector, (3) the rise in the growth rate of the real money stock, (4) the rise in asset prices at a rate that far exceeds the growth of profits (or of GDP), (5) the rise in the budget surplus, (6) the rise in the current account deficit, (7) the increase in the United States' net foreign indebtedness relative to GDP" (Godley: 1999b, p. 2). Process (5) was reverted with the Bush tax-cuts, but processes (1) to (4) can be said to be at the root of the causes which led to the 2008 crisis. Processes (6) and (7) were identified as unsustainable because of Godley's experience at Her Majesty's Treasury at the hey-day of "stop-and-go" cycles in post-war Britain, which faced a recurrent current account barrier to growth. Other instances in which Godley made prescient remarks about the likely negative evolution of the US economy, all based in a consistent modelling, are Godley & Izurieta (2004) and Godley & Zezza (2006). For more on people who actually did see the 2008 crisis coming, we refer to Bezemer (2009), Galbraith (2009) and Keen (2013), and for a study of the development of Godley's thinking and how it was modelled by his days in the British Treasury, we recommend Mata (2012).

4.5. KEYNES ON CAPITAL CONTROLS

The next chapters will introduce elements and concepts referred to international financial movements and their impact on economic activity and income distribution. Financial flows have increased in magnitude several times the growth of world GDP in the last forty years, as the constraints set up with the Bretton Woods agreements were dismantled (Helleiner: 1994). It seems appropriate to review what one of the principal figures involved in the discussions and negotiations that resulted in the establishment of the Bretton Woods institutions had to say to defend the creation of restriction to the free movement of capital across countries. We are referring to John Maynard Keynes.

However, qualification has to be made regarding previous writings on the topic. Davidson (1997) uses the framework of chapter 17 of the General Theory, in terms of the discussion about "own-rates of interest", to scrutinize a series of proposals known as a "Tobin tax" on speculative financial transactions in world markets. Flanders (1989) reviews Keynes writings and conveying the message of his dislike of short-term capital movements, but omit important pieces of evidence out of the survey, which reinforce, broaden and complement the postulate and shed more light about his overall vision of international flows and the effects it has on economic activity, a view we share and which underlies this thesis. We came into acquaintance with Crotty (1983), who analyses in

detail an essay by Keynes written in 1933, "National self-sufficiency" (reprinted in Vol. XXI of his Collected Writings) in which Keynes called for a control of the international sector in order to subordinate it to the necessities of the domestic objectives. Crotty also quotes an illustrative letter from Keynes, which will be mentioned below. This section adds and complements to Crotty's article, drawing on these and other material, giving clues about his intellectual trajectory regarding the topic at hand.

The history of economic thought should be a serious matter. Paraphrasing Dennis Robertson, economic theory does rounds and rounds, progress is in the details, but big ideas do not fail to show up time and time again. This is certainly the case with Keynes. Battles of thought that were fought and won in the thirties, not without (or because of the) bitterness, pain and human sufferance in terms of unemployment, misery and violence, have to be fought all over again. Even if one has confidence that ultimately the result in the battlefield of ideas (not only in the academia, but broadly in the public discourse, in which power participates with a megaphone) will turn out to be in favour of the concepts that "won" eighty years ago, it will certainly not come through sudden enlightenment of the political and economic leadership, but unfortunately by the population experiencing the same deprivations that the Great Depression brought over. It can only be hoped that at least the lessons about racism and nationalisms are better learned than the economic ones.

But since economic ideas appear and reappear by rounds, dictated by specific historical circumstances, as historians of economic thought we have to be careful in studying the evolution in the thought of people who contributed more to different debates at different times, as is the case of Keynes. We admit beforehand that we have a certain weakness for Keynes, whose reading does not fail to prove elevating and fulfilling. We cannot deny a priori the charge of indulgence with him, as the reader might have his or her soft spot for other characters. However, in reviewing what Keynes wrote about the topic of controls to the international movement of capitals, we will argue the case of a continuity of Keynes' thought regarding the subject taking in account the different historical circumstances which he witnessed.

Just like discussions about what Marx really said or meant to say or defended or attacked, quote-mining through Keynes' numerous writings and letters is a clear and present danger, which has been incurred a good number of times. Unfortunately, Keynes provided raw material for this vice, though he "did not intend that there should be any serious discrepancies between my various writings in the subject you mention. I am, however, writing more theoretically and with more general conditions and the long period in view; and in other cases I have more particular circumstances in mind and am more inclined to agree to compromises which might prove practically acceptable." (Keynes: Collected Writings Vol. XI, p. 500-501; from now on we will refer to the collection as CW, together with the number of the volume). In other words, Keynes' writings always had an eye in actual circumstances and he conveyed his articles in a way to make the biggest possible impact on the current opinion. That can explain, for instance, what might appear at first sight as contradictory positions on the gold standard between 1930 and 1931, when he enthusiastically supported the abandonment of the gold standard by Britain, when previously he said that "today the reasons seem stronger (...) to reverse the order of procedure; to accept, substantially, the fait accompli of an international standard;

(...) For to seek the ultimate good via an autonomous national system would mean not only a frontal attack on the forces of conservatism, entrenched with all the advantages of possession, but it would divide the forces of intelligence and goodwill and separate the interest of nations." (*CW VI, p. 302*). Or to put another example, his overall (negative) attitude towards devaluation, but always according to circumstances. For instance, during the discussions regarding the commercial policy to be established after WWII, he wrote to Richard Kahn: "Obviously, there are occasions when it pays to depreciate your exchange (provided, of course, other people do not), since there is no reason why the de facto rate should be the optimum level. I still believe that was the situation prior to 1930. On the other hand, I think it is very often the case that you worsen your position by depreciating the exchange, and I am strongly of the opinion that that is much more likely than the opposite to be the case in the early post-war years. We shall start with a very low value of sterling, and the optimum value is much more likely to be higher, rather than lower." (CW XXVI, p. 283-4) Summing up the point, only a careful perusal of his writings makes quite clear in which subjects he experienced a change of thought (he was quite honest about them) and which alleged changes of mind can be actually attributed to different conjunctures, with the same underlying point of view. In open economy matters, the case is nothing but reinforced. Even though we will draw extensively on his writings themselves (because we care about *what he actually said*), the historical context will be always underlying the scene.

The general line of thought is quite evident already in his earliest writings. Shortly after the outbreak of the First World War, in December 1914 Keynes wrote an analysis of the likely evolution of monetary arrangements in which it can be clearly noted his long-life commitment to international cooperation in the matter:

> "From the time of Ricardo, at least, many economists have believed that civilized countries expose themselves needlessly to sudden and arbitrary disturbances of their social and economic systems by leaving fluctuations of the monetary standard outside their control, when they might be within it. It is easy to invent modes of regulating the value of the standard which, however far from perfection, are at least better than what we have at present. (...) It is, therefore, a possible consequence of the present war, more likely in proportion as the War is prolonged – I cannot say that I yet think it probable – that some international regulation of the standard will be forced on the principal countries of the world. If it proves one of the after effects of the present struggle, that gold is at last deposed from its despotic control over us and reduced to the position of a constitutional monarch, a new chapter of history will be opened. Man will have made another step forward in the attainment of self-government, in the power to control his fortunes according to his own wishes." (CW XI, p. 319-320).

It is equally telling as well that at already such young age (thirty-one years) and considering he was a born and raised Marshallian, he shows the concern for the situation of debtor countries in a gold-standard arrangement, a concern he will translate time and time again in his policy proposals. For instance, in the same article published in the *Economic Journal* in 1914:

> "It may be necessary, in the course of the War, to call in capital which we had previously lent abroad. But it is not to our advantage to do this at a given time in excess of our demand for *goods* from abroad. If we call in loans when we do not want goods to a corresponding value, we do ourselves, by inviting a surfeit of gold, no benefit, but rather harm; and we put our debtors to inconvenience, and even danger. If, on the other hand, we only call in loans when we want goods with which our debtors are able to supply us, they will then, obviously, be in a position to remit what we want. Our interests and theirs – I have especially in mind the United States and our Dominions – are in this manner coincident." (CW XI, p. 323-324).

It can be seen that, besides being already a "two-handed economist" (to repeat a Harry Truman joke) and his abusive use of commas, the idea that debtor countries might have to carry excessively the burden of adjustment due to the lack of gold to settle international transactions is already present at times where Britain was far from being in that position, enjoying a substantially positive net international wealth. This weakens severely the case that Keynes' Bretton Woods proposals were drafted "egoistically" with only the British prospects in mind.

An open economy (and open financial account) context has similarities and differences with a closed context. In the Treatise on Money, Keynes had confidence in the capabilities of the central bank to control prices and the level of income. However:

> "If we are dealing with a closed system, so that there is only the condition of internal equilibrium to fulfil, an appropriate banking policy is always capable of preventing any serious disturbance to the status quo from developing at all. (...) But when the condition of external equilibrium must also be fulfilled, then there will be no banking policy capable of avoiding disturbance to the internal system." (CW V, p. 314)

A gold-standard system underlies most of Keynes' discussions on the topic (we will mention when it does not), and on the face of the previous quote it seems like there is a clear contradiction between an open economy and a closed economy. Actually, there is no contradiction, in the following sense:

> "We found that any individual bank is compelled – unless it is prepared to allow its reserve ratio to be modified – to 'keep step' with the other banks of the system, including the central bank. They can all march forward together and they can all march backward together. (...) A single bank cannot move far unless the others move too; for otherwise its loss or gain of reserve resources will rupture its reserve ratio. Accordingly the total quantity of bank money created is closely governed by whatever causes determine the aggregate of reserve resources for the member banks as a whole. Now the behaviour of an international system, made up of several national systems of member banks each clustering round its central bank, with a uniform currency standard, is essentially the same in principle as that of a closed national system." (CW VI, p. 249)

The similarity, in turn, is that everybody should behave similarly to the rest. This has advantages and disadvantages, mostly the latter:

> "The main effect of an international gold standard (or any other international standard) is to secure *uniformity* of movements in different countries – everyone must conform to the average behaviour of everyone else. The advantage of this is that it prevents individual follies and eccentricities. The disadvantage is that it hampers each central bank in tackling its own national problems, interferes with pioneer improvements of policy the wisdom of which is ahead of average wisdom, and does nothing to secure either the short-period or long-period optimum if the average behaviour is governed by blind forces such as the total quantity of gold, or is haphazard and without any concerted or deliberate policy behind it on the part of the central banks as a body". (CW VI, p. 256).

But where does the danger come from? In the Treatise on Money, the cause of potentially violent fluctuations is to be found in the demand schedule of borrowers:

> "A mere change in the demand schedule of borrowers abroad is capable, without any change in the monetary situation proper, of setting up a disequilibrium in the existing level of money incomes at home. If borrowers abroad are ready and able to offer better terms than before, whilst the demand schedule of borrowers at home is unchanged, this means that foreign lending is increased. Consequently gold will flow until money earnings have fallen sufficiently, relatively to similar earnings abroad, for the foreign balance also to be correspondingly increased" (CW V, p. 311)

By "foreign balance" Keynes meant the current account, and by "foreign lending" the capital account. In the Treatise on Money, the explanation of demand schedules by borrowers in presented when describing the price level of new investment (CW V, p. 127), and it is a concept very similar to the liquidity preference curve used in the General Theory (CW VII, chapter 13). The "demand schedule of borrowers" can be explained as the comparison of the attractiveness of different financial investment and borrowing (savings and 'securities') of the public, in interaction with the disposition of the banking system to lend.

> "A fall in the price level of securities is therefore an indication that the 'bearishness' of the public – as we may conveniently designate (...) an increased preference for savings deposits as against other forms of wealth and a decreased preference for carrying securities with money borrowed from the banks – has been insufficiently offset by the creation of savings deposits by the banking system – or that the 'bullishness' of the public has been more than offset by the contraction of savings deposits by the banking system" (CW V, p. 128).

As an aside, from this quote and the whole volume I of the Treatise on Money, it is clear that the concept of "liquidity preference", perhaps in somewhat different shapes,

is already present in that book, in contradiction with what Garegnani (1978, 1979) argued. But returning to our discussion, it is not only "foreign" borrowers or investors that might cause damage, domestic investors are equally capable of fleeing the country without causing any impact on the exports to compensate the outflow. "A change in international financial conditions or in the wind and weather of speculative sentiment may alter the volume of foreign lending, if nothing is done to counteract it, by tens of millions in a few weeks. Yet there is no possibility of rapidly altering the balance of imports and exports to correspond" (CW VI, p. 300). And of course, the problem is different for a debtor country than a creditor nation, the former being more exposed, "because it is easier to lend less in an emergency than to borrow more. Indeed, when the crisis comes to a debtor nation it results nine times out of ten in its temporarily abandoning its international standard" (CW VI, p. 277). However, the British case was not an exception, with London as a financial centre:

> "It is certain that an international short-term market is a depository of funds, which foreigners wish to keep liquid, on a much greater scale than that on which it is a source of short-term borrowing by foreigners through its acceptances for them. Thus it is very much at the mercy of the initiative of its foreign clients, according as they which to change between long-term and short-term assets, between short-term assets and gold, and between one international centre and another". (CW VI, p. 282)

What was presented as perhaps a decision based on economic uncertainty, whether to invest safely in deposits or to invest in "securities" (shares and obligations from the private non-financial sector), is actually based on a broader set of considerations, labour disputes, change of governments, etc. More on that will be said shortly. The texts arising out of the discussions of Bretton Woods give much food for thought. But before jumping into them, allow us to make a few remarks. As we said, from early on Keynes profited every chance he had to push in favour of a supranational management of the financial system, and the Treatise on Money is not an exception (his proposal is found in CW VI, p. 354-360). We will not discuss this proposal, suffice to say that he proposed an international standard system which provided elasticity to the international money, the value of which would be decreasing with time (i.e. favouring inflation). The defence cannot be better than what follows:

> "I think it desirable that obligations arising out of past borrowing, of which national debts are the most important, should, as time goes on, gradually command less and less of human effort and of the results of human effort, that progress should loosen the grip of the dead hand; that the dead hand should not be allowed to grasp the fruits of improvements made long after the live body which once directed it has passed away" (CW VI, p. 353).

A thorough discussion and recollection of the negotiations leading up to Bretton Woods and the results can be found in Gardner (1956), Van Dormael (1978) and Skidelsky (2000), among many others. We will not discuss point by point, we will restrict to our raison d'être, but a slightly more general view is required to clarify Keynes' disgust of free movement of capital.

Keynes' proposal for a new international currency system was stimulated by the German proposition presented by Walther Funk, president of the Reichsbank, though it was designed by the former finance minister and former president of the same bank, Hjalmar Schacht. Highly receptive at first, he became more sceptic later, though he recognised that Funk's plan had one merit: "it avoids some of the abuses of the old laissez-faire international currency arrangements, whereby a country could be bankrupted, not because it lacked exportable goods, but merely because it lacked gold" (CW XXV, p. 12). Depreciation was a bad method one is bound to use in order to deal with unbalanced situations because of the lack of a better method:

> "Domestic deflation, exchange depreciation and the like aim at stimulating exports by reducing their international price in terms of imports. The amount of price reduction which will prove necessary to stimulate a sufficient expansion in the quantity of exports relatively to imports depends on the elasticity of demand in the world at large for the characteristic products of the country which seeks to increase its sales. (...) The country which is forcing its products on the world suffers a severe loss in the proceeds obtained from its previous volume of trade. To take the limiting case, if it is necessary to reduce the price in at least the same proportion as that in which the volume is increased, the debtor country is involved in a Sisyphus task and gets no nearer a position of equilibrium however great its efforts. (...) Thus it has been an inherent characteristic of the automatic international metallic currency to force adjustments in the direction most disruptive of social order, and to throw the burden on the countries least able to support it, making the poor poorer." (CW XXV, p. 29)

As it is well known already, for Keynes the main fault of the "freely convertible international metallic standard (first silver and then gold)" is that it puts the burden of adjustment on the weaker country, the debtor. As for the major source of instability: "in the second phase preceding the present war, complete degeneration set in and capital funds flowed from countries of which the balance of trade was adverse into countries where it was favourable. This became, in the end, the major cause of instability. (...) The flow of refugee and speculative funds superimposed on this brought the whole system to ruin. We have no security against a repetition of this after the present war (...). Loose funds may sweep round the world disorganising all steady business." Therefore, "nothing is more certain than that the movement of capital funds must be regulated; - which in itself will involve far reaching departures from laissez-faire arrangements." (CW XXV, p. 31).

In his first speech before the House of Lords as a peer, in May 1943, Keynes presented the argument in a way much more akin to the framework of the General Theory. As we said, the burden of adjustment was thrown upon the debtor, even though it did not behave usually in such a reckless way:

> "The world's trading difficulties in the past have not always been due to the improvidence of debtor countries. They may be caused in a most acute form if a creditor country is constantly withdrawing international money from circulation and hoarding it, instead of putting it back again into circulation,

> thus refusing to spend its income from abroad either on goods for home consumption or on investment overseas. We have lately come to understand more clearly than before how employment and the creation of new incomes out of new production can only be maintained through the expenditure on goods and services of the income previously earned. This is equally true of home trade and foreign trade. A foreign country equally can be the ultimate cause of unemployment by hoarding beyond the reasonable requirements of precaution." (CW XXV, p. 273).

This paragraph is the best explanation of why, just like in a closed system, the international trading (and financial) system is vulnerable to a paradox of thrift, in which a decision not to spend earned income puts a drag in the system and ultimately leads world trade to a halt. Under a gold standard, gold hoarded was taken out of circulation, placing a contractive bias to global commerce and activity. The new proposal sets up a new currency of central banks ("bancor"), the quantity of which "was absolutely elastic and in fact the proposals substituted bank money for gold, which would not in future limit the amount of money there would be" (CW XXV, p. 140). The new arrangements also distinguish between the movements of funds with the purposes of new (fixed) investment; movements from creditor to debtor countries in order to maintain equilibrium in the current account; and speculative movements or flights out of a debtor country into a surplus one or from a surplus country to another (CW XXV, p. 53).

The most direct, explicit and argued defence of capital controls Keynes developed in his writings comes as a reply to a memo which presented among other arguments a very sensitive and tactful strategy for Britain in order to approach and negotiate with the United States the future post-war economic order, and a not so Samaritan proposal for an Anglo-American service of investment with a British-minded self-righteousness, if we may be allowed to say so. By the time this memo was written (April 1942), Keynes' International Clearing Union proposal had already been thoroughly discussed in the highest spheres of the British government, so it was well known that the draft included heavy restrictions to the flow of capital across countries, including the provision that "no remittances in respect of the outstanding capital of existing or future assets owned by non-residents shall be made except under licence of both the central banks concerned." (CW XXV, p. 53). We were very surprised to learn that the author of such memo was no other than Roy Harrod, official biographer of Keynes, frequent source of advice. It seems better to present Harrod's objection to controls on capital movements, included in the first appendix of that memo (to be found here: `http://www.lib.e.u-tokyo.ac.jp/_old/keynes_harrod/pdf/81.pdf`), and then let Keynes reply in a firm and solid fashion.

Harrod starts his critique by saying that control of speculative and "hot money" is a second order relatively to the matter of foreign (direct) investment. He notices the "distortionary" effects of tariffs on capital allocation, which might lead to economic autarky. And then he questions, in form of questions (if we may be allowed for the redundancy) the appropriateness of capital control, on the following substantive issues:

- The Clearing Union would render useless the capital controls, since speculative movements could be approximately estimated and counteracted by credits and debits, which would be deduced from the allowance to remedy current account

imbalances.

- Capital controls would be useless once more stable conditions are achieved, removing "the causes of the more vexatious movements".
- It resembles the "Schachtian way of thinking", and it might require inefficient methods of enforcements which could jeopardise the multilateral system of current transactions so dear to the Americans.
- It is not in Britain's interest, since its speculators might be able to gain a relevant amount of profits (200 million pounds in the period 1932-1938, according to some estimation), providing some ease on the balance of payments.
- It goes against enterprising spirit and initiative, and it reduces the "second richest country in the world" to the ordinary task of "husband their resources at home" as some poor countries (these are all almost textual quotations from pages 24-26, and are transcribed in the same (little) context they are exposed by Harrod).

Keynes was not pleased with that memorandum, and he attacked Harrod's argument head on. Quoting in full:

> "I disagree most strongly with your view that the control of capital movements may very possible be unnecessary, especially if a Clearing Union comes into existence. My points of difference can be listed as follows: (a) I do not agree that the question of the precise nature of the control we exercise over such surplus for investment as may be developed in course of time is more fundamental than that of hot money and, therefore, due for prior discussion. The majority of the countries concerned, and certainly ourselves, will have no such surplus in the immediate future. On the other hand, we shall end the war with somewhere approaching two billion pounds of overseas liquid funds in London to which we cannot possibly afford to allow immediate freedom of movement. This is a subject about which we must speak as little as possible at the present stage for fear of increasing the tendency, which is already showing itself, towards an unwillingness to hold sterling balances. But for us some system for the control of capital movements is absolutely indispensable the moment the war is over.
>
> (b) I am exceedingly averse to the idea that the Clearing Union should facilitate speculative movements by estimating their amount and then apparently behaving as though money which had gone abroad and been turned into a foreign currency still remained as part of the effective reserve of the country from which it has fled. In my opinion, this would tear to pieces the reliability of the Clearing Union Scheme and makes no sense to me whatsoever.
>
> (c) I see no reason to feel confidence that the more stable conditions, e.g. the partial remedy of the trade cycle and the prevention of sharp movements in exchange rates, will remove the more dangerous movements. These are likely to be caused by political issues. Surely in the post-war years there is

> hardly a country in which we ought not to expect keen political discussions affecting the position of the wealthier classes and the treatment of private property. If so, there will be a number of people constantly taking fright because they think that the degree of leftism in one country looks for the time being likely to be greater than somewhere else.
>
> (d) You overlook the most fundamental long-run theoretical reason. Freedom of capital movements is an essential part of the old laissez-faire system and assumes that it is right and desirable to have an equalisation of interest rates in all parts of the world. It assumes, that is to say, that if the rate of interest which promotes full employment in Great Britain is lower than the appropriate rate in Australia, there is no reason why this should not be allowed to lead to a situation in which the whole of British savings are invested in Australia, subject only to different estimations of risk, until the equilibrium rate in Australia has been brought down to the British rate. In my view the whole management of the domestic economy depends upon being free to have the appropriate rate of interest without reference to the rates prevailing elsewhere in the world. Capital control is a corollary to this. Both for this reason and for the political reasons given above, my own belief is that the Americans will be wise in their own interest to accept this conception, even though its immediate applicability in their case is not so clear." (CW XXV, p. 148-149)

A few remarks come in time regarding the reasons mentioned above. In hindsight, Keynes was eventually vindicated in the sense that the American idea for post-war financial arrangements did actually include a proposal regarding capital controls, though Keynes thought it was unpractical (CW XXV, p. 164-165).

On the other hand, as we mentioned before, speculative movements are not only caused by a narrow-minded expectation of interest rate movements, but may have deeply political, social and certainly ideological motivations. The threat of capital flight may act as a kind of veto-power in the hands of the elites, reminding of the "political business cycle" argument of Kalecki (1943). Many variations of this argument are well suited to explain episodes of the kind in the Latin American context in the 1980s, for example.

To sum up Keynes' argument, capital controls are an indispensable instrument in order to have space of main-oeuvre in the management of the domestic economy. Otherwise, loose funds, hot money, speculative capital, refugee funds, tax-evading revenues and more concepts of the kind might disrupt the balance of payments, disrupt credit conditions, and disrupt domestic activity, without being there any sound economic foundation, in most cases.

We finish this chapter by highlighting some arguments which may be considered prescient regarding the economic situation of the Eurozone. The analogies are not difficult to make, as the reader will see. As a way of context it must be remembered that at the time, the Dominions (India, South Africa, Australia and other parts of the British Empire) had a favourable trade balance with Britain, they had accumulated huge sterling reserves in London, but because of the financial requirements of the war these balances were frozen and their convertibility and repatriation into gold was prohibited, in an "informal" arrangement with the rest of the sterling area. In discussing the relative merits

of bilateral arrangements or a currency union of the sterling area as a bloc vis a vis the rest of the world, Keynes argued in terms which I judge still relevant for the institutional design of the Eurozone. The quotation comes from the memo entitled "Proposals for an International Currency Union", after several drafts and corrections, circulated after December 15th of 1941, and it refers to the possibility of turning the sterling area into a currency union:

> "It is possible to combine countries, some of which will be in a debtor and some in a creditor position, into a Currency Union which, substantially, covers the world. But surely it is impossible, unless they have a common banking and economic system also, to combine them into a currency union not with, but against, the world as a whole. If other members of the sterling area have a favourable balance against the world as a whole, they will lose nothing by keeping them in bancor, which is universally acceptable, until they have occasion to use them. But if the sterling area is turned into a currency union, the members in credit would have to make a forced and *non-liquid* loan of their favourable balances to the members in debit. (...) They would have to impose import regulations and restraints on capital movements according as the area as a whole was in debit or credit, irrespective of their own positions. (...) The sterling resources of creditor Dominions might come to be represented by nothing but blocked balances in a number of doubtfully solvent countries with whom it suited *us* to trade". (CW XXV, p. 83, italics in the original)

The conclusion: the creditors would be forced to rescue the debtors, in the absence of a common banking and economic (perhaps fiscal?) system. Seventy years later, that is exactly what happened in a creation of the sort.

5

FOREIGN DEBT, DISTRIBUTION, INFLATION AND GROWTH IN A SFC MODEL

5.1. INTRODUCTION

This chapter develops a Stock-Flow Consistent (SFC, from now on) open-economy model with financial transactions between two economies, and capital accumulation. SFC models draw on the tradition of Wynne Godley and Marc Lavoie (Godley & Lavoie 2007a, G&L from now on) in which the income accounting has no "black holes" (Taylor 2008: 639). An income or financial inflow to an institutional sector (household, government, banks, and the rest of the world) is made up of outflow(s) from other sectors. The flows are cumulated over time so that the model is "stock-flow consistent". The effects on wealth of gains or losses in asset prices are carefully accounted for, and so are differential inflation rates in prices for goods and services. About the origin of SFC modelling, its main characteristics and its pertinence for macroeconomic analysis, the interested reader can consult the previous chapter and the references listed there.

In this chapter we extend the model of chapter 12 of G&L, adding some other features presented in Lavoie & Daigle (2011) related to exchange rate expectations. We add an investment function based on the accelerator principle; a Phillips curve with a flat middle segment; a productivity growth function based on the change of real wages; and mark-up pricing rules that take into account the behaviour of the exchange rate, among other characteristics. We introduce as well the possibility of one country issuing debt denominated in both currencies, a typical feature of developing economies, therefore the name we assign to the countries in our model: "USA" and "Argentina". We also include as well foreign lending to firms in a foreign currency.

This type of modelling and these types of assumption seem quite relevant in a pe-

riod in which financial assets represent an increasing multiple of the world GDP (Palma: 2009, p. 834). While most of financial flows are concentrated among industrialized countries, the share that goes and comes from developing countries has a substantial effect in these economies due to their relative small size, their weak financial infrastructure and the important financial liberalization process underwent in the last decades.

It is also relevant, in our view, to have a neat view of the implications, constraints and misconceived arguments about different exchange rate regimes, in an international context where "currency wars" coexist with a monetary union such as the Eurozone, for example. It is the purpose of this chapter to shed light on this discussion and to propose measures that improve the wellbeing of the population without disregarding the budget constraints and stock-flow norms that need to be respected.

The focus of this model will be on what happens to the developing country, Argentina (and at times, Greece), leaving aside the effects on USA (or Germany) as long as they are not necessary for the presentation of the argument. The rest of the paper is as follows. Section II outlines the model. Section III presents and interprets the results from our simulation experiments. Section IV draws conclusions, both with a theoretical and a policy view of current developments in the world economy.

But before we proceed, we must state a qualification. The core of this work is to analyze the interactions between two economies, one financially dependent and the other financially dominant (Vernengo: 2006; Medeiros: 2008), in a very specific sense: by financial dependency we refer to countries that are forced to borrow in a foreign currency. By "financial dominance" we refer to the country that issues the international money. In line with the tradition of SFC modeling (G&L, chapter 11; Lavoie/Zhao: 2010) we use the name of actual countries (Argentina, country of origin of this author, and USA) to identify the countries in this model. This does not imply that the model is calibrated to closely resemble the actual features of the Argentinean and US economies. The point is that the model highlights the consequences of this particular key difference.

5.2. THE MODEL

5.2.1. ACCOUNTING STRUCTURE

The model presents a world composed of two countries ("USA" and "Argentina"), with five sectors in each: Households, firms (which are vertically integrated, so that their inputs are wages and imports), banks, government and the central bank, which is split from the government for explanatory purposes. Each country produces one good, apt for consumption, investment and export purposes. They trade that good, and also financial assets. Table 5.1 presents the balance sheet of each sector in each country.

Households allocate their wealth in deposits (M), cash (H) and short-term bills. There are three types of these bills: the American government issues bills denominated in dollars (B^u); the Argentinean government issues bills denominated in pesos ($B^{\$a}$), that can be acquired by households of both countries, and it also issues bills denominated in dol-

Table 5.1: Balance sheet

	USA					ARGENTINA				
	Households	Firms	Banks	Gov.	CB	Households	Firms	Banks	Gov.	CB
Capital stock		$+K_u$					$+K_a$			
Cash	$+H_u$				$-H_u$	$+H_a$				$-H_a$
Deposits	$+M_u$		$-M_u$			$+M_a$		$-M_a$		
Advances			$-A_u$		$+A_u$			$-A_a$		$+A_a$
Bills USA	$+B^u_{hu}$		$+B^u_{bu}$	$-B^u_{\square}$	$+B^u_{cbu}$	$+B^u_{ha}.xru$				$+B^u_{cba}.xra$
Bills Arg. "$a"	$+B^{\$a}_{hu}.xru$					$+B^a_{ha}$		$+B^a_{ba}$	$-B^{\$a}_{\square}$	$+B^a_{cba}$
Bills Arg. "$u"	$+B^{\$u}_{hu}$								$-B^{\$u}_{\square}.xra$	
Loans "$a"							$-L^a_a$	$+L^a$		
Loans "$u"		$-L^u_u$	$+L^u$				$-l^u_a.xra$			
Wealth	$-V_{hu}$	$-V_{fu}$	$-V_{bu}$	$+V_{gu}$	$-V_{cbu}$	$-V_{ha}$	$-V_{fa}$	$-V_{ba}$	$+V_{ga}$	$-V_{cba}$
Σ	0	0	0	0	0	0	0	0	0	0

lars ($B^{\$u}$) that can only be acquired by residents in the US. All holdings are expressed in the domestic currency, so for instance $B^{\$a}_{hu}.xru$ represents the holdings of Argentinean bills denominated in pesos (the upper-script $\$a$) by American households (the lower script hu), translated into dollars by multiplying it by the American exchange rate. It is just unfortunate that dollars and pesos share the same symbol.

The sole asset of firms is their capital stock; their sole liability, the loans they take from banks (Argentinean firms can borrow from Argentinean banks in pesos and from American banks in dollars; loans have a one-period lifespan), and the difference is their net wealth. Banks, in turn, lend to firms, take deposits, invest in bills and take advances from the central bank according to their circumstances. Their profits accumulate to make their net wealth. For simplicity, banks and firms are assumed to have no equity and pay no dividends. The central bank issues cash (its liability), grants advances to banks, and buys government bills. In the case of the Argentinean central bank, it also holds American bills ($B^{u}_{cba}.xra$), which constitute its reserves, and a sort of net wealth.

Tables 5.2 and 5.3 present the transaction matrix for "USA" and "Argentina", respectively. The first five rows represent the components of the GDP: consumption, government expenditure, investment, exports and imports. Investment is recorded with a plus sign in the current column (tracing the sale of the capital good) and a minus sign in the capital column (recording the use of funds for patrimonial increase). The following rows register wages payments, tax payments and depreciation allowance. The latter, from the point of view of the firm, is a source of funds coming from its own capital, therefore the positive sign. Then come interest payments on bills (to domestic and foreign residents, banks and central banks); on deposits, on loans and on advances. Taking all these movements into account, we can compute profits of firms, banks and central banks. The latter are transferred to their respective government, while banks' and firms' profits are a source of funds for increasing their net wealth.

In the latest rows, we present the net increment in their holdings of the mentioned financial assets, which from their point of view is a use of their money and thus is recorded with a minus. From the receiver point of view it is a source, and we compute it with a plus sign. The same logic holds for banks' and central banks' holdings of bills. We also record the increase in firms' borrowing and banks' lending.

5.2.2. LIST OF EQUATIONS

We present first the equations related to national accounts. Upper-case letters denote nominal variables, lower-case reflect real variables. Equations 1 and 2 refer to real and nominal sales (the former, times sales prices) in each country; equations 3 and 4 refer to real and nominal GDP; then we have the GDP price deflator, imports prices, and the nominal components of GDP. There are not many remarkable features in these equations; perhaps the most important is to note that the price of exports is determined in the export country (equation 8). Quantities will be determined in the import country, as we will show.

Table 5.2: Transaction matrix USA

	USA						
	Households	Firms		Banks		Government	Central Bank
		C	K	C	K		
C	$-C_u$	$+C_u$					
G		$+G_u$				$+G_u$	
I		I_u +	I_u −				
X		$+X_u$					
IM		IM_u −					
$[Y]$		$[Y_u]$					
W	$+W_u.N_u$	$-W_u.N_u$					
T	$-T_u$					$+T_u$	
DA		$-DA_u$	$+DA_u$				
$Int.$							
D	$+r_{mu(-1)}.M_{us(-1)}$			$+r_{mu(-1)}.M_{us(-1)}$			
B^u	$+rb_{u(-1)}.B^u_{hus(-1)}$			$+rb_{u(-1)}.B^u_{bus(-1)}$		$+r_{bu(-1)}.B^u_{s(-1)}$	$+rb_{u(-1)}.B^u_{cbus(-1)}$
$B^{\$a}$	$+rb_{a(-1)}.B^{\$a}_{hus(-1)}.xru$						
$B^{\$u}$	$+rb_{u(-1)}.B^{\$u}_{hud(-1)}$						
A				$+ra_{u(-1)}.A_{us(-1)}$			$+ra_{u(-1)}.A_{us(-1)}$
L^a							
L^u		$-rl_{u(-1)}.L^u_{us(-1)}$		$-rl_{u(-1)}.L^u_{us(-1)}$			
F_f		$-F_{fu}$	$+F_{fu}$				
F_{cb}						$+F_{cbu}$	$+F_{cbu}$
F_b				$-F_{bu}$	$+F_{bu}$		
$Ch.$							
H	$-\Delta H_u$						$-\Delta H_u$
M	$-\Delta M_u$				$+\Delta M_u$		
B^u	$-\Delta B^u_{hus}$				$-\Delta B^u_{bus}$	$+\Delta B^u$	$-\Delta B^u_{cbus}$
$B^{\$a}$	$-\Delta B^{\$a}_{hus(-1)}.xru$						
$B^{\$u}$	$-\Delta B^{\$u}_{hud}$						
A					$+\Delta A_{us}$		$-\Delta A_{us}$
L^a							
L^u			$+\Delta L^u_u$		$-\Delta L^u$		

Table 5.3: Transaction matrix Argentina

	Argentina						
	Households	Firms		Banks		Government	Central Bank
		C	K	C	K		
C	$-C_a$	$+C_a$					
G		$+G_a$				$-G_a$	
I		$+I_a$	$-I_a$				
X		$-IM_a$					
IM		$+X_a$					
$[Y]$		$[Y_a]$					
W	$+W_a.N_a$	$-W_a.N_a$					
T	$-T_a$					$+T_a$	
DA		$-DA_a$	$+DA_a$				
$Int.$				$+r_{ma(-1)}.M_{as(-1)}$			
D	$+r_{ma(-1)}.M_{as(-1)}$						
B^u	$+rb_{u(-1)}.B^u_{has(-1)}.xra$			$+rb_{a(-1)}.B^a_{bas(-1)}$			$+rb_{u(-1)}.B^u_{cbas(-1)}.xra$
$B^{\$a}$	$+rb_{a(-1)}.B^a_{has(-1)}$					$+r_{ba(-1)}.B^{\$a}_{s(-1)}$	$+rb_{a(-1)}.B^a_{cbas(-1)}$
$B^{\$a}$						$B^{\$u}_{hud(-1)}.r_{bu(-1)}.xra$	
A				$+ra_{a(-1)}.A_{as(-1)}$			$+ra_{a(-1)}.A_{as(-1)}$
L^a		$-rl_{a(-1)}.L^a_{as(-1)}$		$-rl_{a(-1)}.L^a_{as(-1)}$	$-rl_{a(-1)}.L^a_{s(-1)}$		
L^u		$-rl_{u(-1)}.L^u_{as(-1)}.xra$					
F_f		$-F_{fa}$	$+F_{fa}$				
F_{cb}						$+F_{cba}$	$+F_{cba}$
F_b				$-F_{ba}$	$+F_{ba}$		
$Ch.$							
H	$-\Delta H_a$						$-\Delta H_a$
M	$-\Delta M_a$				$+\Delta M_a$		
B^u	$-\Delta B^a_{has}.xra$				$-\Delta B^a_{bas}$		$-\Delta B^u_{cbas}.xra$
$B^{\$a}$	$-\Delta B^{\$a}_{has(-1)}$					$+\Delta B^{\$a}$	$-\Delta B^a_{cbas}$
$B^{\$u}$						$-\Delta B^{\$u}_{hud}.xra$	
A					$+\Delta A_{as}$		$-\Delta A_{as}$
L^a			$+\Delta L^a_a$				
L^u			$+\Delta L^a_{us}.xra$		$-\Delta L^a$		

$$(1u) \quad s_u = c_u + i_u + g_u + x_u$$

$$(1a) \quad s_a = c_a + i_a + g_a + x_a$$

$$(2u) \quad S_u = s_u.p_{su}$$

$$(2a) \quad S_a = s_a.p_{sa}$$

$$(3u) \quad y_u = s_u - im_u$$

$$(3a) \quad y_a = s_a - im_a$$

$$(4u) \quad Y_u = S_u - IM_u$$

$$(4a) \quad Y_a = S_a - IM_a$$

$$(5u) \quad p_{yu} = \frac{Y_u}{y_u}$$

$$(5a) \quad p_{ya} = \frac{Y_a}{y_a}$$

$$(6u) \quad p_{mu} = ps_a.xr_u$$

$$(6a) \quad p_{ma} = ps_u.xr_a$$

$$(7u) \quad IM_u = im_u.p_{mu}$$

$$(7a) \quad IM_a = im_a.p_{ma}$$

$$(8u) \quad X_u = x_u.p_{su}$$

$$(8a) \quad X_a = x_a.p_{sa}$$

$$(9u) \quad C_u = c_u.p_{su}$$

$$(9a) \quad C_a = c_a.p_{sa}$$

$$(10u) \quad I_u = i_u.p_{su}$$

$$(10a) \quad I_a = i_a.p_{sa}$$

$$(11u) \quad G_u = g_u.p_{su}$$

$$(11a) \quad G_a = g_a.p_{sa}$$

Firms price their products based on a mark-up rule on unitary cost including interest payments on loans borrowed last year, as shown in equation 12. The mark up is exogenous, but it can vary according to a change in the exchange rate to reflect international competition. A higher coefficient π_{1u}, in equation 13, would mean that the country is more exposed to international competition, so in case of an appreciation of the exchange rate (a *negative* change in the exchange rate) the mark up absorbs part of the impact and prices do not rise by the extent they should[1]. On the other hand, for simplicity, it is assumed that the only inputs firms use are labour and imports.

$$(12u) \quad p_{su} = \frac{(1+\pi_u)(W_u.N_u+IM_u+rl_{u(-1)}.L^u_{us(-1)})}{s_u}$$

$$(12a) \quad p_{sa} = \frac{(1+\pi_a)(W_a.N_a+IM_a+rl_{a(-1)}.L^a_{as(-1)}+rl_{u(-1)}.L^u_{as(-1)}.xra)}{s_a}$$

$$(13u) \quad \pi_u = \pi_{0u} + \pi_{1u}.\left(\frac{\Delta(xr_{u(-1)})}{xr_{u(-1)}}\right)$$

$$(13a) \quad \pi_a = \pi_{0a} + \pi_{1a}.\left(\frac{\Delta(xr_{a(-1)})}{xr_{a(-1)}}\right)$$

$$(14u) \quad W_u = W_{u(-1)} + \omega_{0u}.(W^T_{u(-1)}.p_{su} - W_{u(-1)})$$

$$(14a) \quad W_a = W_{a(-1)} + \omega_{0a}.(W^T_{a(-1)}.p_{sa} - W_{a(-1)})$$

$$(15u) \quad W^T_u = \omega_{1u} + \omega_{2u}.(EMP_u + z_{1u}.[EMP^{\#}_u - EMP_u] - z_{2u}.bandb_u + z_{3u}.bandt_u)$$

$$(15a) \quad W^T_a = \omega_{1a} + \omega_{2a}.(EMP_a + z_{1a}.[EMP^{\#}_a - EMP_a] - z_{2a}.bandb_a + z_{3u}.bandt_a)$$

$$(16ui) \quad z_{1u} = 1 \text{ if } bandb_u < EMP_u < bandt_u$$

$$(16uii) \quad z_{2u} = 1 \text{ if } bandb_u > EMP_u$$

$$(16uiii) \quad z_{3u} = 1 \text{ if } EMP_u > bandt_u$$

$$(16ai) \quad z_{1a} = 1 \text{ if } bandb_a < EMP_a < bandt_a$$

$$(16aii) \quad z_{2a} = 1 \text{ if } bandb_a > EMP_a$$

[1] This is consistent with stylized facts that show that the pass-through from devaluations to prices is smaller than one, so that the real exchange rate moves together with the nominal, and that usually it is the latter that has the most decisive influence in the former. See Taylor & Taylor (2004).

$(16aiii) \quad z_{3a} = 1 \text{ if } EMP_a > bandt_a$

In our model, workers target a real wage when they demand for nominal wages, which are set at the beginning of the period, so that firms know what their costs are at the moment of setting prices. Wage demands are backward-looking, and workers adjust a portion of the discrepancy between the nominal wage implied in the target (of last period) and the actual nominal wage. What real wage do they target?

Here is where we introduce a rather unconventional non-linear Phillips curve. In our model, the demand of workers (who are assumed to target a real wage, *not* a wage share) reflects the demand pressure from the labour market, exemplified by the rate of change of the employment volume, but in a non-linear way. That is why we use the dummy variables of equations 16. If the rate of change in the level of employment rate is within a certain range, workers will demand a given real wage, determined by what they judge to be a "reasonable" rate of job creation, $EMP^{\#}_{\square}$, here equal to 3%, plus or minus a margin (of 0.3% in each direction). If jobs are created at a rate below 2.7%, then the relationship between real wage demands and the rate of change in employment is linear, and the same if the rate of job creations is above 3.3%. That is the intention of the dummy variables included: z_1 is equal to one if $EMP^{\#}_{\square}$ is between 2.7% and 3.3%, and zero otherwise. $z_2$is one if the rate of job creation falls below 2.7%, and $z_3$is one if that rate is higher than 3.3%. Our Phillips curve has a flat middle segment. Its bands are determined by institutional factors, with scope for the influence of political actors. This implies that, in this model, there is no NAIRU. A strong defense of this argument is set forth in Baker (2000) and Storm & Naastepad (2012, p. 181-186) and the literature mentioned there. Our equations draw heavily on G&L(2007a), especially chapter 11 (p. 386-388), even though in their model labour market pressure is captured by the employment rate. Empirical evidence about the existence of flat segments is found in Barnes & Olivei (2003), Lye & McDonald (2008), Stock & Watson (2010) and IMF (2013, chapter 3), among others.

The wage bill that enters in the price function is composed by the nominal wage times the employment volume. This is determined by the ratio of real GDP to labour productivity. The latter factor reacts to changes in the real wage, weighted by a coefficient q. We have omitted in this formulation the Kaldor-Verdoorn effect, even though we are a firm believer in its relevance (see the mentioned volume by McCombie, Pugno & Soro (2002)). We can only offer a clumsy excuse for its omission in this model. The Kaldor-Verdoorn effect sets in motion a cumulative growth process, in demand-led growth models such as this one, by incorporating increasing returns to scale. In our model, that implies an unstable, explosive behavior, which deprives it from a steady state. Rowthorn (1981) already noted that the introduction of such features severely restricts the stability conditions of Kaleckian models, and the same argument applies this time. The effect of real wage growth (or restraint) on productivity has substantial empirical support of its own, such as in Storm & Naastepad (2009, 2012) and Vergeer & Kleinknecht (2007, 2010, 2012), though in the 2010 article they do not find strong evidence of a Kaldor-Verdoorn effect.

The other input in the production process is imports. Equation 22 shows a typical import function, in which the independent variables are the ratio of domestic prices to

import prices and real GDP, with ϵ_1 and μ_1 being the prices elasticities and ϵ_2 and μ_2 the income elasticities of imports. ϵ_0 and μ_0, in turn represents the proportion of imports in domestic output, a coefficient liable to change due to development or industrial policies, such as import-substitution industrialization (we will make simulations trying to depict the latter). Like we said, exported quantities are set by the import countries, as shown in equation 23.

(17u) $EMP_u = {}^{\Delta(N_{u(-1)})}/_{N_{u(-1)}}$

(17a) $EMP_a = {}^{\Delta(N_{a(-1)})}/_{N_{a(-1)}}$

(18u) $w_u = {}^{W_u}/_{p_{su}}$

(18a) $w_a = {}^{W_a}/_{p_{sa}}$

(19u) $N_u = {}^{y_u}/_{pr_u}$

(19a) $N_a = {}^{y_u}/_{pr_a}$

(20u) $pr_u = pr_u.(1 + g_{pru})$

(20a) $pr_a = pr_a.(1 + g_{pra})$

(21u) $g_{pru} = q_u.\left({}^{\Delta(W_{u(-1)})}/_{W_{u(-1)}}\right)$

(21a) $g_{pra} = q_a.\left({}^{\Delta(W_{a(-1)})}/_{W_{a(-1)}}\right)$

(22u) $im_u = \epsilon_0.\left(\frac{p_{yu(-1)}}{p_{mu(-1)}}\right)^{e_1}.y_u^{e_2}$

(22a) $im_a = \mu_0.\left(\frac{p_{ya(-1)}}{p_{ma(-1)}}\right)^{\mu_1}.y_u^{\mu_2}$

(23u) $x_u = im_a$

(23a) $x_a = im_u$

We present next the equations relative to the (nominal and real) capital stock, investment decisions, depreciation allowance, borrowing and profits. The capital stock depreciates at a constant rate δ, but this is always covered by investment. The rate of growth of the capital stock is determined by an accelerator effect, plus an exogenous term, as shown in equation 28. *The accelerator effect is what ultimately makes this model*

a demand-led one. Equation 29 presents the capacity utilization rate, and equation 30 firms' net wealth. This is the difference between the nominal capital stock and loans.

$$(24u) \quad K_u = k_u.p_{su}$$

$$(24a) \quad K_a = k_a.p_{sa}$$

$$(25u) \quad k_u = k_{u(-1)}.(1-\delta_u + gk_u)$$

$$(25a) \quad k_a = k_{a(-1)}.(1-\delta_a + gk_a)$$

$$(26u) \quad i_u = k_{u(-1)}.(gk_u + \delta_u)$$

$$(26a) \quad i_a = k_{a(-1)}.(gk_a + \delta_a)$$

$$(27u) \quad DA_u = \delta_u.K_{u(-1)}$$

$$(27a) \quad DA_a = \delta_a.K_{a(-1)}$$

$$(28u) \quad gk_u = \gamma_{0u} + \gamma_{1u}.\left({}^{\Delta y_{u(-1)}}/_{y_{u(-1)}}\right)$$

$$(28a) \quad gk_a = \gamma_{0a} + \gamma_{1a}.\left({}^{\Delta y_{a(-1)}}/_{y_{a(-1)}}\right)$$

$$(29u) \quad z_u = \frac{y_u}{k_{u(-1)}}$$

$$(29a) \quad z_a = \frac{y_a}{k_{a(-1)}}$$

$$(30u) \quad V_{fu} = K_u - L^u_{us}$$

$$(30a) \quad V_{fa} = K_a - L^u_{as} - L^a_{as}.xra$$

Firms demand loans to cover their financial requirements (principal amount and interest of past loans, investments) not covered by the depreciation allowance and their past profits. A distinguishing feature of this model is that Argentinean firms can borrow in the Argentinean and in the American banking system, in different currencies, as shown in equations (31aii) and (31aiii). Profits are the residual of nominal GDP after computing the wage bill, interest payments on loans, and the depreciation allowance. Loans borrowed to US banks (and the interest payments on them) are always registered at the supplied value (i.e. in dollars) and translated into pesos at the current exchange rate.

$$(31u) \quad L^u_{ud} = L^u_{us(-1)}.(1+rl_{u(-1)}) + I_u - DA_u - F_{fu(-1)}$$

$$(31ai) \quad L_{ad} = L^{a}_{as(-1)}.(1 + rl_{a(-1)}) + L^{u}_{as(-1)}.(1 + rl_{u(-1)}).xra + I_a - DA_a - F_{fa(-1)}$$

$$(31aii) \quad L^{a}_{ad} = v.L_{ad}$$

$$(31aiii) \quad L^{u}_{ad} = L_{ad} - L^{a}_{ad}$$

$$(32u) \quad F_{fu} = Y_u - W_u.N_u - rl_{u(-1)}.L^{u}_{us(-1)} - DA_u$$

$$(32a) \quad F_{fa} = Y_a - W_a.N_a - rl_{a(-1)}.L^{a}_{as(-1)} - rl_{u(-1)}.L^{u}_{as(-1)}.xra - DA_a$$

It is time to describe the equations concerning households' regular income, households' disposable income (actual and expected) and consumption decisions. These are in real terms, based on some expectation about disposable income and "real" wealth. However, these expectations also have an effect in their allocation of their wealth between different alternatives.

$$(33u) \quad Yr_u = W_u.N_u + r_{mu(-1)}.M_{us(-1)} + rb_{u(-1)}.B^{u}_{hus(-1)} + rb_{a(-1)}.B^{\$a}_{hus(-1)}.xru$$

$$+ rb_{u(-1)}.B^{\$u}_{hus(-1)}$$

$$(33a) \quad Yr_a = W_a.N_a + r_{ma(-1)}.M_{as(-1)} + rb_{a(-1)}.B^{a}_{has(-1)} + rb_{u(-1)}.B^{u}_{has(-1)}.xra$$

$$(34u) \quad T_u = \theta_u.Yr_u$$

$$(34a) \quad T_a = \theta_a.Yr_a$$

$$(35u) \quad YD_u = Yr_u + \Delta xru.B^{\$a}_{hus(-1)} - T_u$$

$$(35a) \quad YD_a = Yr_a + \Delta xra.B^{u}_{has(-1)} - T_a$$

$$(36u) \quad yd_u = \frac{YD_u}{p_{su}}$$

$$(36a) \quad yd_a = \frac{YD_a}{p_{sa}}$$

$$(37u) \quad yd^{e}_{u} = yd_{u(-1)} + \beta_u.(yd_{u(-1)} - yd^{e}_{u(-1)})$$

$$(37a) \quad yd^{e}_{a} = yd_{a(-1)} + \beta_a.(yd_{a(-1)} - yd^{e}_{a(-1)})$$

$$(38u) \quad YD^{e}_{u} = yd^{e}_{u}.p_{su(-1)}$$

$$(38a) \quad YD^{e}_{a} = yd^{e}_{a}.p_{sa(-1)}$$

$$(39u) \quad V_{hu} = V_{hu(-1)} + YD_u - C_u$$

$$(39a) \quad V_{ha} = V_{ha(-1)} + YD_a - C_a$$

$$(40u) \quad v_{hu} = \frac{V_{hu}}{p_{su}}$$

$$(40a) \quad v_{ha} = \frac{V_{ha}}{p_{sa}}$$

$$(41u) \quad V^e_{hu} = V_{hu(-1)} + YD^e_u - C_u$$

$$(41a) \quad V^e_{ha} = V_{ha(-1)} + YD^e_a - C_a$$

$$(42u) \quad c_u = \alpha_{1u}.yd^e_u + \alpha_{2u}.v_{hu(-1)}$$

$$(42a) \quad c_a = \alpha_{1a}.yd^e_a + \alpha_{2a}.v_{ha(-1)}$$

Taxes are levied on regular income, and once deducted (and adding the capital gains due to exchange rate movements) we get the nominal disposable income. Notice that the holdings of Argentinean bills denominated in dollars do not generate a capital gain to American holders by exchange rate movements. Dividing nominal disposable income by sales price, we get real disposable income[2]. However households do not base their consumption decisions directly (and entirely) on it, but rather on the expected real disposable income. This is formed by the actual past value and a term that corrects (with a certain speed of adjustment β) past mistakes. They also consume a proportion (rather low) of their past real wealth. With expected disposable income and consumption, we can have an estimate of households' *expected wealth* that they will invest in different assets. But before that we want to highlight an important factor. In the steady state, with no mistaken expectations, there is a stable relation between wealth and disposable income, equal to: $V^*_h = \alpha_3.YD^*$, with $\alpha_3 = \frac{(1-\alpha_1)}{\left[1-(\frac{1}{1+gr})+(\frac{\alpha_2}{1+gr})\right]}$, where gr is the growth rate of disposable income and consumption. This long-run *norm* will have a substantial effect on *government debt*, as we will show later in the simulations. A detailed analysis is found in G&L (2007a), appendix 3.4.

Having decided how much they will consume, and how much they will save, it is time now for households to invest their wealth. Since all financial assets last one period, there is no impediment for them to reallocate their whole wealth, not just new savings. Portfolio allocation is done according to Tobinesque rules, in which agents compare different rates of return plus the relevant risk of the specific asset. In this case, there are two: currency risk, which can cause capital gains or losses according to exchange rate movements; and sovereign risk, which questions directly the repayment capacity of the debtor, the government. Different risks apply to different assets. When a country issues debt denominated in its own currency, in the case of a crisis that can lead to deprecia-

[2] For simplicity we omit the effect of past inflation on real wealth.

tion, the corresponding asset faces currency (or depreciation) risk for foreign investors. Sovereign risk is particularly relevant for countries that have debt denominated in a foreign currency. In our model, sovereign risk is relevant only relative to Argentinean bills denominated in dollars. But we do not only distinguish different types of risk, we also distinguish different types of traders. However, a clarification regarding the notation is due. The variable $B^{\$a}_{hud}$ represents the demand of Argentinean bills denominated in pesos ("$\$a$") by American households ("hud"), while variable $B^{\$u}_{hud}$ represents the demand, by the same households, of Argentinean bills denominated in dollars ("$\$u$"). As we said before, it is just unfortunate that dollars and pesos share the same symbol.

$$(43ui) \quad M^n_{ud} = V^e_{hu}.(\lambda_{10} + \lambda_{11}.rm_u + \lambda_{12}.rb_u + \lambda_{13}.[rb_a + dxru^e] + \lambda_{14}.[rb_u - \phi])$$

$$(43uii) \quad B^u_{hud} = V^e_{hu}.(\lambda_{20} + \lambda_{21}.rm_u + \lambda_{22}.rb_u + \lambda_{23}.[rb_a + dxru^e] + \lambda_{24}.[rb_u - \phi])$$

$$(43uiii) \quad B^{\$a}_{hud} = V^e_{hu}.(\lambda_{30} + \lambda_{31}.rm_u + \lambda_{32}.rb_u + \lambda_{33}.[rb_a + dxru^e] + \lambda_{34}.[rb_u - \phi])$$

$$(43uiv) \quad B^{\$u}_{hud} = V^e_{hu}.(\lambda_{40} + \lambda_{41}.rm_u + \lambda_{42}.rb_u + \lambda_{43}.[rb_a + dxru^e] + \lambda_{44}.[rb_u - \phi])$$

$$(43uv) \quad H^n_{ud} = V_{hu} - M^n_{ud} - B^u_{hud} - B^{\$a}_{hud} - B^{\$u}_{hud}$$

$$(43ai) \quad M^n_{ad} = V^e_{ha}.(\lambda_{50} + \lambda_{51}.rm_a + \lambda_{52}.rb_a + \lambda_{53}.[rb_u + dxru^e])$$

$$(43aii) \quad B^a_{had} = V^e_{ha}.(\lambda_{60} + \lambda_{61}.rm_a + \lambda_{62}.rb_a + \lambda_{63}.[rb_a + dxru^e])$$

$$(43aiii) \quad B^u_{had} = V^e_{ha}.(\lambda_{70} + \lambda_{71}.rm_a + \lambda_{72}.rb_a + \lambda_{73}.[rb_a + dxru^e])$$

$$(43aiv) \quad H^n_{ad} = V_{ha} - M^n_{ad} - B^u_{had} - B^a_{had}$$

$$(44u) \quad H^{\square}_{ud} = H^n_{ud}.z_{4u}$$

$$(44a) \quad H^{\square}_{ad} = H^n_{ad}.z_{4a}$$

$$(45u) \quad z_{4u} = 1 \text{ if } H^n_{ud} > 0$$

$$(45a) \quad z_{4a} = 1 \text{ if } H^n_{ad} > 0$$

$$(46u) \quad M^{\square}_{ud} = M^n_{ud}.z_{4u} + (V_{hu} - B^u_{hud} - B^{\$a}_{hud} - B^{\$u}_{hud}).z_{5u}$$

$$(46a) \quad M^{\square}_{ad} = M^n_{ad}.z_{4a} + (V_{ha} - B^u_{had} - B^a_{had}).z_{5a}$$

$$(47u) \quad z_{5u} = 1 \text{ if } H^n_{ud} < 0$$

(47a) $z_{5a} = 1$ if $H^n_{ad} < 0$

(48u) $dxru^e = -dxra^e$

(48ai) $dxra^e = \chi^f . dxra^{ef} + \chi^c . dxra^{ec}$

(48aii) $dxra^{ef} = \zeta . \left(\frac{xra^{\#} - xra_{(-1)}}{xra_{(-1)}} \right)$

(48$aiii$) $dxra^{ec} = \xi . \left({}^{\Delta(xra_{(-1)})} / {}_{xra_{(-1)}} \right)$

(49) $\rho = \left({}^{B^{\$u}_{hud(-1)}} / {}_{Y_{a(-1)} . xru_{(-1)}} \right)$

(50) $\phi = \kappa . \left({}^{\Delta(\rho)} / {}_{\rho} \right)$

The numerous equations 43 describe portfolio allocation. All the values of the λ coefficients must respect the adding-up constraints set in G&L (2007), p. 328-329. And just like them (p. 325-328), we also have an implicit demand for money which has a negative rate of return equal to the inflation rate, incorporated in the values assigned to the λ.

Equations (43ui), (43uv), (43ai) and (43aiv) show *notional* demands for cash and deposits; that is why they have an upper-script "n". By *notional* we denote the amounts that investors plan to demand *a priori* without any consideration as to whether that amount will be *effectively* demanded, ignoring any shortage that might arise. Why do we split between *notional* and *actual* demands for these two assets in particular? The explanation lies in the first term in the portfolio equations: households allocate their *expected* wealth, with cash demand being the buffer stock that absorbs mistaken expectations between actual and expected wealth. But at times these divergences can be so huge that the notional demand for cash becomes *negative*. For that case, equations (44) to (47) assure that families decrease their deposits to cover the difference. The second term in equation (46) would be smaller than the value resulting from equations (43ui) and (43ai).

Regarding expectations and risks, our modeling of expectation formation regarding the future movement of the exchange rate follows Lavoie & Daigle (2011). In the exchange markets there is a proportion of "fundamentals" traders that act according to some rule and a proportion of "chartists" traders, who follow past movements trying to predict future ones[3]. In the case of the "fundamentals" traders, they expect the exchange rate to move according to the divergence between its past value and some benchmark, $xra^{\#}$. This value does not arise from an equilibrium process nor is directly related to any real fundamental; instead I think of it as a market convention, as what "fundamentals" traders *believe* the exchange rate should be worth. The "chartist" traders try to anticipate the market and guess where the next period value will be based on trend and past

[3] Among the literature supporting this modeling of the exchange market, we can mention Harvey (1993, 2009), Moosa (2003, chapter 8), De Grauwe & Grimaldi (2006, chapter 2), and Rossi (2010).

behaviour analysis. In our model (as well as in Lavoie & Daigle) they assume that the exchange rate will move as it has moved in the period before, in a proportion given by parameter ζ. This separation, between fundamentals and chartists, is likely to create some cyclical behaviour, together with the particular Phillips curve we use.

The last two equations represent risk associated to the holding of Argentinean bills denominated in dollars, a currency that the government does not print. In a simple fashion, we say that that risk moves in line (at a given proportion) with the rate of change in the ratio of (past) Argentina's foreign debt denominated in dollars to its nominal GDP also expressed in dollars. We believe this is a fairly realistic argument that explains better than others some facts of the European crisis: countries with lower debt may be riskier than others with higher, if their position is speedily deteriorating.

The behaviour of commercial banks in this model is pretty simple. They grant all the loans that firms demand (equations 52), and accept all the deposits households make (equations 51), charging a mark up on the former and thus making a profit (equations 58). The difference between deposits plus accumulated profits (their net wealth) and loans is invested in bills, in case it is positive, or is covered with advances from the central bank, in case it is negative. In this case the distinction between notional and actual demands is also relevant, and the mechanism is described in equations 53 to 57. This institutional framework is more similar to the Anglo-Saxon banking system than to the Continental European.

(51u) $M_{us} = M_{ud}$

(51a) $M_{as} = M_{ad}$

(52ui) $L^u_{us} = L^u_{ud}$

(52uii) $L^u_{as} = L^u_{ad}.xru$

(52a) $L^a_{as} = L^a_{ad}$

(53u) $B^{nu}_{bud} = M_{us} + V_{bu} - L^u_{as} - L^u_{us}$

(53a) $B^{na}_{bad} = M_{as} + V_{ba} - L^a_{as}$

(54u) $B^u_{bud} = B^{nu}_{bud}.z_{6u}$

(54a) $B^a_{bad} = B^{na}_{bad}.z_{6a}$

(55u) $z_{6u} = 1$ if $B^{nu}_{bud} > 0$

(55a) $z_{6a} = 1$ if $B^{na}_{bad} > 0$

(56u) $A_{ud} = (L^u_{as} + L^u_{us} - M_{us} - V_{bu}).z_{7u}$

(56a) $A_{ad} = (L^a_{as} + L^u_{as} - M_{as} - V_{ba}).z_{7a}$

(57u) $z_{7u} = 1$ if $B^{nu}_{bud} < 0$

(57a) $z_{7a} = 1$ if $B^{na}_{bad} < 0$

(58u) $F_{bu} = rl_{u(-1)}.L^u_{us(-1)} + rl_{u(-1)}.L^u_{as(-1)} + rb_{u(-1)}.B^u_{bus(-1)}$

$-rm_{u(-1)}.M_{us(-1)} - ra_{u(-1)}.A_{us(-1)}$

(58a) $F_{ba} = rl_{a(-1)}.L^a_{as(-1)} + rb_{a(-1)}.B^a_{has(-1)} - rm_{a(-1)}.M_{as(-1)} - ra_{a(-1)}.A_{as(-1)}$

(59u) $V_{bu} = V_{bu(-1)} + F_{bu}$

(59a) $V_{ba} = V_{ba(-1)} + F_{ba}$

Let us now turn to present the different interest rates of this model. The base rate on government bills is set by the central bank (Lavoie (2006b)). Banks applied a mark up over it to set the loans interest rate. The interest rate on advances to banks carries a penalty, though lower than banks' mark up. The deposit rate is equal to the bill rate.

(60u) $rl_u = rb_u.(1 + i_u)$

(60a) $rl_a = rb_a.(1 + i_a)$

(61u) $r_{mu} = r_{bu}$

(61a) $r_{ma} = r_{ba}$

(62u) $ra_u = r^{\square}_{bu}.(1 + v_u)$

(62a) $ra_a = r^{\square}_{ba}.(1 + v_a)$

I have already mentioned nominal government expenditure in equation 11. Real government expenditure is assumed to grow at a fixed rate σ (This will be handy when we perform fiscal policy experiments). Central banks' profits are given back to their respective governments. I present next the equations showing this and bills supplies to households and banks. Equation (66u) has a special mark (FX) since it will be one of the equations defining a fixed exchange rate closure. When I talk about flexible exchange rates and the central bank, they will adapt a different form.

(63u) $g_u = g_{u(-1)}.(1+\sigma_u)$

(63u) $g_a = g_{a(-1)}.(1+\sigma_a)$

(64u) $B^u_s = B^u_{s(-1)} + G_u - T_u + r_{bu(-1)}.B^u_{s(-1)} - F_{cbu}$

(64ai) $B^a_s = B^{\$a}_{s(-1)}\left(1+r_{ba(-1)}\right) + B^{\$u}_{hud(-1)}.\left(1+r_{bu(-1)}\right).xra + G_a - T_a - F_{cba}$

(64aii) $B^{\$a}_s = B^a_{has} + B^{\$a}_{hus} + B^a_{bas} + B^{\$a}_{cbas}$

(65u) $B^u_{hus} = B^u_{hud}$

(65a) $B^a_{has} = B^a_{had}$

(66uFX) $B^u_{has} = B^u_{had}.xru$

(66ai) $B^{\$a}_{hus} = B^{\$a}_{hud}.xra$

(66aii) $B^{\$u}_{hus} = B^{\$u}_{hud}.xra$

(67u) $B^u_{bus} = B^u_{bud}$

(67a) $B^a_{bas} = B^a_{bad}$

The following equations present the demand and supply functions related to the central bank. We follow the presentation of G&L (2007a), chapter 12.

(68u) $H_{us} = H_{ud}$

(68a) $H_{as} = H_{ad}$

(69u) $A_{us} = A_{us}$

(69a) $A_{ad} = A_{ad}$

(70u) $B^u_{cbud} = H_{us} - A_{us}$

(70a) $B^a_{cbad} = B^a_{cbad(-1)} + \Delta(H_{as}) - \Delta(B^u_{cbas}).xra$

(71u) $B^u_{cbus} = B^u_{cbud}$

(71a) $B^a_{cbas} = B^a_{cbad}$

(72uFX) $B^u_{cbas} = B^u_s - B^u_{hus} - B^u_{bus} - B^u_{cbus} - B^u_{has}$

(72a) $B^u_{cbad} = B^u_{cbas}.xra$

(73uFX) $xru = constant$

(73a) $xra = 1/xru$

(74u) $F_{cbu} = rb_{u(-1)}.B^u_{cbus(-1)} + ra_{u(-1)}.A_{us(-1)}$

(74a) $F_{cba} = rb_{a(-1)}.B^a_{cbas(-1)} + ra_{a(-1)}.A_{as(-1)} + rb_{u(-1)}.B^u_{cbas(-1)}.xra$

It should be noted that in equation (70a), the demand for bills is presented in differences, instead of levels, because there exists the possibility of capital gains due to exchange rate movement (G&L: 461). Equation (72u) shows the essence of a fixed exchange rate: the Argentinean central bank must buy all the American bills left in the market if it wants to sustain a given exchange rate. Otherwise there would be a redundant supply of assets in dollars, and the dollar would plummeted in value. That is why its demand is determined by its supply. There is a redundant equation, however: the Argentinean government supplies the residual bills in pesos (those not bought by banks or households) to the central bank. But there is already one such equation: equation (71a). Since the same variable cannot appear twice in the LHS of the equation, it becomes redundant in the model, but its fulfilment is assured by the tight accounting that we went through: there is no other way. But these equations do not remain the same if we want to model a flexible exchange rate. For that, we need the following closure:

(66uFL) $B^u_{has} = B^u_s - B^u_{hus} - B^u_{bus} - B^u_{cbus} - B^u_{cbas}$

(66uFL) $B^u_{cbas} = constant$

(66uFL) $xru = {}^{B^u_{has}}/_{B^u_{had}}$

In this closure, demand and supply of American bills to Argentinean households are determined independently, and it is the role of the exchange rate to adjust in order to equalize them. We have inverted equation (66uFX). However, this does not mean that these two are the sole factor in the determination of the exchange rate: all the variables play a role here. Imports and exports affect income, GDP growth affects investment, loans and interest rate payments. That is the beauty of stock-flow models: it is a macroeconomic structural model, with no accounting holes, and with a simultaneous and consistent determination of flows, stocks and prices. However, it is more complicated to perform stability analysis in models so large as these ones, and calibration must

be made regarding certain norms (such as the wealth to income ratio mentioned before) rather than by looking at mathematical conditions. To sum up, we present the current account and the capital account of the balance of payments, which includes foreign reserve movements (what G&L call "KABOSA", a capital account that includes the Official Settlement Account). A word of caution is required here: since in the flexible exchange rate regime there are possibilities of capital gains on Argentinean foreign reserves (a constant stock of US bills in dollars) due to exchange rate movements, the balance of payments is not equal to zero by definition. This is only due to what in G&L is call the Official Settlement Account (G&L: 453).

$$(75u) \quad CA_u = X_u - IM_u + r_{ba(-1)}.B^{\$a}_{hus(-1)}.xru + r_{bu(-1)}.B^{\$u}_{hud(-1)} + r_{lu(-1)}.L^{u}_{as(-1)}$$

$$-r_{bu(-1)}.B^{u}_{has(-1)} - r_{bu(-1)}.B^{u}_{cbas(-1)}$$

$$(75a) \quad CA_a = X_a - IM_a + r_{bu(-1)}.\left(B^{u}_{has(-1)} + B^{u}_{cbas(-1)}\right).xra - r_{ba(-1)}.B^{\$a}_{hus(-1)}$$

$$-r_{bu(-1)}.B^{u}_{hud(-1)}.xra - r_{lu(-1)}.L^{u}_{as(-1)}.xra$$

$$(76u) \quad KA_u = \Delta B^{u}_{has} + \Delta B^{u}_{cbas} - \Delta B^{\$a}_{hus}.xru - \Delta B^{\$u}_{hud} - \Delta L^{u}_{as}$$

$$(76a) \quad KA_a = \Delta B^{\$a}_{hus} + \Delta B^{\$u}_{hud}.xra - \Delta B^{u}_{has}.xru - \Delta B^{u}_{cbas}.xra - \Delta L^{u}_{as}.xra$$

Finally, we present a brief description of the baseline used as a benchmark to compare the effects of the different shocks we simulated. We simulated the model for 100 periods, and at the end of those periods GDP was increasing, in the flexible exchange rate regime, at 3.04% in Argentina and 3.03% in USA, with the Argentinean peso slightly depreciating around 0.08% annually, real wages going up 0.03% in Argentina and 0.04% in USA, there is some deflation at around 0.4% per period, and the accumulation rate (equation 28) proceeds at 2.9%. In the fixed exchange rate regime, in turn, GDP grows in both countries at 3.03%, the real wage rate grows at 0.04%, deflation is also at 0.04%, and accumulation moves at 2.9% per period. The debt to GDP ratio grows but at a decreasing trend in both regimes, rising by less than 0.1% per period and stabilizing asymptotically. In our opinion, however, these values should not be given much importance. What matter in our view is to examine the impact of the shocks compared to the baseline, the baseline in itself being of secondary importance.

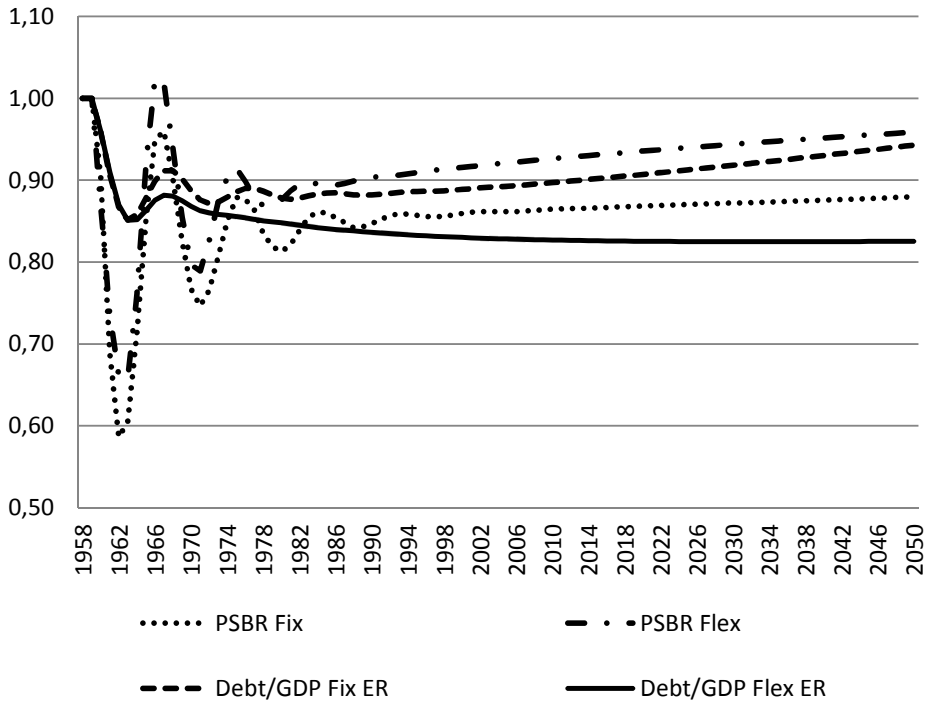
5.3. SIMULATIONS

5.3.1. CONSUMPTION, SAVINGS AND FISCAL POLICY

In the first experiment I increase the coefficient α_{1a} by 10%, which represents the propensity to consume of Argentinean households out of their disposable income. As expected in a model that imposes no constraint on the supply side, we observe that real GDP is higher after the change, the short term impact being higher than in the long run, but still positive. The paradox of thrift holds both in the short and in the long run. However, I do observe a fall in real and nominal household wealth, which slightly counteracts the increased propensity to consume. In other words, the coefficient α_3 becomes smaller. But that is not the only implication.

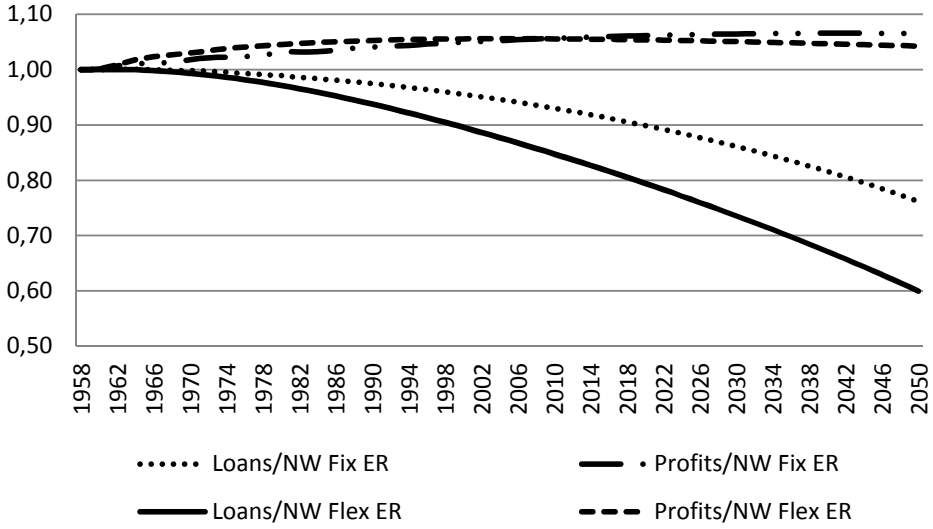
Higher consumption and less savings is matched, ceteris paribus, by two features: one is a deterioration in the external performance, and we do observe the deterioration in the trade and current account of Argentina, attenuated in the flexible exchange rate

Figure 5.1: Higher propensity to save



Public Sector Borrowing Requirements and Debt/Nominal GDP ratio in Argentina after an increase in the propensity to consume out of disposable income

Figure 5.2: Higher public expenditure



Loans to net wealth and profit to net wealth ratios of Argentinean firms after an increase in the rate of growth of public expenditures

regime precisely by the depreciation of the peso (though this does not mean that the exchange rate moves necessarily in the same direction as the current account, as I will show later). The other quite important feature is the fall in the public sector borrowing requirements of the Argentinean government, which is basically the issue of new bills. We therefore have a lower ratio of debt to GDP (though foreign debt denominated in dollars is a higher proportion of total debt). This is shown in figure 5.1.

Let us look now at the effects of a higher rate of growth of public expenditures. The model is very sensitive to changes in this parameter. We increased the coefficients σ_a and σ_u from 3% to 3.15% in the case of a fixed exchange rate regime and to 3.12% in the case of the flexible regime, and even in the latter case, in what refers to the coefficient σ_u we did not have values for the last 15 years, though the sample was big enough to draw some conclusions.

Both increases are expansionary for the country that implements them and for the other as well, due to the stimulus for imports. However the net impact on the balance of trade depends on the ER regime. The flexible ER regime reflects higher output due to an improved balance of trade, which in turn is caused by a depreciation of the exchange rate. The rate of growth of capital stock also has the same behaviour: in both cases it is positive, but it is greater in the flexible ER regime. Instead real consumption is slightly higher in the fixed ER than in the other. The reason: sustained depreciation increases the mark up and lowers real wages, also due to inflationary pressure from more highly priced import goods, something ruled out in our fixed ER model. However given the parameters of our simulations and the magnitude of the changes, the fall in the real wage

is very small and the trade balance impact prevails over losses of consumption expenditure due to lower wages. The opposite of a depreciation is a run-out of foreign reserves in Argentina, in the fixed ER case. But there is more to conclude here.

In recent times financial blogs have started to use as a guide to estimate the future movements of corporate profits the "Kaleckian equation", which basically says that profits are equal to corporate investment minus household's savings plus the budget deficit plus the current account surplus (Kalecki: 1971). Can we observe something like that here? Paraphrasing Barack Obama: yes, we can. Figure 5.2 shows the evolution of the loans to firms' net wealth ratio, and the ratio (net of depreciation allowance) profits to net wealth. Compared to the baseline, we observe the expected result: the loans to net wealth ratio goes down, the profits to net wealth ratio goes up. Also the former ratio falls even more in the flexible ER regime than in the fixed, even though the magnitude of the change was lower. We attribute this to the increase in the mark up and the higher price level observed when the ER is allowed to float.

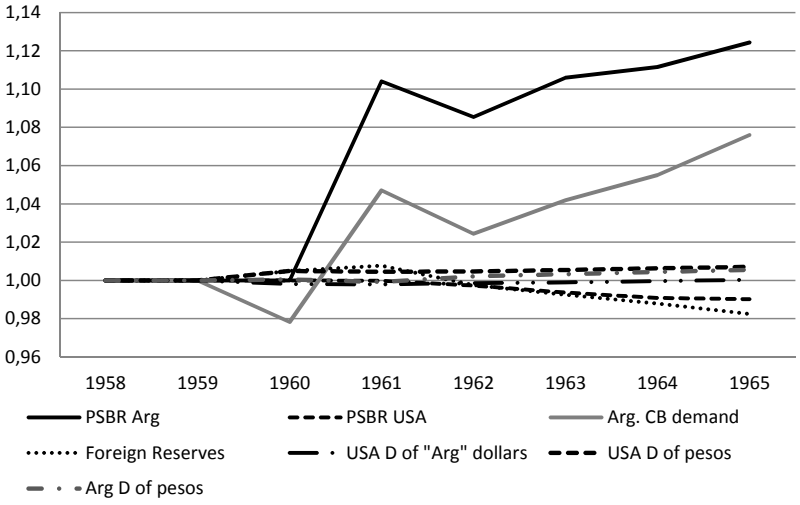
5.3.2. INTEREST RATES, PORTFOLIOS, DEVALUATIONS AND EXPECTATIONS

In what refers to monetary policy I conducted basically three experiments: I raised the interest rate on American bills (and Argentinean bills denominated in dollars), I raised the interest rate on bills denominated in pesos, and I raised both at the same time. In the first stage, we will present the results on the second experiment (an increase of 50 bps in $r_b a$ from 3% to 3.5%). The very short run movements are as expected, the medium to longer run not, but they do offer a lot of insight, notwithstanding. It is a supply and demand story. Let us start with the fixed ER regime. Figure 5.3 presents selected variables, and their reaction to such an increase, during the first five years. We beg the reader to stay with us during the explanation, because it is a difficult graph to read.

Argentinean public sector borrowing requirements (PSBR) escalate, with a small alleviation in the second period, as interest rates take a greater toll in the government budget. The demand for bills in pesos, from American and Argentinean households increases slightly, except for the latter in 1961. The American demand for US bills decreases also in a low magnitude initially, though later it will grow together with household wealth.

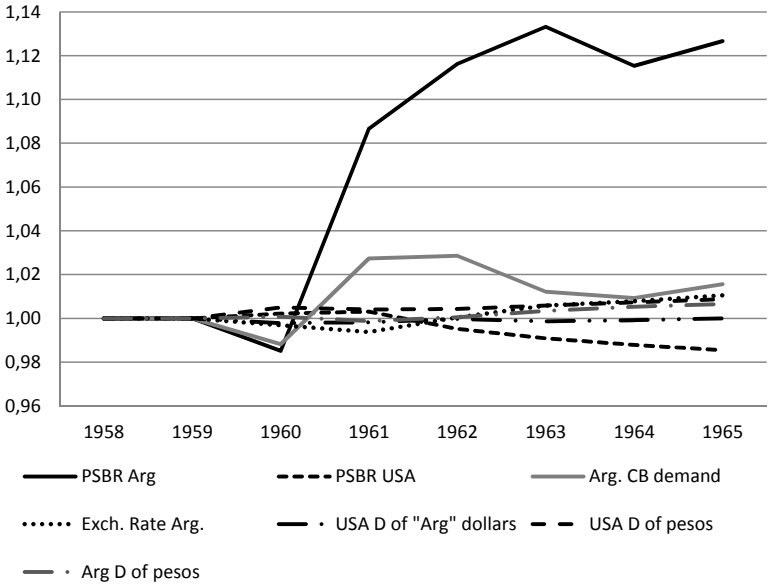
What is steadily declining is the US PSBR. Greater interest payments to US households imply greater income and smaller deficits (this effect is actually small: the American debt is barely 2% lower in the last period of the simulation compared to the baseline). The supply of American bills goes down, and the supply of Argentinean bills goes up. In the first year, with the increase in the demand of Argentinean bills (and the small decline in the demand of American bills) foreign reserves increase, but later they go down as well. The Argentinean central bank sells the dollars in exchange for pesos, but now there are less pesos in circulation than the required amount to keep the interest rate at the desired level, so the central bank *buys the bills the government is issuing with the pesos required to keep the interest rate*. That is how the increased PSBR is "financed". However implausible this might seem (and it does seem unrealistic to us), there is one good, relevant and important feature: the outflow of foreign reserves, even in a fixed exchange rate regime,

Figure 5.3: Higher interest rate in Argentina



Reaction to an increase of 50 bps in the interest rate on bills in pesos in a fixed ER

Figure 5.4: Higher interest rate in Argentina



Reaction to an increase of 50 bps in the interest rate on bills in pesos in a flexible ER

need not go together with a reduction in the domestic money supply. As long as Argentina has (enough) foreign reserves, this process can go for ever. The Mundell-Fleming theorem does not apply. A country can have (and sustain) a domestic interest rate different from the international one. The key is that there is imperfect substitution between the assets (Lavoie: 2000; Serrano & Summa: 2012), that investors do not see them as equal or competing with others. Capital controls might not be theoretically necessary to accomplish this, there are none in our model, but in reality it may be different.

In a flexible ER regime, in 1961 we have an appreciated ER, just like in the fixed ER closure we had an initial increase in reserves. But in that period the effects are different: this causes a capital gain to the government lowering (in one period) its borrowing requirements, together with the fall in the demand for bills denominated in dollars. In a sense, it actually achieves what it tried to do. But this only lasts for one period, in this simulation, and later the effect is reversed. Figure 5.4 shows it.

The attentive reader may ask what happens with the expectations about the movement of the exchange rate. There are two cases. In the fixed ER closure, given that we chose to set an exchange rate level equal to what fundamentalist traders think it should be, there are no expectations of depreciations (I do model this case below). In the flexible exchange rate regime the values obtained for the baseline are below the "fundamental" ER. As the actual ER depreciates in the simulation, it gets closer to the fundamental value, and expectations about its future movement become more optimistic (i.e. the expectation of depreciation is reduced, though in an attenuated way because of the chartist traders). Some more remarks are important here. In my model the impact of an increase in the Argentinean interest rate on output is slightly positive. Output is less than 2% higher in the last period compared to the baseline (in the fixed ER closure, it is 1% higher) because interest receipts increase disposable income and with it consumption. In the flexible ER we should also add the impact of a positive trade balance. I did not include a negative check in the investment function; that remains for future work.

Finally, what happens when such increase in the Argentinean interest rate goes hand in hand with an increase in the American interest rate? Sparing the reader more complicated graphics, we can confidently say that, given the parameters of our model both PSBR (American and Argentinean) go up. The Argentinean government even has to pay more for its bills denominated in dollars. The behaviour we observed previously is attenuated: depreciation is more nuanced, and Argentina even has a gain in its foreign reserves. Due to the cost effect of interest payments on loans (that also raise together with the base rate) the real wage is somewhat decreased as a by-product. This counteracts the effect of interest receipts for a long time, specially the fixed ER closure.

What are the effects when we change the portfolio decisions of households, the proportion in which they allocate their wealth among different assets? For example, what happens when American households fear about the evolution of the Argentinean economy and increase their holdings of domestic bills at the expense of the others? And what if on top of this they have doubts on its solvency in dollars and the coefficient κ rises? In the fixed ER regime, private financial flows to Argentina fall, and so do foreign reserves. However as mentioned before, the "rules of the game" of a gold standard do not apply: nobody plays by the rules. Domestic credit is increased by the central bank, as long as it has foreign reserves to defend the exchange rate. We will show later what happens when

it does not defend the exchange rate. So far, the situation is not good. But what about that in a flexible ER?

Several things are noticeable here. First, the exchange rate depreciates. Does the story end there? No. Depreciation of the peso has certain effects on Argentina, and it is interesting to track them. In this simulation, depreciation increases prices in Argentina and decreases them in the US, via two effects: increasing the cost of imports (and in the Argentinean case, the burden of interest payments plus cost of paying back debts on foreign loans); and it increases (decreases) the mark up. Profits in Argentina increase, in the US they decline. Still, having decided in real terms how much to invest, price increases force Argentinean firms to borrow more, and American firm to borrow less, which means that Argentinean banks demand less bills, and American banks demand more. Real consumption also stays the same, but nominal consumption increases (even though the real wage falls). Looking at equations 39 and 41, one would assume that both expected and actual nominal wealth fall in tandem (remember, expectations about disposable income are backward-looking in this model, and so they do not change initially). But that does not happen. Expected nominal wealth does fall, and with it the Argentinean demand for bills and deposits. But depreciation also causes a capital gain on their holdings of foreign bills (and the opposite goes for USA households), which increases their actual disposable income. In the first period, therefore, they increase their cash holdings, the central bank buying the bills that foreigners, locals and banks do not. This is how the interest rate is kept at its target. In the USA, on the contrary, the central bank sells the bills the agents demand. This result shows that the money supply is determined by the preference of the agents, not set by the central bank[4].

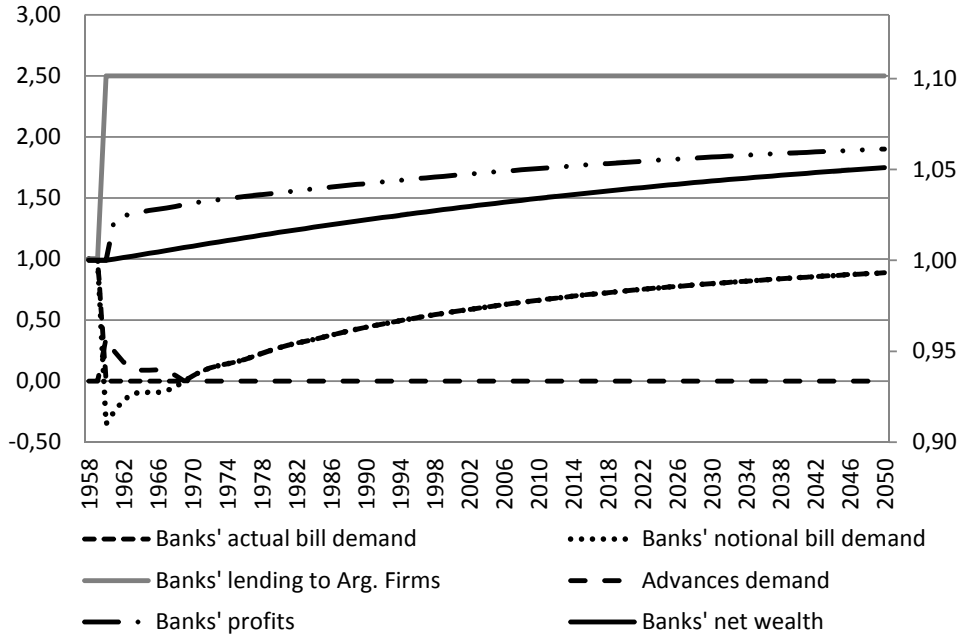
The capital account surplus is reduced as well as the current account deficit. PSBR in Argentina rely more on domestic financing rather than foreign. The Argentinean real wage declines initially, which impacts on real consumption, but as the exchange rate stabilizes, it returns to normality, though at a higher price level. What happens with the expectations about the exchange rate? Keeping in mind that a positive $dxra^e$ implies that the Argentinean ER is expected to depreciate, that variable *diminishes*. Initially, chartist traders increase substantially their expectations of a depreciation, but the opposite happens with the fundamentalists: now the exchange rate is at a higher level, close to (or above of) the value they judge as appropriate. A similar story happens when there is a capital flight from Argentinean households.

But it is also interesting to see what happens when firms change their funding decisions. Suppose Argentinean firms start to borrow more in the US. In the simulation with the flexible ER regime, we increased that proportion from 20% to 30% of their total borrowing requirements, while in the fixed ER closure we raised it to a 50%. Let us start with the latter. The current account of Argentina deteriorates, but aggregate demand does not deteriorate and prices do not change. Remember, the ER does not move. But what happens to the banking sector and private debt is quite revealing. Figure 5.5 shows selected variables of the balance sheet of American banks. The lines corresponding to banks' profits and banks' net wealth, should be read in the secondary axis (RHS). The others, in the LHS axis.

The increase in borrowing by Argentinean firms force US banks to sell all their hold-

[4] Lavoie (2001). For a study of the gold standard period previous to the First World War, look Bloomfield (1959).

Figure 5.5: Higher private foreign borrowing

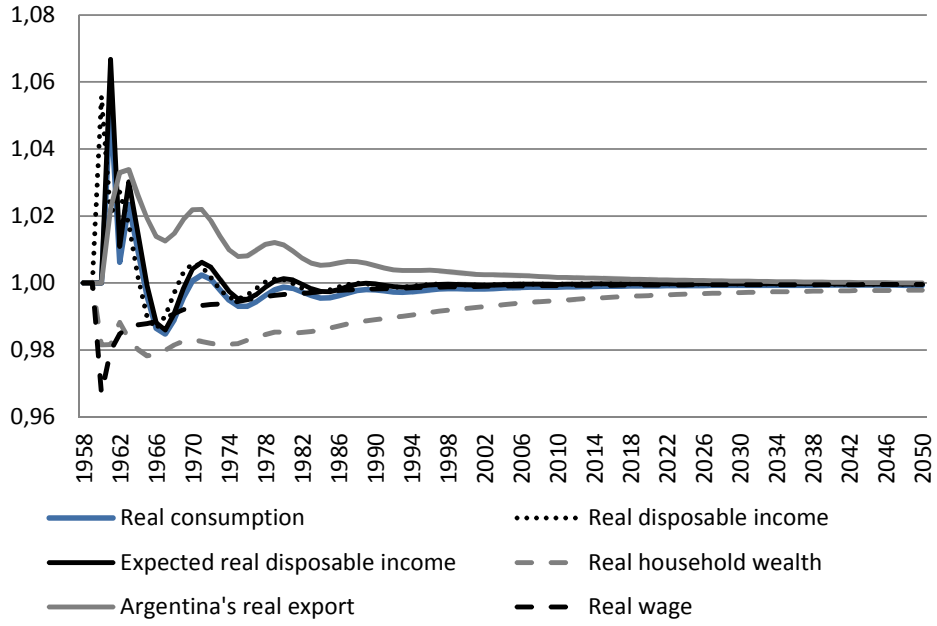


Behavior of selected variables in the balance sheet of American banks

ings of bills. They face a sudden change in their asset composition. They would sell even more bills than what they have (the pointed line representing *notional* demand of bills, goes into negativity) But since they cannot do that, they are forced to ask for advances from the central bank to fund their lending (the line that, starting from zero goes up initially, and then returns to zero around 1970; notional and actual demand of bills are the same after 10 periods). The central bank accepts that, but in order to keep its balance sheet it is forced to sell the bills it holds. Who buys them? The *Argentinean* central bank, of course. It must, if it wants to preserve the exchange rate. Foreign reserves increase substantially, and their rhythm only is reduced when banks start to invest their increased profits in bills, the equivalent of parking it in the central bank, as we see nowadays. That is why banks' profit and net wealth increase: lending goes up.

The opposite happens in Argentina. Lending goes down, pulling down profits and net wealth. They invest what they do not lend in bills, which are sold by the central bank to sterilize its purchase of foreign reserves. I believe that this situation represents quite appropriately the run up to the Asian crisis, as told by Kregel (1998): an explosion of foreign borrowing in a context of stable ER and increased reserves, triggered by financial liberalization in those countries and increased reserves. When something went wrong, those reserves were not enough, because private debt had also escalated.

Figure 5.6: Devaluation in Argentina



Impact in Argentina after a 10% devaluation in a fixed ER regime

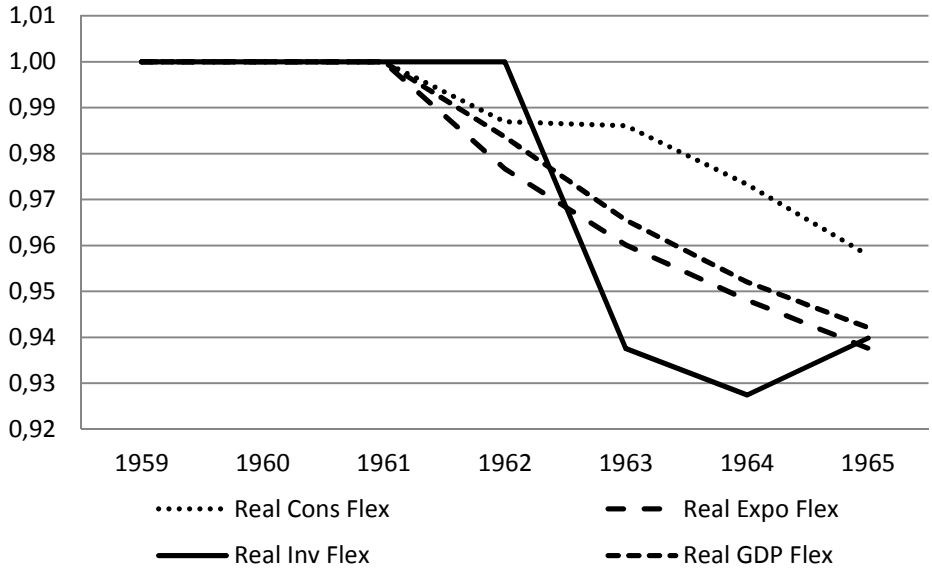
In the flexible exchange rate the situation is as one should expect by now. The exchange rate appreciates, there is an inflow of capital, and the current account deteriorates, but not as much as in the fixed ER closure. American banks are also forced to borrow from their central bank in order to keep with their lending.

When Argentina actually devaluates while keeping its fixed exchange regime, households face two different effects: on one side, their real wage is diminished. On the other, they enjoy a once-in-a-lifetime capital gain on holdings of foreign bills (not actually true, of course, devaluations are common events, but in our little model this episode occurs once in 100 years). In the real world, the people who suffer mostly from the former are not the ones who enjoy the latter. What prevails in the outcome? Figure 5.6 shows us.

The graphic shows us that real disposable income spikes first, driving later consumption with it. Remember that expected disposable income is backward looking. But real wealth fell due to the impact of a higher price level on the other assets. In the medium run, disposable income realigns itself with the real wage, albeit in a somewhat cyclical fashion due to the correction mechanism in the expectations described in equation 37. Real exports increase, foreign reserves increase, bills demands by American households and the Fed decline.

But what if a devaluation is expected but does not occur? Assume that $xra^{\#}$ increases 10%: fundamentalist traders now believe that the Argentinean ER is worth 10% less. The demand for bills denominated in pesos falls, and the demand for bills denominated in

Figure 5.7: Higher targeted real wage



Effect after an increase of 20% in the real wage targeted by Argentinean workers

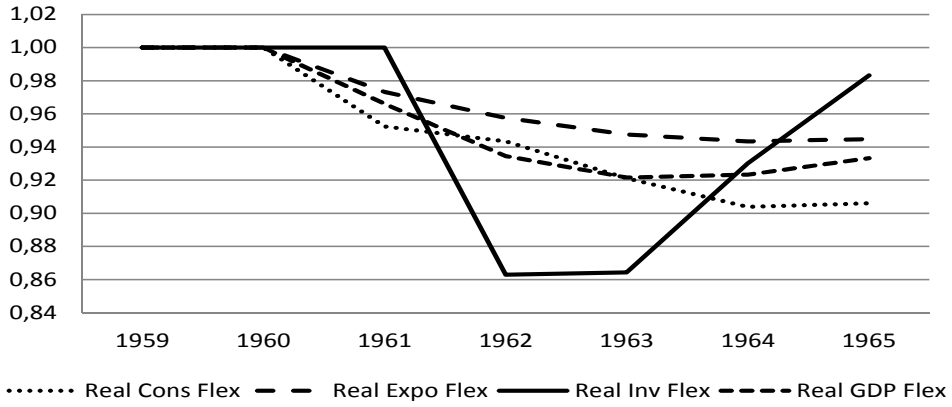
dollars, issued *both* by the American and the Argentinean government increases. This is not corrected over time, since neither the exchange rate nor the value judged by the trader change. The impact of the higher demand for American bills is indeed the responsible for the fall in foreign reserves. And in the flexible ER regime? It does translate into a small depreciation of the peso, which slightly reduces the PSBR of the American government. Argentineans demand more American bills, but their demand represents less (in marginal terms, admittedly) and so interest payments fall. Argentinean real exports increase a bit, and so firms profits.

5.3.3. DISTRIBUTION ISSUES

In our model, does a higher wage demand (say, a higher ω_1) brings higher growth? No. Does a higher mark up (say, a higher π_0) cause higher growth? Neither. Both together? No. Figure 5.7 and Figure 5.8 show Argentinean real GDP and its (real) components (other than real public expenditure) for the first 5 years after the change (in 1960), in the case of higher wage demand and higher mark up, only in the flexible exchange rate regime, for reasons of space. The timing of changes will show that exports are the main driving force in this context.

In the case of an increase in ω_1 in the fixed ER regime there is actually a very slight increase of real consumption in the year 1962, but the fall in real exports is substantial,

Figure 5.8: Higher mark up



Effect after a 20% increase in the mark up of Argentinean firms

dragging first real GDP and afterwards real investment. The effect of the latter is much more pronounced than in the flexible ER.

Two well established facts are that investment tracks GDP, and that it follows it with wild fluctuations. That is the essence of the accelerator principle. Why does real consumption fall so hard, even if the real wage increases as it does? Because of the depressing effect of falling real GDP on employment, one has to add precisely the effects of real wages on productivity: a higher real wage stimulates productivity, as stated in equation 20. The real wage bill (real wage times the employment level, which is a good proxy for the real wage rate) actually falls, even though the wage *share* raises because productivity increases only a q_a proportion of the amelioration in the real wage.

We performed experiments moving the flat segment of the Phillips curve for USA. We did not find major noticeable changes in the variables. But we did not want to finish the paper without any finding that might propose some solution, even in this highly sketched model, for a great scourge of our times, which is the situation in the European "periphery", Greece, Spain Ireland, etc. And we do have interesting findings.

5.3.4. SOMETHING TO SAY ABOUT THE EUROZONE

Even though the Eurozone countries have a central bank dependent of the European System of Central Banks (ESCB), at least that is what the treaties say, we can think of a fixed ER as a proxy for a monetary union, and to treat, in our case, as Greece being "Argentina" and USA as being "Germany". And given what we saw, the high sensitivity our results have to changes in external competitiveness, one might be tempted to say that a good and viable solution for Greece would be a German "inflation", meaning by that an increase in its real wage. Even more, let us make German imports even more

sensitive to this deterioration in its price-competitiveness by increasing, precisely, its price-elasticity e_1. The results are not as encouraging as one would like.

We increased 10% the mentioned e_1 and also ω_{1u} which in this case, making use of our imagination, corresponds to German workers. As expected, Greek exports improve, and GDP follows it, but not that much, because there is another depressing force: consumption. The increase in German wages is translated into export prices, and even though there is some "substitution" between German and Greek production, it is of little magnitude for the consumption basket of Greek workers who see their real wages go down due to higher import prices. A moderate increase in German wages might solve the trade balance problem, but does not improve the situation of Greek workers. There are some imports which are not easily replaceable, and others which are not replaceable at all. Something else must change for the Greek economy (measured by real GDP) and the situation of Greek workers to improve at the same time. It is not mostly a problem of price competitiveness, it is more a problem of economic structure. Where can we find the solution?

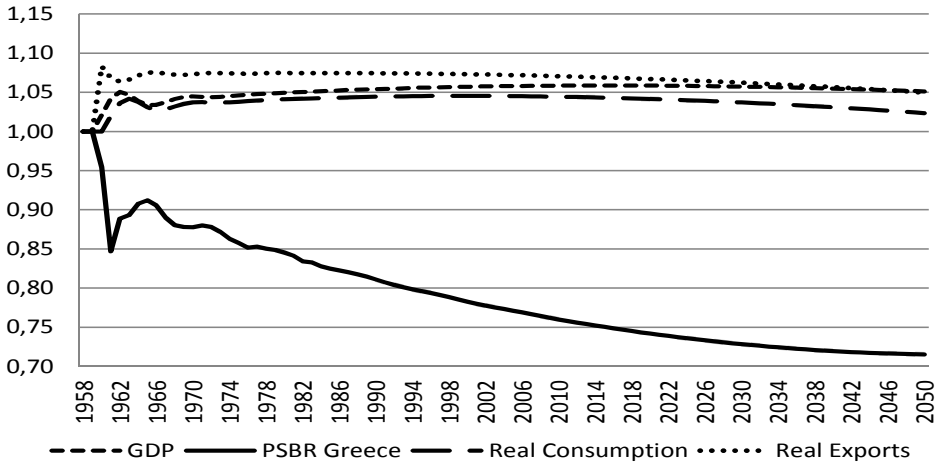
One idea is to invest more in Greece, let say by raising the coefficient γ_{0a} in our model. And yes, this does have positive effects: Greek employment increases, GDP as well, and PSBR falls. But the trade balance deteriorates together with the current account. Notice that in this case we *do not have twin deficits:* we have a public surplus and external deficit, because the former is not as big as the private deficit. Twin deficits are not an economic necessity, as the IMF programs want us to believe. So how can we solve them? The ideal world is a Marshall Plan that changes the economic structure of Greece and makes it less dependent on imports. We model this by increasing γ_{0a} and at the same time by increasing e_0 10%, that is, the propensity of the German economy to import from Greece. Figure 5.9 shows what happens.

Real GDP in Greece increases, employment increases, consumption increases, the current account improves, and public sector borrowing falls, for both factors. Even though Germany experiences a fall in its in GDP, in the long run it is starting to improve due to higher imports of a booming Greece. Our conviction in the necessity, if Greece is going to stay in the Euro (a big if), of a Marshall Plan instead of limited changes in relative prices does not come just from these results, but it is also based in empirical literature, such as Felipe & Kumar (2011) and Papadimitriou, Zezza & Nikiforos (2013). Our simulations, although limited in its characteristics, give us a little more confidence in advancing these solutions.

5.4. CONCLUSIONS

This paper presents an extension of chapter 12 of Godley & Lavoie (2007a) while we also incorporate elements present in Lavoie & Daigle (2011), regarding the expectations formation about the movement of the exchange rate. The methodology adopted is a Stock-Flow Consistent approach that assures that there are no "black-holes" in the accounting of the model: everything comes from somewhere and goes somewhere else. In that line of literature, we added a simple investment function drawing on the accelera-

Figure 5.9: A "Marshall Plan for Greece"



Effect after an increase in autonomous investment in Greece and German propensity to import from Greece

tor principle; the possibility of having foreign debt (both public and private) in a foreign currency; the possibility of having banks borrowing advances from their central bank; a Phillips curve with a flat segment; a productivity growth function; and error correction mechanisms regarding income expectations and portfolio allocation.

In spite of the simplistic nature of some of our assumptions, we have been able to extract some conclusions in light of the results of the simulations we performed. In particular:

- The behaviour of the exchange rate depends on the financial positions of the different sectors (including the government), the portfolio allocation and exchange rate expectations of traders, and it is not strictly related to the behaviour of the current account of the balance of payments. The exchange rate (in a flexible exchange rate regime) or the reserves equilibrate the demand and supply of funding that a country and its agents require and/or demand, according to the currency in which this funding is offered/required. In different simulations, a current account surplus for one country coexisted either with a depreciating exchange rate or an appreciating one. If any causality can be observed, one could say that the movement of the exchange rate influences the trade balance much more than the other way around. However, this does not mean that the exchange rate plays an equilibrating role on the balance of trade or the current account, on the contrary.

- Our results reject the "twin deficit" view articulated long ago by the IMF, which blames fiscal deficits for balance of payments problems, by which is usually meant a structurally negative current account. This view is also behind the economic policies imposed by the "Troika" on the government of the European periphery.

Twin deficits do not always happen when there is accumulation of assets by the private sector (as in a growth model as ours), and even if they do that does not imply there is necessarily a fiscal mess, it might well be the other way around, i.e. problems originated in the external sector might impact negatively in the fiscal position. (Ocampo, Rada & Taylor 2009: chapter 6).

- An important result is that, with sufficient foreign reserves, the "rules of the game" of a fixed ER or a gold standard regime *do not apply*. There need not be a direct relation between the balance of payments (which basically shows the extent of foreign lending/borrowing) and domestic credit.

- In what refers to the current situation of the Eurozone (this chapter has been written while Greece still belonged in it), our paper supports expansionary measures *in the periphery*, coupled with external support to alleviate further deteriorations in the balance of payments, in order to improve the trade balance and at the same time improving the economic wellbeing of the domestic population. Policies that only focus on price competitiveness to solve the problems are not going to improve the living conditions of countries and people in economic difficulties, since the problem is of a more structural nature, related to the productive profile of those economies. An integral approach, such as a "Marshall Plan", is required.

- Our results show that different exchange rate regimes might have each of them positive and negative consequences under different circumstances. We therefore find ourselves in agreement with Palley (2003) in the sense that an active management of both exchange policy and capital mobility can avoid the dangers associated with the passivity of the government in face of the disruptive consequence each extreme case might have. The set of the rules for this management *can (and should)* be designed to achieve different targets in terms of employment, output, inflation and balance of payments performance: it is not easy, but it can be done, even in an open economy context.

5.5. APPENDIX: INITIAL VALUES OF VARIABLES AND PARAMETERS

$s_u =$	2288.51608	$z_{3u} =$	0	$L^u_{ud} =$	5000	$\lambda_{23} =$	-0.01
$s_a =$	2288.51608	$z_{1a} =$	1	$L_{ad} =$	5000	$\lambda_{24} =$	-0.02
$S_u =$	4577.03216	$z_{2a} =$	0	$L^u_{ad} =$	1000	$\lambda_{32} =$	-0.01
$S_a =$	4577.03216	$z_{3a} =$	0	$F_{fu} =$	145.631068	$\lambda_{33} =$	0.1
$y_u =$	1830.81286	$EMP_u =$	0.03	$F_{fa} =$	145.631068	$\lambda_{34} =$	-0.05
$y_a =$	1830.81286	$EMP_a =$	0.03	$Yr_u =$	3125	$\lambda_{40} =$	0.125
$Y_u =$	3661.62573	$w_u =$	0.5	$Yr_a =$	3125	$\lambda_{41} =$	-0.02
$Y_a =$	3661.62573	$w_a =$	0.5	$T_u =$	625	$\lambda_{42} =$	-0.02
$p_{yu} =$	2	$N_u =$	2855.800483	$T_a =$	625	$\lambda_{43} =$	-0.05
$p_{ya} =$	2	$N_a =$	2855.800483	$\theta_u =$	0.2	$\lambda_{44} =$	0.1
$p_{mu} =$	2	$pr_u =$	0.641085704	$\theta_a =$	0.2	$M^n_{ad} =$	1998.381877
p_{ma}	2	$pr_a =$	0.641085704	$YD_u =$	2500	$B^a_{had} =$	4995.954693
$IM_u =$	915.406432	$g_{pru} =$	0.03	$YD_a =$	2500	$B^u_{had} =$	2248.179612
$IM_a =$	915.406432	$g_{pra} =$	0.03	$yd_u =$	1250	$H^u_{ad} =$	757.48
$X_u =$	915.406432	$q_u =$	0.3	$yd_a =$	1250	$\lambda_{50} =$	0.2
$X_a =$	915.406432	$q_a =$	0.3	$yd^e_u =$	1245.954693	$\lambda_{51} =$	0.1
$C_u =$	2208.73786	$im_u =$	457.7032158	$yd^e_a =$	1245.954693	$\lambda_{52} =$	-0.05
$C_a =$	2208.73786	$im_a =$	457.7032158	$\beta_u =$	0.2	$\lambda_{53} =$	-0.03
$I_u =$	776.699029	$\varepsilon_0 =$	0.25	$\beta_a =$	0.2	$\lambda_{60} =$	0.5
$I_a =$	776.699029	$\varepsilon_1 =$	0.7	$YD^e_u =$	2491.909385	$\lambda_{61} =$	-0.05
$G_u =$	676.188833	$\varepsilon_2 =$	1	$YD^e_a =$	2491.909385	$\lambda_{62} =$	0.1
$G_a =$	676.188833	$mu_0 =$	0.25	$V_{hu} =$	10000	$\lambda_{63} =$	-0.03
$p_{su} =$	2	$mu_1 =$	0.7	$V_{ha} =$	10000	$\lambda_{70} =$	0.225
$p_{sa} =$	2	$mu_2 =$	1	$v_{hu} =$	5000	$\lambda_{71} =$	-0.03
$\pi_u =$	0.159927	$x_u =$	457.7032158	$v_{ha} =$	5000	$\lambda_{72} =$	-0.03
$\pi_a =$	0.159927	$x_a =$	457.7032158	$V^e_{hu} =$	9991.909385	$\lambda_{73} =$	0.07
$\pi_{0u} =$	0.159927	$K_u =$	10000	$V^e_{ha} =$	9991.909385	$H_{ud} =$	757.48
$\pi_{0a} =$	0.159927	$K_a =$	10000	$c_u =$	1104.368932	$H_{ad} =$	757.48
$\pi_{1u} =$	0.2	$k_u =$	5000	$c_a =$	1104.368932	$z_{4u} =$	1
$\pi_{1u} =$	0.2	$k_a =$	5000	$\alpha 1u =$	0.75	$z_{4a} =$	1
$W_u =$	1	$i_u =$	388.3495146	$\alpha 2u =$	0.75	$M_{ud} =$	1998.381877
$W_a =$	1	$i_a =$	388.3495146	$\alpha 1a =$	0.035	$M_{ad} =$	1998.381877
$\omega_{0u} =$	0.2	$DA_u =$	485.4368932	$\alpha 2a =$	0.035	$z_{5u} =$	0
$\omega_{0u} =$	0.2	$DA_a =$	485.4368932	$M^n_{ud} =$	1998.381877	$z_{5a} =$	0
$w^T_u =$	0.5	$\delta_u =$	0.05	$B^u_{hud} =$	4995.954693	$dxru^{\varepsilon} =$	0
$w^T_a =$	0.5	$\delta_a =$	0.05	$B^{Sa}_{hud} =$	999.1909385	$dxra^{\varepsilon} =$	0
$\omega_{1u} =$	0.5	$gk_u =$	0.03	$B^{Su}_{hud} =$	1248.988673	$\chi^f =$	0.75
$\omega_{1u} =$	0.5	$gk_a =$	0.03	$H^n_{ud} =$	757.48	$\chi^c =$	0.25
$\omega_{2u} =$	0.2	$\gamma_{0u} =$	0.02	$\lambda_{10} =$	0.2	$dxra^{\varepsilon f} =$	0
$\omega_{2u} =$	0.2	$\gamma_{0a} =$	0.02	$\lambda_{11} =$	0.1	$\zeta =$	0.2
$bandb_u =$	0.003	$\gamma_{1u} =$	0.3	$\lambda_{12} =$	-0.05	$dxra^{\varepsilon c} =$	0
$bandt_u =$	0.003	$\gamma_{1a} =$	0.3	$\lambda_{13} =$	-0.01	$\eta =$	0.2
$bandb_a =$	0.003	$z_u =$	0.3619304	$\lambda_{14} =$	-0.02	$\rho =$	0.34110224
$bandt_a =$	0.003	$z_a =$	0.3619304	$\lambda_{20} =$	0.5	$\phi =$	-0.00002
$z_{1u} =$	1	$V_{fu} =$	5000	$\lambda_{21} =$	-0.05	$M_{us} =$	1998.381877
$z_{2u} =$	0	$V_{fa} =$	5000	$\lambda_{22} =$	0.1	$M_{as} =$	1998.381877
$L^u_{us} =$	5000	$L^a_{ad} =$	4000	$\lambda_{30} =$	0.1	$L^a_{as} =$	4000
$L^u_{as} =$	1000	$v =$	0.8	$\lambda_{31} =$	-0.01	$B^{nu}_{bud} =$	1000
$B^{na}_{bad} =$	1000	$r_{la} =$	0.036	$B^a_s =$	9001.62	$B^a_{cbad} =$	757.48
$B^u_{bad} =$	1000	$i_u =$	0.2	$B^{Sa}_s =$	7752.63	$B^u_{cbus} =$	757.48
$B^a_{bad} =$	1000	$i_a =$	0.2	$B^u_{hus} =$	4995.954693	$B^a_{cbas} =$	757.48
$z_{6u} =$	1	$r_{mu} =$	0.03	$B^u_{has} =$	4995.954693	$B^u_{cbas} =$	904.57
$z_{6a} =$	1	$r_{ma} =$	0.03	$B^u_{has} =$	2248.179612	$B^u_{cbad} =$	904.57
$A_{ud} =$	0	$ra_u =$	0.033	$B^{Sa}_{hus} =$	999.1909385	$xra =$	1
$A_{ad} =$	0	$ra_a =$	0.033	$B^{Su}_{hus} =$	1248.988673	$xru =$	1
$z_{7u} =$	0	$v_u =$	0.1	$B^u_{bus} =$	1000	$xra^{\#} =$	1
$z_{7a} =$	0	$v_a =$	0.1	$B^a_{bas} =$	1000	$F_{cbu} =$	22.06261893
$F_{bu} =$	172.153357	$g_u =$	338.0944165	$H_{us} =$	757.48	$F_{cba} =$	49.19967755
$F_{ba} =$	119.203032	$g_a =$	338.0944165	$H_{as} =$	757.48	$CA_u =$	0
$V_{bu} =$	4759.1	$\sigma_u =$	0.03	$A_{us} =$	0	$CA_a =$	0
$V_{ba} =$	2244.13	$\sigma_a =$	0.03	$A_{ad} =$	0	$KA_u =$	0
$rl_u =$	0.036	$B^s_u =$	9906.19	$B^u_{cbud} =$	757.48	$KA_a =$	0

6

FOREIGN PRIVATE DEBT IN A KALECKIAN GROWTH MODEL

6.1. INTRODUCTION

We finished the review of Kaleckian models of growth in chapter two by noticing what we believe there to be a gap in the literature, in the sense that insufficient attention has been given to the interplay of income distribution and growth with foreign indebtedness. Burkett & Dutt (1991) deal with *domestic* financial liberalization in a study of the Chilean economy in the late 1970's and early 1980's, but their model still assumes a closed economy. The work of Bhaduri (1987, 2004) analyses the impact of financial flows on aggregate demand, but does not integrate thoroughly the connections between these two factors and income distribution. In this chapter we will develop a model close to La Marca (2005, 2010) and Blecker (2011), but with some important differences highlighting the autonomous character of financial flows and its implications. But by "autonomous" we do not mean exogenous: this thesis adopts a Kindlebergerian approach (2000) in the sense that financial flows follow waves or cycles, usually following financial deregulation processes.

The episodes of foreign debt crises in the world in the last three or four decades are far higher than fingers and toes taken together, and nowadays we see in the European Union the problems and consequences of such crises. In the last three to four decades, these episodes happened mostly in developing countries, and the acuteness of these have already been stated in chapter one, along with the flows that caused them. It is time to integrate them in a model. However, we will concentrate on one particular channel: private non-financial foreign debt. We have two reasons to choose this focus. First, when dealing with open economy matters the Kaleckian literature has focused so far on the current account (or the trade balance) without incorporating the public sector, and therefore omitting any reference to matters of public debt, for instance. We have mentioned in chapter two works that include the public sector in a closed economy,

but we believe it is preferable at this stage to advance step by step removing assumptions one after another. Since the Kaleckian literature on open economy issues has so far concentrated on the private sector, we decided to continue along that road, leaving the inclusion of public finance considerations for further work. The second reason is that this is a straightforward channel at the core of the three concerns of this thesis: income distribution, growth, and foreign debt.

The structure of this chapter is as follows. In the next section, we will develop a Kaleckian model of an open economy in which firms can borrow abroad in a foreign currency. Later, we will discuss some similarities and differences in the balance of payments crises suffered by two countries, Mexico and South Korea, as example stereotypes of two broader episodes: the Latin American crises in the 80s and 90s, and the East Asian crisis of 1997. The next section is a brief recapitulation of the econometric method we are going to employ and the data we are going to use to compare how well the model presented can explain the evolution of these two countries. Section five will show the results of the econometric tests performed, and section six will conclude.

6.2. THE MODEL

6.2.1. ACCOUNTING

We present first the assets and liabilities structure of the economy. In this model, we have four sectors. Households, firms, the central bank (no government activity, its pertinence will be clear later) and the rest of the world. Households hold equities p_eQ, which are their sole asset, and since they do not have any liability in this model, it is also their net wealth NW_h. Firms, in turn, have real capital as an asset K plus the cash H they get from the central bank in exchange for the foreign currency they sell, foreign loans ED (adjusted by the exchange rate), equity p_eQ as liabilities, and net wealth NW_f as a residual. If there are sustained periods of current account surplus they might be net creditors to the rest of the world, but we rule out that possibility in the model. When financial inflows from abroad destined to firms exceed the current account deficit, or coexist with a current account surplus, then foreign reserves R owned by the central bank increase, but since they are obtained by firms, the central bank buys those reserves with high powered money. Table 6.1 presents what we have just said.

In table 6.2, we present a matrix tracking all the flows allowed in this model. A plus

Table 6.1: Balance sheet

Households		**Firms**		**Central Bank**		**Rest of World**	
Assets	**Liab/NW**	**Assets**	**Liab/NW**	**Assets**	**Liab/NW**	**Assets**	**Liab/NW**
p_eQ	NW_h	K	ED	R	H	D	
		H	p_eQ				
			NW_f				

Table 6.2: Transaction matrix

	Households	**Firms**		**Central Bank**	**ROW**
		Current	**Capital**		
Consumption	$-C$	$+C$			
Investment		$+gK$	$-gK$		
Exports		$+X$			$-X$
Imports		$-IM$			$+IM$
GDP		Y			
Wage bill	$+\psi Y$	ψY			
Interest		$-IED_{-1}$			$+iD_{-1}$
Dividends	$+Div$	$-Div$			
Savings	S_h	S_f			$-B$)
Profits		$-F_f$	$+F_f$		
Equities	$-p_eQ$		$+p_eQ$		
Borrowing			$\Delta(ED)$		$-\Delta(D)$
Cash			$+\Delta(H)$	$-\Delta(H)$	
Reserves			$-\Delta(R)$	$+\Delta(R)$	

is a source of money, a minus represents uses of money. There is one good apt for consumption C, investment gK and export purposes X. Subtracting imports IM (which are assumed to be used only as an input, and not for consumption), we get GDP Y. Firms pay the wage bill ψY (equal to the wage share ψ times GDP), interest services on previous loans $iED_{(-1)}$, and dividends Div. Households invest all their savings S_h in acquiring equities, which is one out of three sources of funds for funding investment in this model. The other two are retained profits F_f and foreign loans D, which are also lent for speculative purposes (more on this later, when we explain the determinants of financial flows in the model). As we mentioned above, the central bank buys the foreign currency in possession of firms with high powered money. Since the central bank is *acquiring* those reserves, they appear with a plus sign. The price of equities is fixed, and we will also refrain from making assumptions about the borrowing behaviour of firms. It will be assumed that foreign lending is both demand and supply-driven, epitomized by the phrase "when it rains, it pours".

6.2.2. DISTRIBUTION

Let us start by presenting the price formation equation of the only product in this economy, which uses labour and imports as inputs. The price is set by means of a mark-up, exogenous in the short-run, over costs. Therefore, we have equation (1):

(1) $p = (1+z)(W_{a_0} + E\bar{P}_m)$

z is the fixed mark-up, W is the nominal wage, a_0 is the inverse of the labor productivity, E is the nominal Exchange rate and m is unit imports. From this, we can deduct the following relations, regarding the profit share, the wage share, the real exchange rate

and income shares, presented in equations (2)-(5), respectively. The real exchange rate, as usual, is the ratio of foreign prices to domestic prices, translated by the nominal exchange rate. Besides that, every input that enters into the price function (including the mark-up) has an income share. Interest payments will be treated slightly different.

(2) $\pi = \frac{z}{1+z}$

(3) $\psi = \frac{W a_0}{P}$

(4) $e = \frac{E\tilde{P}}{p}$

(5) $\pi + \psi + em = 1$

In the long run, the mark up is not fixed; it is the result of price and wage bargaining in the economy. Unlike three to four decades ago, when the constancy of income shares was a "stylized fact" (for instance in Kaldor (1961)), in the last decades wage and profit shares are not roughly constant, and have experienced enormous changes, as reviewed in the introduction to this thesis. Drawing from equation (3), the wage share would move according to:

(6) $\widehat{\psi} = \widehat{W} + \widehat{a_0} - \widehat{p}$

Where a $\widehat{\ }$ denotes a growth rate. Productivity growth will be assumed exogenous, and since in our price equation a_0 is the *inverse* of labour productivity, we can state that $\widehat{a_0} = -\alpha$. In order to explain wage and price bargaining, we set our framing within the conflicting claims approach to income distribution. Workers and firms target a wage share. Some other models have emphasized the real wage as a target for workers (such as Cassetti (2003) and Godley & Lavoie (2007a)), but in this model we will concentrate on shares. In turn, since firms cannot control the trade balance, and since labour productivity is exogenous, they are not able to change production techniques. Therefore, they also have in mind a target profit share, which in turn implies a target wage share. Let us go step by step.

First, workers' nominal wage demand is expressed in equation (7):

(7) $\widehat{W} = \phi(\psi_w - \psi) + \gamma e$

If the wage share is below their target, they demand higher nominal wages, with an adjustment speed equal to ϕ. They also resist, in part, real depreciations which is captured by the term γe. Firms also move prices according to the divergence between the actual wage share and their own target, with a certain adjustment speed, as shown in equation (8):

(8) $\widehat{p} = \rho(\psi - \psi_f)$

But what determines the wage share targeted by firms? It will be assumed to depend on three variables. An exogenous one, representing relative bargaining power; the exchange rate, in the sense that a real depreciation allows firms to raise mark-ups, and the opposite with appreciations (by the way, this realistically implies that the pass-through from depreciations to prices is incomplete); and foreign borrowing, that in our model is only private. There are arguments to support this assertion. The first one is that higher borrowing implies (given the interest rate) higher interest payments, and firms try to resist the damage to their profits, by passing on the costs to customers. Second, foreign borrowing is, in this model, a proxy for capital account liberalization, which in itself has happened historically pari passu with capital flows liberalization. There are numbers of studies, which were mentioned in chapter one, that reinforce this point: financial liberalization has had worsening effects on income inequality. And together with trade liberalization, it allows more capital mobility and puts pressure on workers' bargaining power. That is way workers' bargaining power is not necessarily related to the unemployment rate, but it is determined by broader considerations of even a political nature, and is treated as exogenous, in this model. Therefore, we feel very confident in stating the following equation:

$$\psi_f = \tau - \delta e - \omega d \tag{9}$$

Where τ represents the exogenous bargaining power, and d represents foreign borrowing. Substituting (9) in (8), we get (10):

$$\widehat{p} = \rho(\psi - \tau + \delta e + \omega d) \tag{10}$$

And replacing $\widehat{p}$ and $\widehat{W}$ in (6), we arrive at:

$$\widehat{\psi} = \phi(\psi_w - \psi) + \gamma e - \alpha - \rho(\psi - \tau + \delta e + \omega d) \tag{11}$$

Rearranging, we arrive at (12):

$$\widehat{\psi} = \psi(-\phi_w - \rho) - \rho\omega d + \phi\psi_w + e(\gamma - \rho\delta) - \alpha + \rho\tau \tag{12}$$

Differentiating this equation with respect to the two endogenous variables that appear here (ψ and d), we get the following results:

$$\frac{\partial\widehat{\psi}}{\partial\psi} = \left(-\phi - \rho + \frac{\partial e}{\partial\psi}(\gamma - \rho\delta)\right) \tag{13}$$

$$\frac{\partial\widehat{\psi}}{\partial d} = -\rho\omega < 0 \tag{14}$$

$\frac{\partial e}{\partial\psi}$ is negative because of mark up pricing, which means that a higher wage share entails a real appreciation. It has been argued, though, that usually $\gamma \leq \rho\delta$, which means

that wages have not compensated real depreciations or capital account opening. However, we will assume that that difference is rather small in magnitude, so that equation (13) is negative as well. (14) is straight out negative. The attentive reader may note that there is no Phillips curve or NAIRU in this model, a position that finds theoretical and empirical support in the literature mentioned in chapter five.

Lastly, when $\widehat{\psi} = 0$, we get that the value of the wage share is equal to:

$$\psi^* = \frac{-\rho\omega d + \phi\psi_w + e(\gamma - \rho\delta - \alpha + \rho\tau)}{(\phi + \rho)} \quad (15)$$

6.2.3. EFFECTIVE DEMAND

Firms' savings are a fraction of the profit share, determined by the retention ratio. What is not saved, is distributed, so we have equations (16) and (17):

$$F_f = s_f.\pi Y \quad (16)$$

$$Div = (1 - s_f).\pi Y \quad (17)$$

Households, in turn, distinguish between their income out of wages (being a fraction of the wage share) and their income out of dividends. They do not consume the same proportion, depending on the source of income. They have different propensities to save, with $s_w < s_d < s_f$ as reflected in equation (18):

$$S_h = s_w\psi Y + s_d(1 - s_f).\pi Y \quad (18)$$

Normalizing by the capital stock, we get the savings rate for the whole economy:

$$\sigma = {}^{S}/_{K} = {}^{[\pi(s_f + s_d - s_f s_d) + s_w\psi]Y}/_{K} = [\pi(s_f + s_d - s_f s_d) + s_w\psi]u \quad (19)$$

Going now to the investment function, ever since the work of Bhaduri & Marglin (1990), and especially when it comes to empirical research, Kaleckian models have assumed that investment depends partly on capacity utilization, as a proxy for economic activity, and the profit share, as a proxy for profitability. It is not our objective in this chapter to dwell on the debates sparked by that article, or the arguments around Kaleckian models of growth. Here we will just assume that investment is determined by an exogenous parameter representing "animal spirits", or a secular trend of growth; capacity utilization; the profit share; and foreign indebtedness. In principle, following Ndikumana (1999), we include debt servicing as a constraining factor on the evolution of investment. Deeper implications of the role of the interest rate in Kaleckian models can be found in the work of Lavoie (1992, 1993, 1995a) and Hein (2006, 2012), among others. Therefore, I get the following equation:

(20) $g = {}^{I}/_{K} = g_0 + \beta_u + \theta\pi - vid$

Turning to the current account balance, it is the result of the difference between exports, imports and interest payments, expressed in national currency:

(20) $B = X - IM - iED$

When normalized by the capital stock, and expressed in linear functional form, the current account depends, as usual, on the real exchange rate, on domestic economic activity (represented by capacity utilization), on foreign economic activity, and on debt servicing. This is summed up in equation (22):

(22) $b = {}^{B}/_{K} = \varepsilon e - \zeta u + \chi u^f - oid$

Following La Marca (2010), we state that capacity utilization moves according to:

(23) $\widehat{u} = \lambda(g + b - \sigma)$ or

(24) $\widehat{u} = \lambda u(\beta - \zeta - [\pi(s_f + s_d - s_f s_d) + s_w\psi]) - id(v + o) + \theta\pi + \varepsilon e + g_0 + \chi u^f$

In this equation, we have the 3 endogenous variables: u, ψ, d. The derivates of $\widehat{u}$ against each of them are as follow:

(25) $\frac{\partial\widehat{u}}{\partial u} = -\lambda\{([\pi(s_f + s_d - s_f s_d) + s_w\psi] - \beta + \zeta)\}$

(26) $\frac{\partial\widehat{u}}{\partial d} = -i\lambda(v + o)$

(27) $\frac{\partial\widehat{u}}{\partial\psi} = \lambda\{(-u)[\frac{\partial\pi}{\partial\psi}(s_f + s_d - s_f s_d) + s_w] + \theta\frac{\partial\pi}{\partial\psi} + \varepsilon\frac{\partial e}{\partial\psi}\}$

In equation (25), in order to have internal stability, the term in the parenthesis (which represents the effect on aggregate savings) plus income elasticity of imports (ζ) should be higher than the response of investment to changes in aggregate demand, measured by β. This is the usual Keynesian stability condition, and it will be assumed that it holds, so that the partial derivative ($\frac{\partial\widehat{u}}{\partial u}$ is negative. Equation (26) is also negative, due to the influence of higher borrowing payments on the current account and on investment.

Equation (27) checks the wage-led or profit-led regime of the economy, according to whether the sign is positive or negative, respectively. Let us see what each component implies. The part $\frac{\partial\pi}{\partial\psi}(s_f + s_d - s_f s_d)$ is negative, and tracks the reaction of savings out of profits and dividends due to an increase in the wage share. s_w is obviously positive, but most likely smaller in absolute value than the previous term (which sums up two larger values, though both smaller than one), so we can conclude that $(-u)[\frac{\partial\pi}{\partial\psi}(s_f + s_d - s_f s_d) + s_w]$ will be positive. The next two terms are negative, since they register the impact

of reduced profitability on investment, and the impact of the appreciated real exchange rate on the trade balance. The stability of the system actually allows for both regimes, under certain parameter constellations. The value of capacity utilization when equation (24) is equal to zero, is:

$$u^* = \frac{-id(\upsilon+o)+\theta\pi+\varepsilon e+g_0+\chi u^f}{\pi(s_f+s_d-s_f s_d)+s_w\psi+\zeta-\beta} \quad (28)$$

6.2.4. FOREIGN INDEBTEDNESS

So far, the model has been very similar to the work of La Marca (2005, 2010). The main difference concerns the role of debt servicing in the price equation, and a slightly different investment function. Blecker (2011) is also very close to what has been expressed here. However, La Marca deals with foreign flows by focusing on the sustainability of the current account of the balance of payments. But there is no logical need for which private capital and financial flows should exactly compensate any surplus or deficit in the current account, since foreign reserves are free to accommodate any difference, in accounting terms. Even if the inflow of FDI and portfolio flows more than compensate a current account deficit and increase foreign reserves, the argument developed in this chapter is that their effect is not innocuous. The balance sheet of the private sector has an importance of its own. We want to show a channel for this. For that matter, we adapt to this argument the specification of exchange rate expectations presented in chapter five, in the stock-flow consistent model.

Foreign indebtedness is driven by domestic (demand-side) and foreign (supply-side) factors. There is an element present in both sides: rising economic activity. On the supply side, there is one hard truth for developing countries: capital flows in when you grow, and leaves your country when you fall, much in the fashion of "manias", as Kindleberger (2000) analyzed. On the demand side, there is not much investment to fund when the economy is stagnant. There are two other factors that drive financial flows: the complex of exchange rate expectations and interest rate differentials, and the risk premium. The former is a relevant factor both for the demand and foreign side, the latter is more relevant for lenders.

As I mentioned in the previous chapter, there is a post-Keynesian tradition in the treatment of the exchange rate market. Post-Keynesians basically distinguish two types of traders: "fundamentalists" and "chartists". The former base their expectations according to some rule regarding what they perceive to be some "fundamental" indicators of debt sustainability and economic pace. The latter follow recent market movements, trends, and derive investment strategies based on that analysis. In this model, we try to capture features of both behaviours, presenting the following function:

$$\widehat{d} = \eta u + \mu(i - i^f) + (1-\mu)(d^f - d) \quad (29)$$

The first term captures the impact of economic activity. Since in normal times ex-

change rates tend to follow interest rates differentials, and assuming the (not unreasonable) assumption that exchange rate movements are driven by financial flows, the second term captures precisely that: the difference between domestic and foreign interest rate as an explanatory factor of foreign borrowing. This effect might be counteracted (or reinforced) by the excess (or shortage) of borrowing over some "critical" value as judged by fundamentalist traders, therefore the upperscript f. This value is conventional and varies from country to country, not necessarily based on actual fundamentals, or with a different weight assigned to different indicators.

The partial derivatives with respect to the endogenous variables are as follows:

$$\frac{\partial \widehat{d}}{\partial d} = -(1-\mu) \tag{30}$$

And

$$\frac{\partial \widehat{d}}{\partial u} = \eta \tag{31}$$

When there is no change in foreign borrowing ($\widehat{d} = 0$), its equilibrium level is equal to:

$$d^* = \frac{\eta u + \mu(i - i^f) + (1-\mu)d^f}{(1-\mu)} \tag{32}$$

6.2.5. THE SYSTEM AND ITS STABILITY

We are left, therefore with a 3-variable linear dynamic system, that can be represented by the following simultaneous equations:

$$\begin{pmatrix} \widehat{\psi} \\ \widehat{u} \\ \widehat{d} \end{pmatrix} = \begin{pmatrix} \frac{\partial \widehat{\psi}}{\partial \psi} & 0 & \frac{\partial \widehat{\psi}}{\partial d} \\ \frac{\partial \widehat{u}}{\partial \psi} & \frac{\partial \widehat{u}}{\partial u} & \frac{\partial \widehat{u}}{\partial d} \\ 0 & \frac{\partial \widehat{d}}{\partial u} & \frac{\partial \widehat{d}}{\partial d} \end{pmatrix} \begin{pmatrix} \psi \\ u \\ d \end{pmatrix}$$

In matters of sign, the Jacobian matrix has the following signs:

$$\boldsymbol{J} = \begin{pmatrix} - & 0 & - \\ ? & - & - \\ 0 & + & - \end{pmatrix}$$

The Routh-Horwitz conditions for stability of a 3x3 system are such that:

i $Tr(\boldsymbol{J}) < 0$

ii $Det|\boldsymbol{J}| < 0$

iii $Det|\mathbf{1}| + Det|\mathbf{2}| + Det|\mathbf{3}| > 0$

iv $Tr(\boldsymbol{J})(Det|\mathbf{1}| + Det|\mathbf{2}| + Det|\mathbf{3}|) + Det|\boldsymbol{J}| > 0$

The trace must be negative (and that condition is fulfilled already at plain sight); the determinant of the Jacobian must be negative; the sum of the determinants of the diagonal elements (the **1**, **2** and **3**, in condition iii) must be positive, and that sum times the negativity of the trace, plus the determinant, must also be positive. Denoting the elements of the Jacobian matrix as a_{ij}, with i representing the row and j the column as usual, the determinant of the Jacobian is:

$$Det|\boldsymbol{J}| = a_{11}\begin{vmatrix} a_{22} & a_{23} \\ a_{32} & a_{33} \end{vmatrix} - a_{12}\begin{vmatrix} a_{21} & a_{23} \\ a_{31} & a_{33} \end{vmatrix} + a_{13}\begin{vmatrix} a_{21} & a_{22} \\ a_{31} & a_{32} \end{vmatrix}$$

$$Det|\boldsymbol{J}| = (-)\begin{vmatrix} - & - \\ + & - \end{vmatrix} - 0\begin{vmatrix} ? & - \\ 0 & - \end{vmatrix} + (-)\begin{vmatrix} ? & - \\ 0 & + \end{vmatrix}$$

If the economy is wage-led (which implies a positive a_{21}), this determinant is necessarily negative. If aggregate-demand is profit-led, there are still some parameter constellations under which it would fulfil the condition.

The determinants of the elements of the diagonal are as follow

$$Det|\mathbf{1}| = \begin{pmatrix} a_{22} & a_{23} \\ a_{32} & a_{33} \end{pmatrix} = \begin{pmatrix} - & - \\ + & - \end{pmatrix} > 0$$

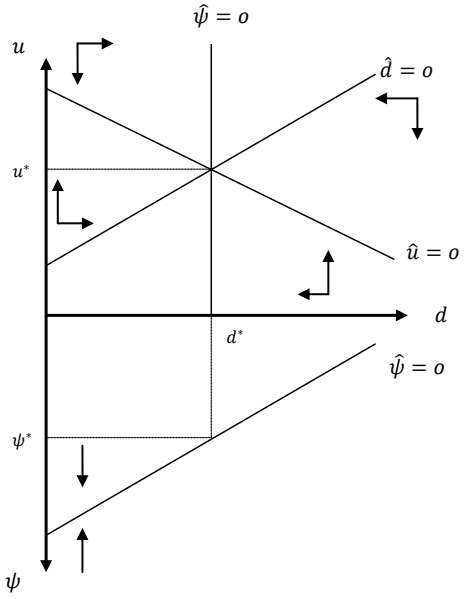
$$Det|\mathbf{2}| = \begin{pmatrix} a_{11} & a_{13} \\ a_{31} & a_{33} \end{pmatrix} = \begin{pmatrix} - & - \\ 0 & - \end{pmatrix} > 0$$

$$Det|\mathbf{3}| = \begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} = \begin{pmatrix} - & 0 \\ ? & - \end{pmatrix} > 0$$

Therefore, condition (iii) is also satisfied. For a sufficiently large trace in absolute value, and for a small value of the determinant, the fulfilment of condition (iv) is satisfied. A graphic depiction might be useful to understand the dynamics in the model. Figure 6.1 shows the wage share curve, the utilization curve and the debt curve, all in equilibrium. From equation (12), we have that $\widehat{\psi}$ is a vertical line in the plane (d, u).

This chapter puts the emphasis on a foreign-driven contraction with a deterioration in the wage share. The effects might take some time to build up, more than this schematic presentation may assume, but the modelled channels lead us to that conclusion. Suppose for instance, that fundamentalists traders have a more positive view of the country, or are more willing to lend to it, or that the capital account has been opened and therefore they are willing to tolerate more leveraged borrowers, so that d^f goes up.

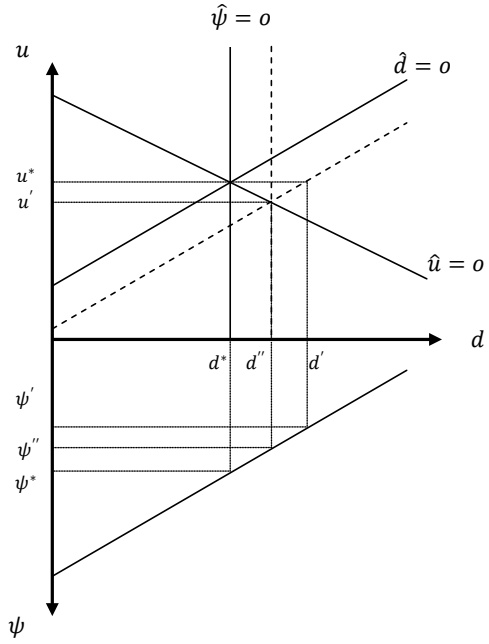
Figure 6.1: Model with private foreign debt



Financial openness is usually tied with higher corporate indebtedness, which was previously rationed. Lenders are also less strict in terms of requirements, and firms find it easier to borrow abroad. Money flows into the country. As debt starts to pile up, firms pass their higher costs to prices, and start to reduce their investment in an attempt to control their borrowing. Though income distribution might be turning in their favour, they might not be able to recover all the interest payments that flow out of the country. Figure 6.2 captures what happens. Initially, the economy is still at (d^*, u^*, ψ^*). The increase in d^f shifts the $\widehat{d}$ towards the right, to d'. With time, the restrictions on investment, coped with the worsening in income distribution, bring the economy towards (d'', u'', ψ''). If the economy is of a wage-led nature, the initial fall in investment (due to higher interest payments) might be exacerbated by the downfall in the wage share. Alternatively, in a profit-led case there might be some relief to investment due to a fall in relative costs, though not enough to offset the burden of debt servicing. The deterioration in the wage share does not happen at once, however. It is quite likely that initially the exchange rate appreciates, but this is a short-lived effect. It is assumed here that a certain deleveraging process (of the private sector) takes place. The deterioration in the exchange rate might have opposing effects, enhancing profitability but hurting consumption and the burden of foreign-denominated debt. Overall, the model does conclude that output will eventually contract, in the new equilibrium state.

This should not be interpreted in support of Reinhart & Rogoff (2010) findings. As is already well known, they affirm that there is a negative relation between public debt and growth, which becomes especially acute after the debt to GDP ratio increases over 90%.

Figure 6.2: Reaction to outflows



Here, however, we are concerned with private foreign debt, not public debt. Second, we are *specifically* concerned with private *foreign* debt, in particular denominated in foreign currency. And third, there is no magic 90% threshold: the value is d^f is conventional, depending on investors' expectations and whatever factors determine the latter, not necessarily related, therefore it is highly volatile and can vary from country to country and from situation to situation.

6.3. TWO CRISES, DIFFERENT CHANNELS?

Crises in Latin America have been characterized by the sustained presence of current account deficits (López G.: 2004, p. 202; Kregel: 1998, p. 46). In the Bretton Woods era, these deficits were occasioned by trade imbalances, since imports reacted stronger than exports to economic activity both domestically and global, added to the importance of foreign technology as a component of domestic investment. In the post-Bretton Woods era, these deficits were severely aggravated since the late 1970s by the openness of the capital and financial account, together with the international liquidity created by the oil shock in 1973 (Maes & Clement: 2013, p. 6-10). Latin American foreign debt doubled between 1978 and 1981 (Correa & Vidal: 2006, p. 166). It can be said that both government

and private debt rose to levels not known before.

The composition and pace of these inflows did not remain the same throughout the period. In the 1970s, there was an increasing short-term profile of debt, and lenders were mainly international banks. The ensuing debt crisis in the 1980s crippled American banks, who were at the brink of collapse and retracted from these markets. And balance of payments shortages caused high levels of inflation and even hyperinflation in a number of countries. The next wave was different, with money coming in the form of portfolio investment and FDI (mainly in concept of purchases of firms and privatizations). These inflows helped to build up foreign reserves, to fund an expansion in bank credit and to stabilize the exchange rate (for instance, regarding Argentina see De Lucchi (2013)), but did not help to increase investment substantially. But even if debt were not at ostensibly high levels by today standards (Argentina in the 1990s, for one, would have meet the Maastricht Criteria every single year), countries were severely dependent on the continuous inflow of foreign financial flows to sustain the current account deficit and debt servicing, particularly as most of these were denominated in a foreign currency (the dollar, usually). Sudden stops of financial flows left governments at the brink of default, and in many cases the jump was unavoidable.

The underlying dynamics in East Asian countries was different (Kregel: 1998; Palma: 2001). These countries did not have unsustainable current account deficits. In South Korea for instance, even though there was a pervasive state "interference" in the development process, investment was being carried mainly by *chaebols*, private conglomerates that diversified into unrelated lines of business. Government savings were structurally higher than public investment (Storm & Naastepad: 2005, p. 1075). The significant inflow of foreign savings was mainly composed of long-term loans from private lenders and public institutions (including multilateral development banks) subject to the regulatory supervision of a non-independent Bank of Korea, while FDI and portfolio inflows were negligible (Noland: 2007, p. 486). The banking system was under government control (Chang, Park & Yoo: 2001, p.141), and together with capital controls they decoupled domestic from international financial markets. Loans were the main source of funding for firms, while on the external front the Korean won was undervalued for much of the period until the 1990s, and government usually run surpluses even during the 1990s. The Korean government had a fiscal surplus of 0.5% in 1995 and a deficit of 0.3% in 1996, hardly an unsustainable figure.

In the Korean case, there starts a process of financial deregulation in the early 1990s, with interest rate deregulation, stock market openness, foreign exchange liberalization and a reduction of policy-oriented loans. A summary of the measures instrumented in those years can be found in Chang, Park & Yoo (2001, p. 141-142) and Noland (2007, p. 510-521). The financial fragility induced by this liberalization process is striking. Foreign assets diminished and foreign borrowing increased, short-term external debt exploded (reaching around 250% of foreign reserves, according to Noland, p. 501). In fact, short-term debt was over 60% of all debt during the 1990s up until the crisis (Crotty & Dymski: 2001, p. 69). Even though the exchange rate market was liberalized, inflows kept it at a very stable level up to the crisis (Crotty & Dymski: 2001, p. 63). Foreign lending to the stock market, the development of derivatives (Neftci: 1998 provides a picture of the developments in this front), a deterioration in the terms of trade (the price of semiconduc-

tors, one of its main exports, fell 90% in two years (Kregel: 1998, p. 54)) and the fragilities of lenders themselves (Japanese banks in particular) all led to a fast and deep contagion of outflows as the rest of East Asia was suffering (Thailand, Taiwan, Hong Kong, Indonesia, Philippines).

Even though both South Korea and Mexico "enjoyed" a flood of short-term and FDI capital inflows, in the latter case it was directed towards acquisition of public companies and public expenditures, as well as to finance a structural trade deficit. In the Korean case, it was mainly destined towards financial corporations and chaebols, and investment. The deterioration in private non-financial corporations' balance sheet was acute (chaebols were leveraged in excess of 500%) and the "cure", the IMF program, killed the patient, with a debt-deflation process following suit (Kregel: 1998, p. 58-59). We believe that the differences between those two episodes help to understand in a clear way different types of balance of payments crises, and are more relevant than ever in the current European situation, where countries faced huge housing and commercial property booms, firms, households and banks are heavily indebted in spite of (or causing, one may say) a not "reckless" fiscal behaviour prior to 2008.

6.4. ECONOMETRICS AND THE DATA

In this chapter, we adopt a Cointegrated VAR (or CVAR) perspective, based on Juselius (2006). In VAR models, there is no a priori distinction between exogenous and endogenous variables. As we mentioned in chapter three, a Vector Auto-Regressive equation can be presented in matrix form as:

$$x_t = \gamma_0 + \gamma_1 x_{t-1} + \cdots + \gamma_p x_{t-p} + \epsilon_t$$

With x_t, x_{t-p} being nx1 vectors of random variables; γ_i being nxn matrix of coefficients and ϵ_t a vector of errors with normal distribution (0, Ω). However, if the variables x_t are non-stationary and have the same order of integration, it might be the case that "that certain linear combinations of the variables of the vector process are integrated of lower order than the process itself" (Juselius 2006: 80). In that case, if we do not include the cointegrated vector in the equation, we would be omitting relevant variables. We then have a Vector Error Correction Model, whose formal equation was presented in equation 14 of chapter three. We present here again for convenience:

$$\Delta x_t = \Pi x_{t-1} + \pi_1 \Delta x_{t-1} + \pi_p \Delta x_{t-p} + \varepsilon_t$$

The rank of matrix Π indicates the number of cointegrating vectors, and it can be decomposed into two matrix as: $\Pi = \alpha\beta'$, with β being a matrix with one or more elements different from zero (the cointegrating vectors) and α measuring the speed of adjustment. The procedure to test a VECM runs in the following order. We must first check the stationarity of each variable. If we reject the null hypothesis of stationarity, and find that

the integrating order of the variables is the same, we check later for the presence of cointegration using the Johansen (1988) methodology. Drawing on Enders (2010: 386-387), assume a simple equation of n variables:

$$x_t = A_1 x_{t-1} + \varepsilon_t$$

so that

$$\Delta x_t = (A_1 - I) x_{t-1} + \varepsilon_t$$

$$\Delta x_t = \pi x_{t-1} + \varepsilon_t$$

where x_t and ϵ_t are nx1 vectos, A_1 is a nxn matrix of coefficients, I is an nxn identity matrix. The rank of $A_1 - I$ equals the number of cointegrating vectors; if the rank is all zero, all the sequences are unit root, there is no linear combination of the x_{ii} variables, and there is no cointegration. If the rank is different from zero, there are cointegration relations. With the cointegrating relations, we estimate the VECM, and can also check the causality in the Granger sense between the variables.

Let us turn to the data we are using. The South Korean data was taken from the website of the Bank of Korea. The wage share is the ratio of compensation of employees to Gross Domestic Product, both registered in Korean Won at current prices. The private debt ratio includes in its numerator the Corporate non-financial External debt, and in the denominator the GDP, also in Korean Won at current prices. As a proxy of capacity utilization, we used the logarithm of GDP in won at *constant* prices, data taken from the OECD (2013). Figures 6.3a to 6.3c present their evolution during the period 1970-2011.

It can be seen that the wage share, starting from low levels (the bottom occurred in 1974), increased in a more or less sustained fashion up until the early 1990s. It had some peaks right until the 1997 crisis, it decreased later and it only recovered in the mid-2000s, when it stabilized around 46%. Private debt in turn had a rather stable level in the 1970s, and after 1980 it started a steadily decreasing trend, until the early 1990s. At that time, there was a fast build-up of private debt that reached its peak in 1997, and after a deleveraging process returned to its normal low levels.

In the case of GDP, South Korea enjoyed growth rates around 10% up until early 1990s as well, with some shocks such as 1980 and other cyclical fluctuations of rather small amplitude. The average growth rate during the 1990s was around 6.6%, never reaching the 10% threshold except in 1999, as the recovery from the crisis took speed. In the 2000s, the South Korean economy grew at an average rate of 4,2%, substantially lower than its previous records, but never suffered a recession, not even in the 2008/9 crisis.

In the case of Mexico, data was taken from the OECD and the World Bank. We use the Labour Income Share of the Total Economy for the wage share; the logarithm of GDP at constant pesos for the utilization rate; while the private debt ratio includes in the denominator the GDP at current dollars, and in the numerator the private nonguaranteed external debt stocks from the World Bank (`http://datos.bancomundial.org/indicador/DT.DOD.DPNG.CD`). Figures 6.4a to 6.4c show their evolution for the period 1971-2009.

Figure 6.3: South Korean Data

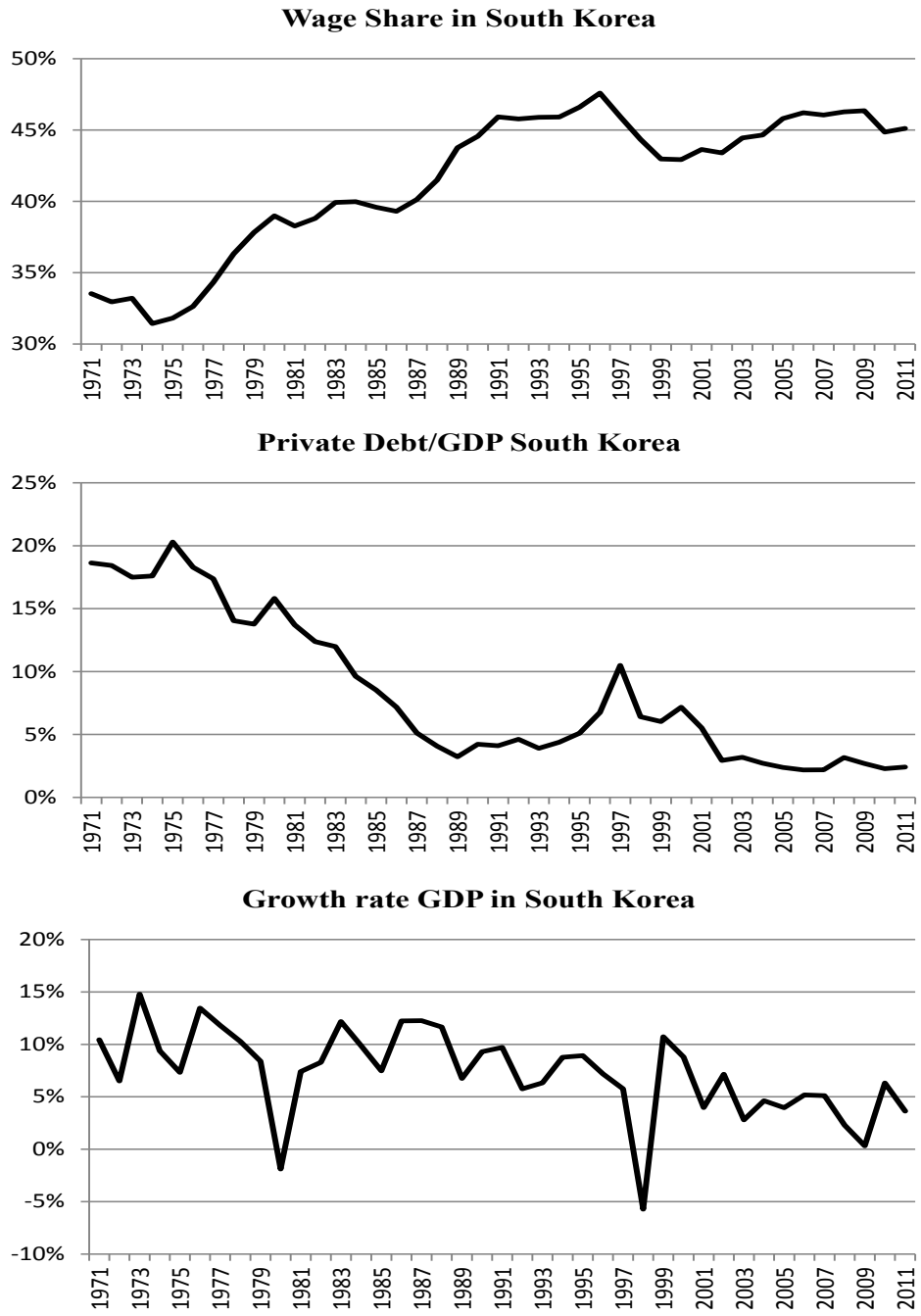
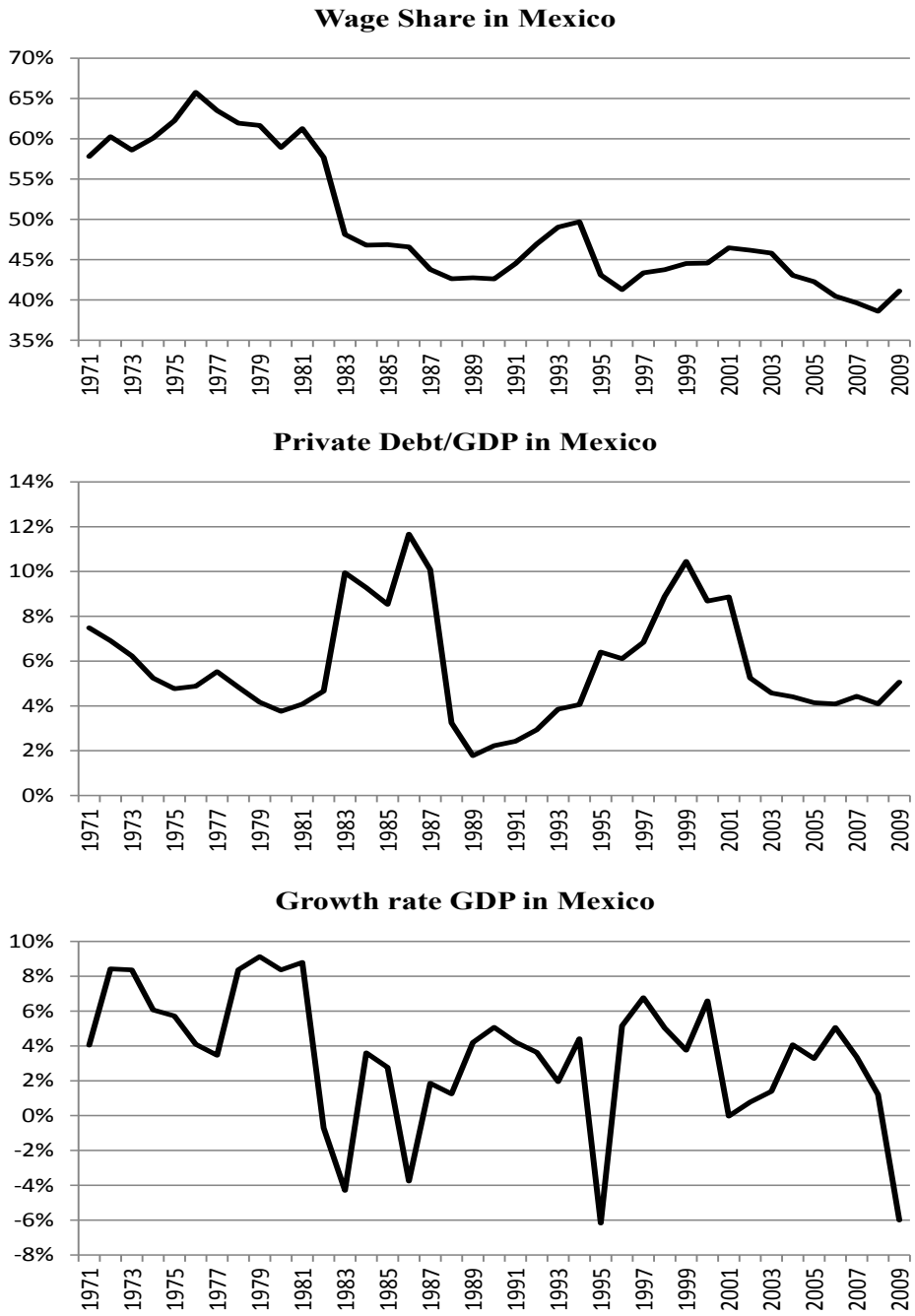


Figure 6.4: Mexican data



The charts show that, after the debt crisis in 1982, GDP growth became more volatile; the wage share diminished substantially and failed to recover to previous levels; and private debt peaked twice as a share of GDP. The average rate of growth was 2.21% during the 1980s, but only 0.10% from 1982 to 1988. There was a recovery after the liberalization of the trade and financial account of the balance of payments, which coincided in time with another built-up of private debt. The fluctuations after the Tequila crisis in 1995 were closely linked to the evolution of the US economy. Mexico suffered from the explosion of the dotcom bubble, and even more severely from the burst of the housing bubble in the US.

6.5. RESULTS

The results will be presented in the following order: I will show first the unit root tests; then we will check for the existence of cointegration, and the Granger causality tests. Those results will help us to choose an order for the variables in the cointegration equations, and in the short-run responses covered in the VEC. Finally, in order to clarify the nature of our findings, we will perform an impulse-response analysis with the results we obtained.

The first thing when we perform a VAR or a VEC, is to check the nonstationarity of the variables. For that, we looked at the correlograms of the logarithms of the variables and performed Augmented Dickey-Fuller tests (the number of lags were chosen according to the lowest Bayesian Information Criteria) and Phillips-Perron tests. The tests did not yield always the same conclusions, but the evidence shows us that each trio of variables, in both countries, were found to be I(1), integrated of order one. Table 6.3 shows the results, an asterisk marks when the test rejects the null hypothesis of unit root at the 99% of confidence.

We used the software Eviews, which requires first to test for the presence of cointegration before estimating the VECM. We tried three types of specifications: with an intercept (and no trend) in the cointegration equation (CE) but not in the VAR (option 1); with an intercept (but no trend) in both the CE and in the VAR (option 2); and with an intercept and trend in the CE, but none of those in the VAR (option 3). Table 6.4 shows

Table 6.3: Unit root tests

	Mexico		South Korea	
	ADF	Phillips-Perron	ADF	Phillips-Perron
Log(wageshare)	-1.143947	-1.083421	-1.59822	-1.38703
D(Log(wageshare))	-4.623983*	-4.523666*	-3.81436*	-3.77624*
Log(GDP)	-2.550514	-2.431910	-0.10917	0.151329
D(Log(GDP))	-4.750105*	-4.750105*	-6.1906*	-6.25019*
Log(Debt/GDP)	-3.239155*	-2.655561	-1.46818	-1.47055
D(Log(Debt/GDP))	-4.755685*	-4.618358*	-5.8477*	-5.84226*

the results of the Unrestricted cointegration rank test, with the probabilities of each option. The rows represent the numbers of cointegrating relations. When the probability is lower than 5%, the null hypothesis of a certain number of CE (none, at most one or at most two) is rejected. The p-values provided by the software are from Mackinnon, Haug & Michelis (1999).

Table 6.4: Cointegration relations

	Mexico			South Korea		
Hypothesized No. of CE	Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
None	0.0134*	0.0881	0.1454	0.0000*	0.0012*	0.0143*
At most 1	0.1034	0.1394	0.1238	0.0285*	0.0112*	0.0572
At most 2	0.2916	0.0731	0.1828	0.1268	0.0093*	0.3656

In Mexico, we have evidence to reject the null hypothesis of no cointegrating relation, while in South Korea we have evidence to reject all three null hypothesis. However, the search for normality in the residuals (fail to reject the Jarque Bera test) lead us to the following specifications: for Mexico, we will test one cointegrating relation, with an intercept in both the CE and the VAR (that is, option 2 above), and with two dummies to control for outliers, in the years 1988 and 2009. 1988 was the aftermath of a restructuring of public and private debt, while the full impact of the global financial crisis was felt in 2009. In the case of South Korea, we will test for two cointegrating relations, with an intercept only in the CE (that is, option 1 above) and with two dummies, for the years 1974 and 1980, in the aftermath of the first and second oil shock, and in the latter case it was also the year of the assassination of President Park Chung-Hee. We did not find evidence that supports the presence of heteroskedasticity nor evidence to reject the null hypothesis of the LM test at 95% of confidence.

Since we have evidence of a cointegrating relation in the case of the Mexican economy, the Granger causality test showed us that this relation holds between the logarithm of GDP and the logarithm of the wage share. The results are presented in table 6.5.

We have therefore chosen the order wage share – GDP – Debt for the specification of the test. We report first the cointegrating equation for Mexico normalized by the wage share, with the t-values in parenthesis:

$$L(Wagesh) = -7.273765 + 0.377506 * L(GDP) + 0.092530 * L(Debt)$$
$$(4.88699) \qquad (1.55725)$$

The cointegration analysis shows the existence of a stable long-run relation between output and the wage share, and according to the Granger causality test we have evidence to support the view that the former affects more the latter than vice versa. The coefficients corresponding to foreign private debt are not significant, though they present a positive sign. We are more interested in the sign of the coefficient than in its magnitude, though in the case of private debt it seems to be rather small.

What results do we get for South Korea? The Block exogeneity test shows us that private debt causes in the Granger sense both GDP and the wage share, but it is not

Table 6.5: Cointegration relation Mexico

VEC Granger Causality/Block Exogeneity Wald Tests
Date: 05/23/13 Time: 18:41
Sample: 1971 2009
Included observations: 37

Dependent variable: D(LWAGESH)

Excluded	Chi-sq	df	Prob.
D(LGDP)	8.544232	1	0.0035
D(LDEBT)	0.121915	1	0.7270
All	8.852127	2	0.0120

Dependent variable: D(LGDP)

Excluded	Chi-sq	df	Prob.
D(LWAGESH)	5.276540	1	0.0216
D(LDEBT)	0.009274	1	0.9233
All	5.301336	2	0.0706

Dependent variable: D(LDEBT)

Excluded	Chi-sq	df	Prob.
D(LWAGESH)	0.403931	1	0.5251
D(LGDP)	0.431955	1	0.5110
All	1.319333	2	0.5170

caused by any of them, so it can be called a "weakly exogenous variable". The chosen order is the same as in Mexico. The results are as follow:

The results show that GDP causes in a Granger sense the wage share, and that private debt does the same with GDP. We show therefore the first cointegrating equation normalized for the wage share and the second normalizes for the GDP, assigning a zero coefficient. Again, we put in parenthesis the t-values in parenthesis

The first cointegrating equation is as follow:

$$L(Wagesh) = -2,16164\text{–}0.213194 * L(GDP) + 0.066576 * L(Debt)$$
$$(-3.03479) \qquad (0.844659)$$

The second equation reads:

$$L(GDP) = -8.173034 + 0.137012 * L(Debt)$$
$$(0.672056)$$

It might seem that there is a significant negative relationship between the wage share and GDP, as well as the relation between debt and GDP, though the latter is not significant at all. The first finding (the negative relation between GDP and the wage share) might be explained by the substantial increase in productivity during the period observed. If real wage growth does not keep up with productivity growth, the wage share might fall (Storm & Naastepad: 2005, p. 1080). However, the short run impact might not be the same, and

Table 6.6: Cointegration relation South Korea

VEC Granger Causality/Block Exogeneity Wald Tests
Date: 05/23/13 Time: 19:08
Sample: 1970 2011
Included observations: 40

Dependent variable: D(LWAGESH)

Excluded	Chi-sq	df	Prob.
D(LGDP)	0.213846	1	0.6438
D(LWAGESH)	0.001124	1	0.9733
All	0.215356	2	0.8979

Dependent variable: D(LGDP)

Excluded	Chi-sq	df	Prob.
D(LDEBT)	8.611276	1	0.0033
D(LDEBT)	0.669351	1	0.4133
All	9.575502	2	0.0083

Dependent variable: D(LWAGESH)

Excluded	Chi-sq	df	Prob.
D(LDEBT)	0.906206	1	0.3411
D(LGDP)	15.91242	1	0.0001
All	16.78680	2	0.0002

as we mentioned we will perform impulse-response simulations which will sum up the short and long run interactions between the variables.

We now turn to the short-run interactions, which are summed up in the Error Correction Model (ECM) for each variable. We start by presenting in the next table the ECM for Mexico, which includes two dummy variables, for the years 1988 and 2009. We include in parenthesis the t-values.

Even though the equations are not very conclusive (the F-value is very low), we can draw some results from them. GDP seems to be path-dependent, in the sense that it is self-reinforcing: higher GDP (or GDP growth) yesterday seems to cause higher GDP today, giving a warning against contractionary policies. The economy seems to be profit-led in the short term, though the result is not significant. Foreign private debt does not seem to affect negatively GDP, but again, the significance level is very low. To sum up with Mexico, figures 5.6 show the impulse-response simulations performed with the results, showing the response to a generalized one standard deviation innovation, avoiding then any discussion about the ordering of the variables.

Based on these graphs, but keeping in mind the little confidence one can attach to the results, the following conclusions come to mind:

- The wage share is positively affected by GDP, especially in the short run, while in the long the impact is smaller. There is also a negative impact of higher private debt.

- GDP does not seem to move with changes in income distribution, though one can

Table 6.7: VEC Mexico

	D(LWAGESH)	D(LGDP)	D(LDEBT)
COINTEG. EQ. 1	-0.232213 (-2.84931)	-0.06241 (-1.03162)	-0.256407 (-0.59382)
D(LWAGESH(-1))	0.10976 (0.61292)	-0,214107 (-1.61065)	0.501512 (0.52858)
D(LGDP(-1))	0.546653 (2.07285)	0.486361 (2.48442)	1.288884 (0.92245)
D(LDEBT(-1))	0.018829 (0.67868)	0.004487 (0.21788)	0.330604 (-2.24914)
C	-0.029749 (-2.31630)	0.015306 (1.60547)	-0.020215 (-0.29707)
DUM88	-0.017316 (-0.36796)	-0.029982 (-0.82856)	-1.082308 (-4.34078)
DUM09	0.077435 (1.67150)	-0.091827 (-2.67024)	0.24219 (0.98673)
R2	0.347938	0.342269	0.490725
F	2.667979	2.601895	4.817874

say that the positive impact of the innovations are very short lived, reflecting perhaps the negative coefficient in the ECM. The path-dependent behaviour of GDP that we saw in those results is present, and we have a negative impact of foreign private debt on GDP, though a warning should be made regarding its low significance level.

It must be mentioned that these results are in agreement with Onaran & Galanis (2012), who find Mexico to be profit-led overall, but do not match those of López G. (2012b) who found that Mexico is a case of a strongly wage-led economy, also using a cointegrated VAR approach although with different specification and length-span. López Gallardo, Sánchez and Spanos (2011) also found a positive relation between trade protection and output, and a negative one between the latter and the real exchange rate. This last result is compatible and even complementary with the wage-led characteristic of the Mexican economy.

What about South Korea? Table 6.8 shows the ECM results for that country. Again, t-values are in the parenthesis.

The ECM equation of debt has very low significance and hardly any strong conclusion can be based on it. Our results show us that GDP impacts positively in the short run on the wage share, contradicting somewhat the long-run cointegrating coefficients that we found earlier. Foreign private debt also seems to affect negatively GDP. Both results are significant. And even though the economy seems to be wage-led, the significance level is too low to say anything about it. Keeping this in mind, the impulse-response simulations show the following:

We can see in these simulations how the positive initial effect of GDP on the wage share disappears in time, and we can see the substantive impact of private debt on GDP;

Figure 6.5: Shocks in Mexico

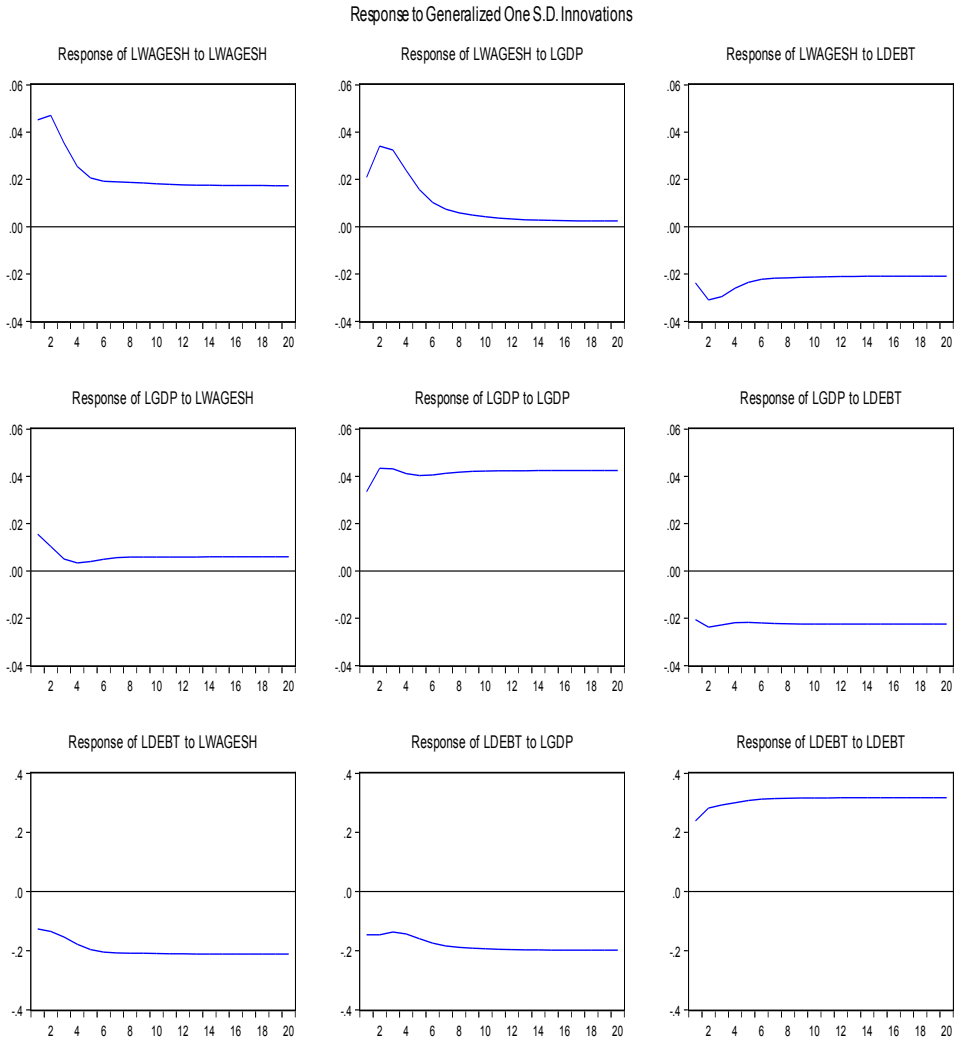


Figure 6.6: Shocks in South Korea

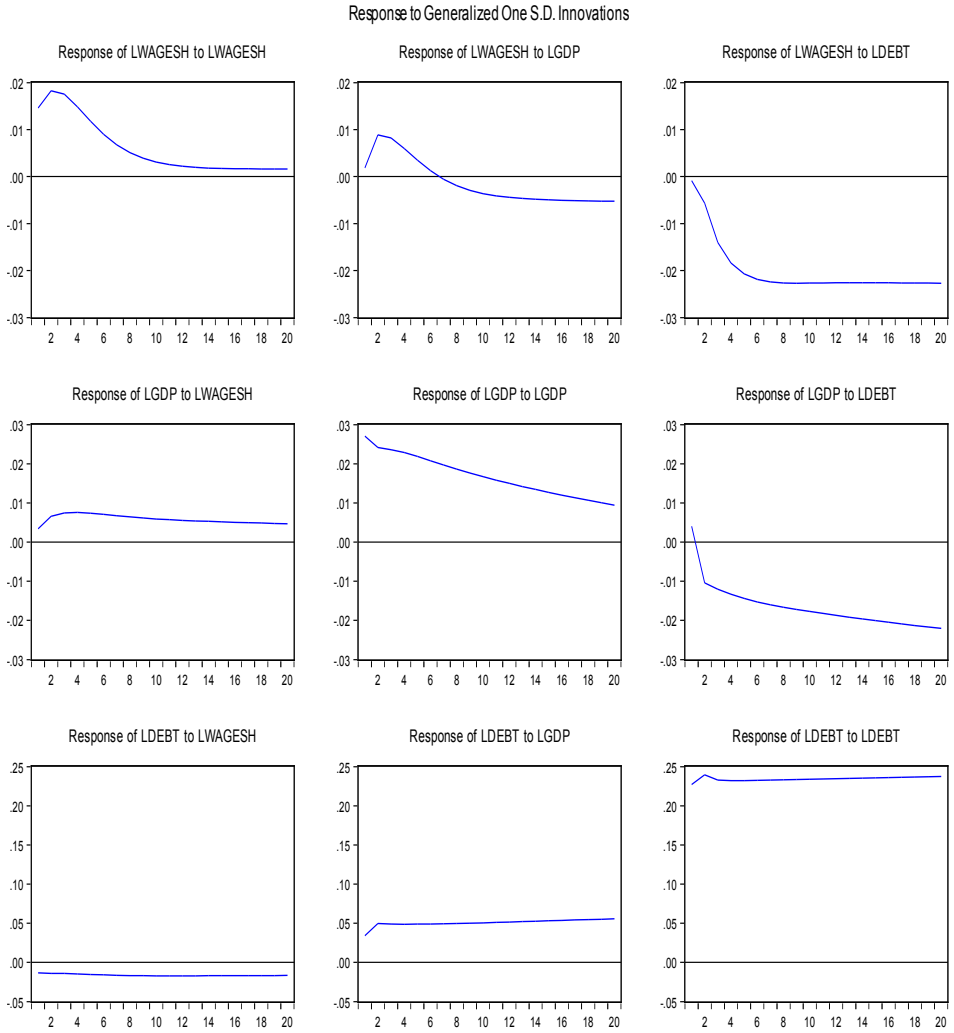


Table 6.8: VEC South Korea

	D(LWAGESH)	D(LGDP)	D(LDEBT)
COINTEG. EQ. 1	-0.169357 (-4.44928)	0.026165 (0.36993)	-0.084755 (-0.14284)
COINTEG. EQ. 2	0.009079 (3.50105)	-0.033313 (-6.91304)	0.042911 (1.06151)
D(LWAGESH(-1))	0.332966 (3.40522)	0.148656 (0.81814)	-0.051109 (0.03353)
D(LDEBT(-1))	0.273172 (3.98904)	-0.009272 (-0.07286)	0.493647 (0.46244)
D(LGDP(-1))	-0.010498 (-0.95195)	-0.060136 (-2.93450)	0.04622 (0.26886)
DUM74	-5.94201 (-5.94201)	-0.021061 (-0.73109)	0.071374 (0.29535)
DUM80	0.011777 (0.77252)	-0.117865 (-4.16075)	0.21827 (0.91851)
R2	0.711792	0.59582	0.031268
F	13.58344	8.107803	0.177523

the effect on the wage share was also negative, but not significant. This finding is consistent with Storm & Naastepad (2005), in the sense that GDP growth (and particularly manufacturing growth) was the main driver of productivity growth in East Asian countries, and therefore it tends to lower the wage share, for a given real wage. It is certain the case that the Korean state did not only aim at "disciplining capital", but also labor (Seguino: 1999, p. 321; Storm & Naastepad: 2005, p. 1086). We can also see the short-run wage-led characteristics of the Korean economy.

These results are compatible with the channels we emphasized in the model presented above and provide some evidence for the existence of a negative impact of foreign private borrowing on GDP and distribution, however cautious one must remain in taking them at face value. Our findings also stand in line with Kregel's description, in the sense that even though foreign indebtedness has been the trigger of too many crises, financial flows enter through different channels. Our model captures one of those (private borrowing) and our findings (Korea with private debt, but not Mexico) are in close agreement with that argument: South Korea (taken as an example of the East Asian countries) was severely harmed by a wave of capital inflows to the private sector, while in the Mexican case we could not establish a close relationship between private debt and GDP growth. It is the case, therefore, that other factors should be included in the model to account for its trajectory. However, we do not believe the South Korean case to be a once-off episode of balance of payments crisis driven by speculative inflows and their interaction with the balance sheet of the private sector. Many European countries provide more recent examples, and are witnesses to the relevance of these type of models.

6.6. CONCLUSION

In this chapter, we developed a Kaleckian model of growth and distribution governed by conflicting claims of workers and firms, and added the impact of foreign indebtedness of the latter sector. The drivers of foreign inflows (and outflows) are domestic and external, and have effects on income distribution (through the price mechanism and targeted income shares) and investment (through debt repayment and increasing leverage).

We tried to assess the empirical relevance of the model by applying a Vector Error Correction Model (VECM) in Mexico and South Korea. Both countries faced large inflows and outflows of short-term debt in the last four decades (in different waves), but the receivers of those flows were different, and the channels by which they affected the economy too. In the Mexican case private flows were destined to cover a structurally negative current account balance, and at times a fiscal deficit. In the case of South Korea, private flows went into the banking and non-financial corporations, in the context of a generally balanced current account and fiscal stance.

The results obtained reflect these different patterns, though they should be treated carefully due to their low significance. We were able to assess a cointegration relation between private debt and growth in the South Korean case, but not in the Mexican case. These results, showed in an impulse-response simulation, can also apply to situations in which private debt built-ups occur in the context of "responsible" budget behaviour.

Our outcomes also contradict the view that an income distribution pattern in favour of profits is a requirement in order to have a prolonged period of high economic growth. Though in some cases the coefficients pointed towards a wage-led characteristic of the economy (as in South Korea) or profit-led characteristic (as in Mexico), the low significance in both cases lead as to conclude that overall, high economic growth is compatible with different distributive frameworks, and the choice among the latter should not be based solely upon narrow-minded (and empirically dubious) economic reasons, but should also consider social, political and even cultural factors.

The policy implications that can be derived from our model, besides what has already been said regarding income policies, refer to the management of financial inflows and to the impact of foreign borrowing on firms balance sheets and income targets. On the first matter, the results support the case for implementing barriers and disincentives to short-run capital movements, not only with an eye on public indebtedness, but also taking into account the private sector (both financial and non-financial corporations) as a possible recipient of those inflows.

On the other hand, our model highlights the importance of firms' balance sheet in the distributive struggle. Firms might try to reduce the burden of debt servicing by transferring interest costs to customers. Liabilities in foreign currency might be a problem in the context of pressures on the exchange rate, and if workers try to resist attempts by firms to ease the burden of their commitments by reducing wages or restraining expansions (and possible personal lay-offs), the stage is set for conflict and likely tensions in inflation and employment. But in the case that workers cannot or do not try to resist those attempts, then the impact over aggregate demand might be equally (or more) contractive, due to the likely decrease in the purchasing power of big masses of the popula-

tion.

In all cases, the model and the results suggest the importance of an active management of the credit system (and private sector's indebtedness) and the external position of the different sectors of the economy, by conciliating (or prioritising between) aspirations and fragilities of social groups and institutions.

Future research within the Kaleckian literature should aim at analyzing the overall impact of foreign debt, not just private-owned. The model presented in previous chapter is a good start in that line (if a complicated one, admittedly).

6.7. APPENDIX

- **Mexico**

  Residual Portmanteau test for autocorrelation

  Lag 2: Prob: 0.7031

  Lag 3: Prob: 0.2135

  Residual Serial Correlation LM test

  Lag 1: Prob: 0.3463

  Lag 2: Prob: 0.5387

  Residual Normality test, Choleski orthogonalization

  Jarque-Bera: Prob: 0.0643

  White Heteroskedasticity

  No Cross Terms: Prob: 0.9491

  Cross Term: Prob: 0.3420

- **South Korea**

  Residual Portmanteau test for autocorrelation

  Lag 2: Prob: 0.5924

  Lag 3: Prob: 0.9236

Residual Serial Correlation LM test

Lag 1: Prob: 0.0818

Lag 2: Prob: 0.7072

Residual Normality test, Choleski orthogonalization

Jarque-Bera: Prob: 0.2052

White Heteroskedasticity

No Cross Terms: Prob: 0.0926

Cross Term: Prob: 0.1335

7

CONCLUSIONS

7.1. WHAT DID WE DO AND WHY WE DID IT

In the previous chapters we tried to integrate three remarkable trends observed in the last decades of capitalism within a particular point of view. The three trends are: a) the economic slowdown experienced in developed and (many) developing countries, among several episodes of balance of payments crises usually related to causes other than their trade performance; b) the change in functional and personal income distribution, with a bigger share accruing to recipients of profit income and different degrees of concentration of earnings in the top 1% of the distributive scale; c) the exponential increase in the movement of financial flows across the globe and the corresponding increment in external debt. The focus of our study has been on trends in developing countries

The point of view adopted was the Kaleckian approach, which rejects a necessary negative relation between economic growth (and investment) and a higher wage share of income. As we tried to show in the literature review in chapter two, the Kaleckian models of growth are amenable to accommodating competing views, and in particular different distributive patterns and their impact on economic growth, with different assumptions and different scope, integrating monetary policy issues, or open economy factors, etcetera. We did so by analysing first using a Kaleckian growth model what the relation between economic performance and income distribution has been for a middle income country such as Argentina, trying different econometric techniques previously used in the empirical literature on other countries.

The one aspect that was not tackled in detail so far in the Kaleckian approach was the integration of international financial flows and their interaction with aggregate demand and income distribution.

We did so in two different ways. We first developed in chapter five a two-countries structural macroeconomic model depicting the balance sheets and tracking the flow of funds of different institutional sectors. The model, an extension of chapter 12 of God-

ley & Lavoie (2007a), adopted a modelling methodology which allows the practitioner to have a clear understanding of the interdependence of the financial and non-financial sides of the economy, their interaction with the public sector, the effects of and the impact on government borrowing, and the nature of public and private debt (its domestic or foreign nature, its denomination in domestic or foreign currency, etcetera). To our knowledge, this is the first stock-flow consistent model that includes government debt denominated in a foreign currency. This methodology is being more frequently used in an empirical fashion as well.

The model presented in chapter six has a more limited scope but it is highly relevant in the sense that it integrates a Kaleckian approach to income distribution and investment behaviour with supply-and-demand driven foreign inflows of financial capital, along the lines of a behavioural Post-Keynesian depiction of foreign exchange market and financial movements behaviour set forth in Harvey (1991, 1993) and Lavoie & Daigle (2011), among others. A novel feature is that the model focuses on financial flows directed to the Private Non-Financial sector, increasing external *private* debt, and the implications that a build-up of external *private* debt might have on investment behaviour (through an increased burden of debt servicing, and potential fragilities in the private sector's balance sheet) and income distribution (through its impact on the exchange rate and the interest cost influence on the profit margin of firms, for instance).

We proceeded then to analyse the empirical performance of this model, adopting a Cointegrated VAR (CVAR) econometric modelling approach. Though the results were not as strongly as expected, they did yield results which are in broad agreement with the implications of the model and some highlighted literature, in particular Kregel (1998).

7.2. WHAT DID WE GET

While it is true that we adopted simplifying assumptions in each of the models we developed (as is unavoidable true for all modelling exercises, our models simulations do bring out a number of findings which we consider to be relevant to the 'real world':

- Contrary to mainstream views, the econometric results reject the view that it is essential to increase the profit share in order to have high and sustained rates of economic growth and high levels of fixed investment by the private sector. We did not find any negative relationship between the wage share, GDP and investment in any of the three countries analysed econometrically. These results are entirely compatible with our review of the empirical literature, which finds an overwhelming majority of cases in which the opposite relation (a positive one between wage share and aggregate demand) holds, though results are somewhat contradictory in some countries. The most cautious is that the relation between distribution and aggregate demand is not unambiguous.

- In the case of chapter three our results pointed towards a change in the nature of the foreign restraint in the Argentinean economy in the late 1970s and early 1980s, compatible with the increased influence of foreign capital in the performance of

the balance of payments noticed in chapter one. The negative impact on GDP of a higher foreign indebtedness of the private sector was corroborated for the Korean case by the results obtained in chapter six.

- The exchange rate is not a variable that accommodates trade flows or costs divergence or even the current account of the balance of payments, even though it has an important influence on them, undoubtedly. But in the simulations performed in chapter five, a current account surplus coexisted either with depreciating or appreciating exchange rates, according to the different shocks that we simulated. The behaviour of the exchange rate is overwhelmingly dependent on the financial positions of different sectors (including the government), the portfolio decisions of financial investors and the objectives of government policy, as long as it has the means to carry them through.
- Coincidentally, the impact of exchange rate policy and relative price policy in general might disappoint expectations as to its power in conciliating different objectives, such as an improvement in the balance of payments at the same time that it seeks to increase GDP growth. Changes in price competitiveness are insufficient to adjust trade and current account imbalances while preserving economic activity. Structural factors as the overall propensity to import or productivity differences might not be as reactive as supposed.
- There need not be a direct relation between the balance of payments and domestic credit. In particular, theoretically speaking a country might enjoy a certain degree of freedom in its interest rate policy, even without capital controls though the latter are indeed helpful. The excerpts of Keynes' writings presented in chapter four are fully in agreement with this conclusion.
- As shown in chapter five, the "twin deficit" view articulated long ago by the IMF, which blames fiscal deficits for balance of payments problems, is devoid of theoretical and empirical support. Twin deficits do not always happen, and even in cases when they coincide, the underlying causality usually runs the other way around: it is the balance of payments problems that usually force contractionary policies and which end up damaging the fiscal position.

7.3. WHAT DO WE MAKE OF IT ALL

Based on the findings listed above and enumerated in the corresponding chapters, what sort of policy conclusions and ideas for analysis can we extract from them?

- Since different distributive patterns are compatible with sustained periods of fast economic growth, the choice for a particular distributive pattern is of a political nature, giving space for public intervention regarding the coordination of expectations, the reconciliation of demands, possible compensations for losses, interactions between public and private initiative (particularly in investment stimulus), etc.

- An example of such intervention regards the exchange rate policy. Since the exchange rate might have contradictory effects according to the circumstances, we do not favour a fixed exchange rate regime or a floating one, but an active management of both exchange policy and capital mobility, including action on the expectations and the stimulus of financial investors. Public passivity is what has to be avoided, and our results support the existence of varying degrees of freedom for government intervention on interest rate matters, for instance.

- Related to the former, another present danger is the build-up of foreign *private* debt, just as much as public foreign debt. Public indebtedness is not the sole indicator of the external financial fragility of an economy, and private sector balance sheets should be a focus of attention of policy makers. Public debt might actually act as an important instrument in deleveraging policies, as we showed in chapter five. This conclusion is another corollary of the rejection of the "twin deficits" view.

- The control of the credit policy is not only relevant regarding the financial position of different sectors but also influences income distribution. Low interest rates coupled with adequate domestic credit supply and capital controls can stimulate investment, avoid fragilities in private sectors balance sheet and stimulate aggregate demand without requiring a decrease in the wage share and in living conditions and an increase in income inequality. Quite the contrary, a more egalitarian income distribution might reduce the weaknesses of the private sector (and protect public resources) as long as it reduces their leverage and exposure, with more solid income streams and financial positions.

- Since the exchange rate does not necessarily adjust trade flows or current account imbalances, other instruments are required to solve tensions in the balance of payments. In general, relative price competitiveness is not a silver bullet that will solve structural trade deficits and improve at the same time the living standards of the population. Our models call for a coordinated and expansionary approach to tackle the current problems of the Eurozone, for instance, an approach akin to a "Marshall Plan", if the present shape of the common currency is to be maintained.

- In a more academic aspect, we believe we showed the usefulness of the Kaleckian approach in order to accommodate and integrate elements of foreign exchange markets and international interest rates into the analysis of economic growth, private investment and income distribution.

7.4. WHAT CAN BE DONE NEXT

The findings listed above were obtained through models with different degrees of simplifying assumptions. Further research might be carried out by lifting up those restrictions.

In our view, the most important aspect to pursue is the integration of public finance in an open economy Kaleckian growth model. The stabilizing and stimulating aspects

of public expenditure has been included in the mentioned works by Olivier Allain, and from a Sraffian perspective in Serrano (1995). However, in the former case in particular, no considerations are given on the negative impact of foreign borrowing by the public sector. "Sudden stops" of financial flows might force a fiscal tightening not because of lack of financial means, but because of insufficient foreign reserves, impacting negatively on economic activity.

In chapter five, the mark up is a function of the movement of the exchange rate, but no consideration is given to the financial aspects of the firm. Investment decisions might be influenced by the borrowing capabilities of enterprises, and the search for profits might be reflected in the pricing behaviour of firms, as modelled for instance in Godley & Lavoie (2007a). In an open economy framework, the movements of the exchange rate can have repercussions on the firms' debt structure beyond its impact on price competitiveness. In relation to this, the access to domestic financing might also be included to provide a more complete view of the financing alternatives face by firms nowadays, in domestic and international financial markets.

In short, the models provided here might serve as a backbone for further research, both from a theoretical and empirically relevant nature.

Agosin, M.R., & Huaita, F. (2011): *Capital flows to emerging economies: Minsky in the tropics,* Cambridge Journal of Economics, Vol. 35 (4), p. 663-683.

Alesina, A. & Perotti, R. (1996): *Income distribution, political instability and investment,* European Economic Review, Vol. 40 (2), p. 1203-1228.

Alesina, A. & Rodrik, D. (1994): *Distributive politics and economic growth,* The Quarterly Journal of Economics, Vol. 109 (2), p. 465-490.

Allain, O. (2013): *Tackling the instability of growth: A Kaleckian model with autonomous demand expenditures,* Documents de travail du Centre d'Economie de la Sorbonne 2013.26, Université Panthéon-Sorbonne.

Arestis, P. (2006): *Financial liberalization and the relationship between finance and growth,* in P. Arestis and M. Sawyer (eds.): A Handbook of Alternative Monetary Economics, Edward Elgar, Cheltenham.

Asimakopulos, A. (1975): *A Kaleckian theory of income distribution,* Canadian Journal of Economics, Vol. 8 (3), p. 313-333.

—. (1991): *Keynes's General Theory and Accumulation,* Cambridge University Press, Cambridge.

Aspromourgos, T. (2009): *The Science of Wealth: Adam Smith and the Framing of Political Economy,* Routledge, London.

Atkinson, A.B., Piketty, T., & Saez, E. (2011): *Top incomes in the long run of history,* Journal of Economic Literature, Vol. 49 (1), p. 3-71.

Auerbach, P. & Skott, P. (1988): *Concentration, competition and distribution – a critique of theories of monopoly capital,* International Review of Applied Economics, Vol. 2 (1), p. 42-61.

Azpiazu, D. (ed.) (1999): *La Desregulación de los Mercados. Paradigma e Inequidades de las Políticas del Neoliberalismo,* Grupo Editorial Norma, Buenos Aires.

Backus, D., Brainard, W., Smith, G. & Tobin, J. (1980): *A model of U.S. financial and nonfinancial economic behaviour,* Journal of Money, Credit and Banking, Vol. 12 (2), p. 259-293.

Baker, D. (2000): *NAIRU: Dangerous dogma at the Fed, Financial Markets and Society,* available at http://www.cepr.net/documents/publications/fmsno00.pdf.

Bank for International Settlements (2006): *76th Annual Report,* Basel.

—. (2008): *Financial globalization and emerging markets capital flows,* BIS Discussion Papers No. 44, Basel.

—. (2012a): *Currency internationalisation: lessons from the global financial crisis and prospects for the future in Asia and the Pacific,* BIS Discussion Papers No. 61, Basel.

—. (2012b): *The future of financial globalization,* BIS Discussion Papers No. 69, Basel.

Baran, P. & Sweezy, P. (1966): *Monopoly Capital, Monthly Review,* New York.

Barba, A. & Pivetti, M. (2012): *Distribution and accumulation in post-1980 advanced capitalism,* Review of Keynesian Economics, Vol. 0 (1), Inaugural issue, p. 126-142.

Barnes, M & Olivei, G. (2003): *Inside and outside the bounds: threshold estimates of the Phillips curve,* Federal Reserve Bank of Boston New England Economic Review, p. 3-18.

Basualdo, E. (2006): *Estudios de Historia Económica Argentina. Desde mediados del siglo XX a la actualidad,* Siglo XXI-FLACSO, Buenos Aires.

Beccaria, L. & Gallin, P. (2002): *Regulaciones Laborales en Argentina. Evaluaciones y Propuestas,* CIEPP-OSDE, Buenos Aires.

Bellamy Foster, J. (2013): *Marx, Kalecki and Socialist Strategy,* Monthly Review, Vol. 64 (11), available in http://monthlyreview.org/2013/04/01/marx-kalecki-and-socialist-strategy.

Bentolilla, S. & Saint-Paul, G. (2003): *Explaining movements in the labour share,* Journal of Macroeconomics, Vol. 3 (1), p. 1-33.

Bezemer, D. (2009): *"No one saw this coming": Understanding financial crisis through accounting models,* MPRA Paper No. 15892.

—. (2011): *Causes of financial instability: Don't forget finance,* Working Paper No. 665, Levy Economics Institute of Bard College.

Bhaduri, A. (1987): *Dependent and self-reliant growth with foreign borrowing,* Cambridge Journal of Economics, Vol. 11 (3), p. 269-273.

—. (2004): *The opportunities and dangers of international capital inflows for developing countries from an effective demand perspective,* in Z. Sadowski & A. Szeworski (eds.): Kalecki's Economics Today, Routledge, London.

Bhaduri, A. & Marglin, S. (1990): *Unemployment and the real wage,* Cambridge Journal of Economics, Vol. 14 (4), p. 375-393.

Blecker, R. (1999): *Kaleckian macro models for open economies,* in J. Deprez & J. T. Harvey (eds.): Foundations of International Economics, Routledge, London.

—. (2002): *Distribution, demand and growth in Neo-Kaleckian macro odels,* in M. Setterfield (Ed.): The Economics of Demand-led Growth: Challenging the Supply-Side Vision of the Long Run, Edward Elgar, Cheltenham.

—. (2011): *Open economy models of distribution and growth,* in E. Hein & E. Stockhammer (eds.): A Modern Guide to Keynesian Macroeconomics and Economic Policies, Edward Elgar, Cheltenham.

Bloomfield, A. (1959): *Monetary Policy under the International Gold Standard: 1880-1914,* Federal Reserve Bank of New York, New York.

Boianovsky, M. (1995): *Wicksell's business cycle,* The European Journal of the History of Economic Thought, Vol. 2 (2), p. 375-411.

Borrill, P. & Tesfatsion, L. (2010): *Agent-based modelling: the right mathematics for the social sciences?,* Working paper No. 10023, Department of Economics, Iowa State University.

Bortz, P. (2014): *Foreign debt, distribution, inflation and growth in a SFC model,* European Journal of Economics and Economic Policies: Intervention, forthcoming.

Bowles, S. & Boyer, R. (1995): *Wages, aggregate demand, and employment in an open economy: an empirical investigation,* in G. Epstein & H. Gintis (eds): Macroeconomic Policy After the Conservative Era. Studies in Investment, Saving and Finance, Cambridge University Press, Cambridge.

Brainard, W. & Tobin, J. (1968): *Pitfalls in financial model building, American Economic Review,* Vol. 58 (2), p. 99-122.

Burgess, S. (2011): *Measuring financial sector output and its contribution to UK GDP,* Bank of England Quarterly Bulletin 2011 (3), p. 234-245.

Burkett, P. & Dutt, A.K. (1991): *Interest rate policy, effective demand, and growth in LDCs,* International Review of Applied Economics, Vol. 5 (2), p. 127-153.

Caiani, A., Godin, A. & Lucarelli, S. (2012): *Schumpeter in a matrix: A stock flow consistent analysis of technological change,* Quaderni di Dipartimento No. 175, Dipartimento di economia politica e metodi quantitative, Università degli studi di Pavia.

Canitrot, A. (1981): *Teoría y práctica del liberalism. Política antiinflacionaria y apertura económica en la Argentina, 1976-1981,* Desarrollo Económico, Vol. 21 (3), pp. 131-189.

Carrera, J., Feliz, M. & Panigo, D. (1999): *Unit root and cycles in the main macroeconomic variables for Argentina,* Anales de la Asociación Argentina de Economía Política, Rosario.

Carter, S. (2007): *Real wage productivity elasticity across advanced economies, 1963-1999,* Journal of Post Keynesian Economics, Vol. 29 (4), p. 573-600.

Cassetti, M. (2003): *Bargaining power, effective demand and technical progress: A Kaleckian model of growth,* Cambridge Journal of Economics, Vol. 27 (3), p. 449-464.

—. (2012): *Macroeconomic outcomes of changing social bargains. The feasibility of a wage-led open economy reconsidered,* Metroeconomica, Vol. 63 (1), p. 64-91.

Caverzasi, E. & Godin, A. (2013): *Stock-Flow consistent modelling through the ages, Working Paper No. 745,* Levy Economics Institute of Bard College.

Cecchetti, S.G. & Kharroubi, E. (2012): *Reassessing the impact of finance on growth, BIS Working Papers No 381,* Bank for International Settlements.

Chandrasekhar, C.P. (2008): *Global liquidity and financial flows to developing countries: new trends in emerging markets and their implications,* G-24 Discussion Paper No. 52, United Nations.

Chang, H.J., Palma, J.G. & Whittaker, D.G. (eds) (2001): *Financial Liberalization and the Asian Crisis,* Palgrave, Basingstoke.

Chang, H.J., Park, H.J. & Yoo, C.G. (2001): *Interpreting the Korean crisis: financial liberalization, industrial policy and corporate governance,* in H.J. Chang, J.G. Palma & D.G. Whittaker (eds) (2001): Financial Liberalization and the Asian Crisis, Palgrave, Basingstoke.

Checchi, D., & García-Peñalosa, C. (2005): *Labour market institutions and the personal distribution of income in the OECD,* CESifo Working Paper No 1608.

Chick, V. & Caserta, M. (1997): *Provisional equilibrium in macroeconomic theory,* in P. Arestis, J.G. Palma and M. Sawyer (eds): Capital Controversy, Post-Keynesian Economics and the History of Economic Thought: Essays in Honour of Geoff Harcourt, Vol. 2, Routledge, London.

Cibils, A. & Allami, C. (2008): *La financiarización en la Argentina 1990-2007: Un estudio de caso,* presented at the 2nd Jornadas de Economía Política, November 10-11, San Miguel.

Cincotti, S., Roberto, M. & Teglio, A. (2010): *Credit money and macroeconomic insta-*

bility in the agent-based model and simulator Eurace, Economics: The Open-Access, Open-Assessment E-Journal, Vol. 4, 2010-26. Available at `http://dx.doi.org/10.5018/economics-ejournal.ja.2010-26`

Clark, J.B. (1899): *The Distribution of Wealth,* Macmillan, London.

Copeland, M.A. (1949): *Social accounting for money flows,* The Accounting Review, Vol. 24 (3), p. 254-264.

Coremberg, A., Marotte, B., Rubini, H. & Tisocco, D. (2007): La Inversión Privada en la Argentina (1950-2000),: *Temas Grupo Editorial* UADE – ANCE, Buenos Aires.

Correa, E. & Vidal, G. (2006): *Financial deregulation and capital flows in Latin American countries,* in P. Arestis, J. Ferreiro and F. Serrano (eds.): Financial Developments in National and International Markets, Palgrave Macmillan, Basingstoke.

Cripps, F. & Godley, W. (1976): *A formal analysis of the Cambridge economic policy group model,* Economica, 43 (November), p. 335-48.

Crotty, J. (1983): *On Keynes and capital flight,* Journal of Economic Literature, Vol. 21 (1), p. 59-65.

Crotty, J. & Dymski, G. (2001): *Can the global neoliberal regime survive victory in Asia?,* in P. Arestis and M. Sawyer (eds.) (2001): Money, Finance and Capitalist Development, Edward Elgar, Cheltenham.

Dafermos, Y. (2012): *Liquidity preference, uncertainty, and recession in a stock-flow consistent model,* Journal of Post Keynesian Economics, Vol. 34 (4), p. 749-776.

Dafermos, Y. & Papatheodorou, C. (2011): *Functional and personal income distribution in a stock-flow consistent model,* presented at the 15th conference of the Research Network Macroeconomic Policies, October 28-29, Berlin.

Dallery, T. (2007): *Kaleckian models of growth and distribution revisited: evaluating their relevance through simulations,* presented at the 11th. Conference of the Research Network Macroeconomic Policies, October 26-27, Berlin.

Dallery, T. & Van Treeck, T. (2011): *Conflicting claims and equilibrium adjustment processes in a stock-flow consistent macro model,* Review of Political Economy, Vol. 23 (2), p. 189-211.

Damill, M., & Keifman, S. (1992): *Liberalización de comercio en una economía de alta inflación: Argentina 1989-1991,* Documentos CEDES No. 72, Buenos Aires.

Davidson, P. (1982): *International Money and the Real World,* Macmillan, London.

—. (1997): *Are grains of sand in the wheels of international finance sufficient to do the job when boulders are often required?,* Economic Journal, Vol. 107 (3), p. 671-686.

De Grauwe, P. & Grimaldi, M. (2006): *The Exchange Rate in a Behavioural Finance Framework,* Princeton University Press, Woodstock (England).

De Lucchi, J.M. (2013): *Endogenous money and foreign debt sustainability during Argentinean Convertibility,* Review of Keynesian Economics, Vol. 1 (3), p. 322-346.

De Pablo, J. C. (1975): *Precios relativos, distribución del ingreso y planes de estabilización: la experiencia de la Argentina durante 1967-70,* Desarrollo Económico, Vol. 15 (1), p. 55-83.

—. (1978): *Inversión, liberalismo y populismo,* Desarrollo Económico, Vol. 18 (2), p. 131-137.

Diamand, M. (1973): *Doctrinas económicas, desarrollo e independencia,* Editorial Paidós, Buenos Aires.

Dobb, M. (1973): *Theories of Value and Distribution since Adam Smith,* Cambridge University Press, Cambridge.

Dormael, A. (1978): *Bretton Woods: Birth of a Monetary System,* Macmillan, London.

Dos Santos, C.H. (2002): *Three Essays in Stock-Flow Consistent Macroeconomic Modelling,* Ph.D. Dissertation, New School For Social Research.

—. (2005): *A stock-flow consistent general framework for formal Minskyan analyses of closed economies,* Journal of Post Keynesian Economics, Vol. 27 (4), p. 712-735.

Dos Santos, C.H. & Zezza, G. (2008): *A simplified, benchmark, stock-flow consistent Post Keynesian growth model,* Metroeconomica, Vol. 63 (1), p. 170-199.

Downward, P. & Lee, F. (2001): *Post Keynesian pricing theory "reconfirmed"? A critical review of Asking About Prices,* Journal of Post Keynesian Economics, Vol. 23 (3), p. 465-483.

Downward, P. & Reynolds, P. (1996): *Alternative perspectives on Post-Keynesian price theory,* Review of Political Economy, Vol. 8 (1), p. 67-78.

Duménil, G. & Lévy, D. (1999): *Being Keynesian in the short term and classical in the long term: The traverse to classical long-term equilibrium,* The Manchester School, Vol. 67 (6), p. 684-716.

—. (2012): *Being Post-Keynesian in the medium term and Classical-Marxian in the long term?,* available in http://www.jourdan.ens.fr/levy/dle2012o.pdf

Dünhaupt, P. (2012): *Financialization and the rentier income share – evidence from the USA and Germany,* International Review of Applied Economics, Vol. 26 (4), p. 465-487.

Dutt, A. K. (1984): *Stagnation, income distribution and monopoly power,* Cambridge Journal of Economics, Vol. 8 (1), p. 25-40.

—. (1990): *Growth, Distribution and Uneven Development,* Cambridge University Press, Cambridge.

—. (2003): *New growth theory, effective demand, and Post-Keynesian dynamics, en N. Salvadori (ed.): Old and New Growth Theories – An Assessment,* Edward Elgar, Cheltenham.

Eatwell, J., Mouakil, T. & L. Taylor (2008): *Liquidity, leverage and the impact of subprime turbulence,* Centre for Financial Analysis and Policy, Judge Business School, University of Cambridge.

Economic Comission for Latin American and the Caribbean (1986): *América Latina y el Caribe: Balance de Pagos 1950-1984,* Cuadernos Estadísticos de la CEPAL, Santiago de Chile.

Ederer, S. & Stockhammer, E. (2008): *Demand effects of the falling wage share in Austria,* Empirica, Vol. 35 (5), p. 481-502.

Ederer, S., Onaran, O. & Stockhammer, E. (2009): *Functional income distribution and aggregate demand in the Euro-area,* Cambridge Journal of Economics, Vol. 33 (1), p. 139-159.

Edwards, S. (ed.) (2007): *Capital Controls and Capital Flows in Emerging Economies,* University of Chicago Press, Chicago.

Eichengreen, B. (2003): *Capital Flows and Crises,* MIT Press, Cambridge, MA.

Enders, W. (2010): *Applied Econometric Time-Series, 3rd ed.,* John Wiley & Sons, Nueva York.

Epstein, G.A. (ed.) (2005): *Financialization and the World Economy,* Edward Elgar, Cheltenham.

Epstein, G.A. & Jayadev, A. (2005): *The rise of rentier incomes in OECD countries: financialization, central bank policy and labor solidarity,* in G.A. Epstein (ed.): Financialization and the World Economy, Edward Elgar, Cheltenham.

Epstein, G.A. & Power, D. (2003): *Rentier incomes and financial crises: an empirical examination of trends and cycles in some OECD countries,* Canadian Journal of Development Studies, Vol. 24 (2), p. 229-248.

European Commission (2007): *Employment in Europe,* Brussels.

—. (2013): *AMECO Database.*

Feldman, E. & Sommer, J. (1986): *Crisis Financiera y Endeudamiento Externo en la Argentina,* Centro Editor de América Latina, Buenos Aires.

Felipe, J. & Kumar, U. (2011): *Unit labour costs in the Eurozone,* Working Paper No. 651, Levy Economics Institute of Bard College.

Fernández, A.L., González, M., Lafleur, L. & Wahlberg, F. (2008): *Manipulación de las estadísticas públicas. Qué oculta sobre la situación de los trabajadores?,* presented at the 4th Conference of the Sociedad de Economía Política y Pensamiento Crítico Latinoamericano, October 22-24, Buenos Aires.

Ferreiro, J., Gómez, C., Rodriguez, C. & Correa, E. (2007): *Liberalización financiera en América Latina: efectos sobre los mercados financieros locales,* Economiaz, Vol. 66 (3), p. 266-293.

Ferreres, O. (2005): *Dos Siglos de Economía Argentina (1810-2004): Historia Argentina en Cifras,* El Ateneo, Buenos Aires.

Fiorito, A. (2009): *Crecimiento dirigido por la demanda y el acelerador de la inversión en Argentina,* presented in the Annual Congress of Asociación de Economía para el Desarrollo de la Argentina, Buenos Aires.

Flanders, M.J. (1989): *International Monetary Economics, 1870-1960,* Cambridge University Press, Cambridge.

Foley, D. (2008): *Adam's Fallacy: A Guide to Economic Theology,* Harvard University Press, Cambridge, MA.

Fontana, O. & Godin, A. (2013): *Securitization, housing market and banking sector behaviour in a stock-flow consistent model,* Economics Discussion Paper No. 2013-13, Kiel Institute for the World Economy.

Forbes, K.J. & Warnock, F.E. (2011): *Capital flow waves: surges, stops, flight and retrenchment,* NBER Working Paper No. 17351.

Fry, M. (1980): *Saving, investment, growth and the cost of financial repression,* World

Development, Vol. 8 (4), p. 317-27.

Galbraith, J.K. (2009): *Who are these economists, anyway?,* Thought & Action, Fall 2009, p. 85-97.

Gardner, R. (1956): *The Sterling-Dollar Diplomacy,* Oxford University Press, Oxford.

Garegnani, P. (1978): *Notes on consumption, investment and effective demand, part I,* Cambridge Journal of Economics, Vol. 2 (4), p. 335-353.

—. (1979): *Notes on consumption, investment and effective demand, part II,* Cambridge Journal of Economics, Vol. 3 (1), p. 63-92.

Gasparini, L. (2005): *El fracaso distributivo de Argentina: el papel de la integración y las políticas públicas,* in G. Marquez (ed.): ¿Para Bien o Para Mal?: Debate sobre el Impacto de la Globalización en los Mercados de Trabajo de América Latina, Interamerican Development Bank, Washington.

Gerchunoff, P. & Llach, J.J. (1975): *Capitalismo industrial, desarrollo asociado y distribución del ingreso entre los dos gobiernos peronistas: 1950-1972,* Desarrollo Económico, Vol. 15 (1), p. 3-54.

Gerchunoff, P. & Llach, L. (2000): *El Ciclo de la Ilusión y el Desencanto,* Ariel, Buenos Aires.

Godin, A. (2012): *Guaranteed green jobs: Sustainable full employment,* Working Paper No. 722, Levy Economics Institute of Bard College.

Godley, W. (1996): *Money, finance and national income determination: An integrated approach,* Working Paper No. 167, Levy Economics Institute of Bard College.

—. (1999a): *Money and credit in a Keynesian model of income determination,* Cambridge Journal of Economics, 23 (4), p. 393-411.

—. (1999b): *Seven unsustainable processes: Medium-term prospects and policies for the United States and the world, Strategic Analysis,* Levy Economics Institute of Bard College.

—. (1999c): *Open economy macroeconomics using models of closed systems, Working Paper No. 285,* Levy Economics Institute of Bard College.

Godley, W. & Cripps, F. (1978): *Control of imports as a means to full employment and the expansion of world trade,* Cambridge Journal of Economics, Vol. 2 (2), p. 327-334.

—. (1983): *Macroeconomics, Fontana, London.*

Godley, W. & Izurieta, A. (2004): *The US economy: Weaknesses of the 'strong' recovery,* Banca Nazionale del Lavoro Quarterly Review, Vol. 57 (2), p. 131-139.

Godley, W. & Lavoie, M. (2005): *Comprehensive accounting in simple open economy macroeconomics with endogenous sterilization or flexible exchange rates,* Journal of Post Keynesian Economics, Vol. 28 (2), p. 241-276.

—. (2007a): *Monetary Economics: An Integrated Approach to Credit, Money, Income, Production and Wealth,* Palgrave Macmillan, New York.

—. (2007b): *Fiscal policy in a stock-flow consistent (SFC) model,* Journal of Post Keynesian Economics, Vol. 30 (1), p. 79-100.

—. (2007c): *A simple model of three economies with two currencies: the Eurozone and the USA,* Cambridge Journal of Economics, Vol. 31 (1), p. 1-23.

Godley, W. & Zezza, G. (2006): *Debt and lending* a cri de Coeur, Policy Note 2006/04, Levy Economics Institute of Bard College.

Goldberg, P.K., & Pavcnik, N. (2007): *Distributional effects of globalization in developing countries,* Journal of Economic Literature, Vol. 45 (1), p. 39-82.

Gordon, D. (1995): *Growth, distribution, and the rules of the game: social structuralist macrofoundations for a democratic economic policy,* in G. Epstein and H. Gintis (eds): Macroeconomic Policy After the Conservative Era. Studies in Investment, Saving and Finance, Cambridge University Press, Cambridge.

Graña, J.M. (2007): *Distribución funcional del ingreso en la Argentina 1935-2005,* Documento de Trabajo Nº 8, CEPED, University of Buenos Aires.

Graña, J. & Kennedy, D. (2008): *Salario real, costo laboral y productividad. Argentina 1947-2006,* Documento de Trabajo Nº 12, CEPED, University of Buenos Aires.

Greenspan, A. (1997): *Hearing before the Subcommittee on Domestic and International Monetary Policy, House of Representatives,* Available in `http://commdocs.house.gov/committees/bank/hba38677.000/hba38677_0f.htm`

Hagemann, H. (1999): *The development of business-cycle theory in the German language area 1900-1930,* Storia del Pensiero Economico, Vol. 37 (1), p. 87-122.

—. (2001): *Wicksell's 'new theory of crises': an introduction,* Structural Change and Economic Dynamics, Vol. 12 (3), p. 331-334.

Harcourt, G. C. (2006): *The Structure of Post-Keynesian Economics. The Core Contributions of the Pioneers,* Cambridge University Press, Cambridge.

Harrod, R.F. (1939): *An essay in dynamic theory,* The Economic Journal, Vol. 49 (2), p. 14-33.

—. (1942): *Forthcoming conversation with the United States on economic questions,* memorandum, available in `http://www.lib.e.u-tokyo.ac.jp/_old/keynes_harrod/pdf/81.pdf`

Harvey, J. (1991): *A Post Keynesian view of exchange rate determinations,* Journal of Post Keynesian Economics, Vol. 14 (1), p. 61-71.

—. (1993): *The institution of foreign exchange trading,* Journal of Economic Issues, Vol. 27 (3), p. 679-698.

—. (2009): *Currencies, Capital Flows and crises. A Post Keynesian Analysis of Exchange Rate Determination,* Routledge, London.

Hein, E. (2006): *Interest, debt and capital accumulation – a Kaleckian approach,* International Review of Applied Economics, Vol 20 (3), p. 337-352.

—. (2009): *'Financialisation' in a comparative static, stock-flow consistent post-kaleckian distribution and growth model,* Ekonomiaz No. 72, p. 120-137.

—. (2011): *Distribution, 'Financialisation' and the financial and economic crisis – Implications for post-crisis economic policies,* MPRA Paper No 31.180.

—. (2012): *The Macroeconomics of Finance-dominated Capitalism – and its Crisis,* Edward Elgar, Cheltenham.

—. (2013): *Finance-dominated capitalism and redistribution of income: a Kaleckian perspective,* Cambridge Journal of Economics, published online 09/08/2013, doi:10.1093/cje/bet038.

Hein, E. & Ochsen, C. (2003): *Regimes of interest rates, income shares, savings and investment: a Kaleckian model and empirical estimations for some advanced OECD economies,* Metroeconomica, Vol. 54 (4), p. 404-433.

Hein, E. & Schoder, C. (2011): *Interest rates, distribution and capital accumulation – a Post-Kaleckian perspective on the U.S. and Germany,* International Review of Applied Economics, Vol. 25 (6), p. 693-723.

Hein, E. & Stockhammer, E. (2011): *A post-Keynesian macroeconomic model of inflation, distribution and employment, in E. Hein and E. Stockhammer (eds.): A Modern Guide to Keynesian Macroeconomics and Economics Policies,* Edward Elgar, Cheltenham.

Hein, E. & Tarassow, A. (2010): *Distribution, aggregate demand and productivity growth – theory and empirical results for six OECD countries based on a Post-Kaleckian model,* Cambridge Journal of Economics, Vol. 34 (4), p. 727-754.

Hein, E. & Van Treeck, T. (2010): *"Financialisation" in post-Keynesian models of distribution and growth: a systematic review, in M. Setterfield (ed.): Handbook of Alternative Theories of Economic Growth,* Edward Elgar, Cheltenham.

Hein, E. & Vogel, L. (2008): *Distribution and growth reconsidered – empirical results for six OECD countries,* Cambridge Journal of Economics, Vol. 32 (3), p. 479-511.

Hein, E., Lavoie, M. & Van Treeck, T. (2011): *Some instability puzles in Kaleckian models of growth and distribution,* Cambridge Journal of Economics, Vol. 35 (3), p. 587-612.

—. (2012): *Harrodian instability and the 'normal rate' of capacity utilization in Kaleckian models of distribution and growth – a survey,* Metroeconomica, Vol. 63 (1), p. 139-139.

Helleiner, E. (1994): *States and the Reemergence of Global Finance: From Bretton Woods to the 1990s,* Cornell University Press, Ithaca, NY.

Hicks, J. (1966): *The Theory of Wages, 2nd edition,* Macmillan, London.

—. (1974): *The Crisis in Keynesian Economics,* Basil Blackwell, Oxford.

Hodgson, G. (2007): *Meanings of methodological individualism,* Journal of Economic Methodology, Vol. 14 (2), p. 211-26

International Labour Office (2011): *World of Work Report: Making Markets work for Jobs,* Geneva.

International Monetary Fund (2007): *World Economic Outlook,* Washington, DC.

—. (2013): *World Economic Outlook,* Washington, DC.

Jaumotte, F. & Tytell, I. (2007): *How has the globalization of labor affected the labor income share in advanced countries?,* IMF Working Papers 07/298, IMF.

Jayadev, A. (2005): *Financial Liberalization and its Distributional Consequences: an Empirical Exploration, Ph.D. dissertation,* University of Massachusetts Amherst.

Johansen, S. (1988): *Statistical analysis of cointegration vectors,* Journal of Economic Dynamics and Control, Vol. 12 (3), p. 231-254.

Juselius, K. (2006): *The Cointegrated VAR Model: Methodology and Applications,* Ox-

ford University Press, Oxford.

Kaldor, N. (1955): *Alternative theories of distribution,* Review of Economic Studies, Vol. 23 (2), p. 83-100.

—. (1957): *A model of economic growth,* The Economic Journal, Vol. 67(4), p. 591-624.

—. (1961): *Capital accumulation and economic growth, in F.A. Lutz and D.C. Hague (eds.): The Theory of Capital,* St. Martins Press, London.

—. (1966): *Marginal productivity and the macro-economic theories of distribution: comment on Samuelson and Modigliani,* Review of Economic Studies, Vol. 33 (4), p. 309-319.

Kaldor, N. & Mirrlees, J. (1962): *A new model of economic growth,* Review of Economic Studies, Vol. 29 (3), p. 174-192.

Kalecki, M. (1943): *Political aspects of full employment,* Political Quarterly, Vol. 14 (4), p. 322-330.

—. (1971): *Selected Essays in the Dynamics of the Capitalist Economy,* Cambridge University Press, Cambridge.

Keen, S. (2013): *Predicting the 'Global Financial Crisis': Post-Keynesian macroeconomics,* Economic Record, Vol. 89 (1), p. 228-254.

Keynes, J. M. (1971-1989): *The Collected Writings of John Maynard Keynes,* Macmillan/Cambridge University Press for Royal Economic Society, London

Vol. V: *Treatise on Money (Volume I)* [1930];

Vol. VI: *Treatise on Money (Volume II)* [1930];

Vol. VII: *The General Theory of Employment, Interest and Money* [1936];

Vol. XI: *Economic Articles and Correspondence* Academic;

Vol. XIII: *The General Theory and After* Preparation;

Vol. XIV: *The General Theory and After* Defence and Development;

Vol. XXI: *Activities 1931-1939* World Crises and Policies in Britain and America;

Vol. XXV: *Activities 1940-1944* Shaping the Post-War World, The Clearing Union;

Vol. XXVI: *Activities 1941-1946* Shaping the Post-War World, Bretton Woods and Reparations;

Kim, J.H. (2006): *A two-sector model with target-return pricing in a stock-flow consistent framework,* ROBINSON Working Paper No. 06-01, University of Ottawa.

Kindleberger, C. (2000): *Manias, Panics and Crashes: a History of Financial Crises, 4th edition,* John Wiley and Sons, New York.

King, J. E. (2012): *The Microfoundations Delusion: Metaphor and Dogma in the History of Macroeconomics,* Edward Elgar, Cheltenham.

Kinsella, S. (2011): *Words to the wise: Stock flow consistent modelling of financial instability,* Geary Working Paper 2011/30, UCD Geary Institute.

Kinsella, S. & O'Shea, T. (2010): *Solution and simulation of large stock flow consistent monetary production models via the Gauss Seidel Algorithm,* available at `http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1729205`

Kinsella, S. & Tiou Tagba-Aliti, G. (2012): *Simulating the impact of austerity on the Irish economy using a stock-flow consistent model,* presented at the 16th conference of the Research Network Macroeconomics and Macroeconomic Policies (FMM), October 25–27, Berlin

Kinsella, S., Godin, A. & Tiou Tagba-Aliti, G. (2012): *Method to simultaneously determine stock, flow and parameter values in large stock flow consistent models,* Research Note No. 20, Institute for New Economic Thinking.

Kinsella, S., Greiff, M. & Nell, E.J. (2011): *Income distribution in a stock-flow consistent model with education and technological change,* Eastern Economic Journal, Vol. 37 (1), p. 134-149.

Kregel, J.A. (1989): *Savings, investment and Finance in Kalecki's theory, in M. Sebastiani (ed.): Kalecki's Relevance Today,* Macmillan, London.

—. (1998): *East Asia is not Mexico: the difference between balance of payments crises and debt deflation,* in K.S. Jomo (ed.): Tigers in Trouble: Financial Governance, Liberalisation and Crises in East Asia, Zed Press, London.

Kurz, H. (1990): *Technical change, growth and distribution: a steady-state approach to 'unsteady' growth,* in H. Kurz: Capital, Distribution and Effective Demand, Polity Press, Cambridge.

—. (1990 [1986]): *Normal positions and capital utilization,* Political Economy, Vol. 2 (1), p. 37-54. Reprinted in H. Kurz: Capital, Distribution and Effective Demand, Polity

Press, Cambridge.

Kurz, H. & Salvadori, N. (2003): *Theories of economic growth – old and new,* in N. Salvadori (ed.): Old and New Growth Theories – An Assessment, Edward Elgar, Cheltenham.

La Marca, M. (2005): *Foreign debt, growth and distribution in an investment-constrained system,* in N. Salvadori and R. Balducci (eds.): Innovation, Unemployment and Policy in the Theories of Growth and Distribution, Edward Elgar, Cheltenham.

—. (2010): *Real exchange rate, distribution and macro fluctuations in export-oriented economies,* Metroeconomica, Vol. 61 (1), p. 124-151.

Lanata Briones, C. and Lo Vuolo, R. (2008): *El proceso de ahorro-inversión en la Argentina. Una aproximación a las relaciones causales de los procesos de crecimiento y distribución,* Working Paper No. 63, Centro Interdisciplinario para el Estudio de Políticas Públicas.

—. (2011).: *Regímenes de acumulación, cambios estructurales y límites al crecimiento económico en la Argentina de la post-Convertibilidad,* Working Paper No. 81, Centro Interdisciplinario para el Estudio de Políticas Públicas.

Lavagna, R. (1978a): *Aldo Ferrer y la política económica en la Argentina de posguerra,* Desarrollo Económico, Vol. 17 (4), p. 654-664.

—. (1978b): *Distribución del ingreso e inversión,* Desarrollo Económico, Vol. 18 (1), p. 138-144.

Lavoie, M. (1992): *Foundations of Post-Keynesian Economic Analysis,* Edward Elgar, Aldershot.

—. (1993): *A post-classical view of money, interest, growth and distribution,* in G. Mongiovi and C. Rühl (eds.): Macroeconomic Theory: Diversity and Convergence, Cambridge University Press, Cambridge.

—. (1995a): *Interest rates in post-Keynesian models of growth and distribution,* Metroeconomica, Vol. 46 (2), p. 146-177.

—. (1995b): *The Kaleckian model of growth and distribution and its neo-Ricardian and neo-Marxian critiques,* Cambridge Journal of Economics, Vol. 19 (6), p. 789-818.

—. (1996): *Traverse, hysteresis, and normal rates of capacity utilization in Kaleckian models of growth and distribution,* Review of Radical Political Economics, Vol. 28 (4), p. 113-147.

—. (2000): *A Post Keynesian view of interest parity theorems,* Journal of Post Keyne-

sian Economics, Vol. 23 (1), p. 163-179.

—. (2001): *The reflux mechanism in the open economy,* in L.P. Rochon and M. Vernengo (eds.): Credit, Interest Rates and the Open Economy, Edward Elgar, Cheltenham.

—. (2006a): *A fully coherent post-Keynesian model of currency boards,* in C. Gnos and L.P. Rochon (eds.) Post Keynesian Principles of Economic Policy, Edward Elgar, Cheltenham.

—. (2006b): *Endogenous money: accommodationist,* in P. Arestis and M. Sawyer (eds.): Handbook of Alternative Monetary Economics, Edward Elgar, Cheltenham.

—. (2008): *Financialisation issues in a Post-Keynesian stock-flow consistent model,* Intervention: European Journal of Economics and Economic Policies, Vol. 5 (2), p. 331-356.

—. (2010): *Surveying short run and long run stability issues with the Kaleckian model of growth,* in M. Setterfield (ed.): Handbook of Alternative Theories of Economic Growth, Edward Elgar, Cheltenham.

Lavoie, M. & Daigle, G. (2011): *A behavioural finance model of exchange rate expectations within a stock-flow consistent framework,* Metroeconomica, Vol. 62 (3), p. 434-458.

Lavoie, M. & Ramírez-Gastón, P. (1997): *Traverse in a Two-Sector Kaleckian Model of Growth with Target-Return Pricing,* The Manchester School of Economic & Social Studies, Vol. 65(2), p. 145-69.

Lavoie, M. & Zhao, J. (2010): *A study of the diversification of China's foreign reserves within a three-country stock-flow consistent model,* Metroeconomica, Vol. 61 (3), p. 558-592.

Lawson, T. (2007): *An orientation for a green economics?,* International Journal of Green Economics, Vol. 1 (3), p. 250-267.

Lazonick, W. (2011): *Reforming the financialized business corporation,* Employment Policy and Research Network. `http://www.employmentpolicy.org/topic/21/research/reformingfinancialized-corporation`

—. (2012): *Financialization of the U.S. corporation: what has been lost, and how it can be regained,* MPRA Paper No. 42307.

Lazonick, W. & O'Sullivan, M. (2000): *Maximizing shareholder value: a new ideology for corporate governance,* Economy and Society, Vol. 29 (1), p. 13-35.

Le Heron, E. (2009): *Fiscal and monetary policies in a Keynesian stock-flow consistent model,* Estudos do GEMF 2009-01, Faculdade de Economia, University of Coimbra.

—. (2012): *Confidence, increasing risks, income distribution and crisis in a Post Kaleckian stock flow consistent model,* presented at the conference Political Economy and the Outlook for Capitalism, July 5-7, Paris.

Lee, F. (1998): *Post Keynesian Price Theory,* Cambridge University Press, Cambridge.

Lindenboim, J., Kennedy, D. & Graña, J.M. (2005): *Distribución funcional del ingreso en Argentina. Ayer y hoy,* Documentos de Trabajo Nº 4, CEPED, UBA.

—. (2006): *Distribución, consumo e inversión en la Argentina a comienzos del siglo XXI,* Realidad Económica, N. 218, p. 65-92.

—. (2011): *Wage share and aggregate demand: contributions for labour and macroeconomic policy,* presented at the 2nd conference on Regulating for Decent Work: Regulating for a Fair Recovery, International Labour Organization, Geneva.

López G., J. (2004): *Economic crises in Latin America: some considerations in the light of Kalecki's theory,* in Z. Sadowski & A. Szeworski (eds.): Kalecki's Economics Today, Routledge, London.

(2012a): *Keynes, Kalecki and the real world,* presented at the Workshop Cambridge Approach to Economics – History and Legacy, March 20-22, Florence.

—. (2012b): *Effective demand and income distribution in the recent evolution of the Mexican Economy,* presented at the 4th GREThA/GRES International conference on economic development, June 13-15, Bordeaux.

López G., J. & Assous, M. (2010): *Michal Kalecki,* Palgrave Macmillan, Basingstoke.

López G., J., Sánchez, A. & Spanos, A. (2011): *Macroeconomic linkages in Mexico,* Metroeconomica, Vol. 62 (2), p. 356-385.

Luxemburg, R. (1951 [1913]): *The Accumulation of Capital,* Routledge, London.

Lye, J. & McDonald, I. (2008): *The Eisner puzzle, the unemployment threshold and the range of equilibria,* International Advances in Economic Research, Vol. 14 (2), p. 125-141.

MacKinnon, J., Haug, A. & Michelis, L. (1999): *Numerical distribution functions of likelihood ratio tests for cointegration,* Journal of Applied Econometrics, Vol. 14 (5), p. 563-577.

Maes, I. & Clement, P. (2013): *The Latin American debt crisis: at the origins of the BIS macro-prudential approach to financial stability,* Working Paper No. 247, National Bank

of Belgium.

Marcuzzo, M.C. (2010): *Whose welfare state: Beveridge versus Keynes,* in R. Backhouse and T. Nishizawa (eds.): No Wealth but Life: Welfare Economics and the Welfare State in Britain, 1880-1945, Cambridge University Press, Cambridge.

Marone, H. (2007): *Mapping Global Capital Flows,* Development Studies Research Papers, United Nations Development Programme.

Marshall, W. (2012): *International capital flows and Latin America: making sense of disappointing results,* in C. Gnos, L.P. Rochon and D. Tropeano (eds.): Employment, Growth and Development. A Post Keynesian Approach, Edward Elgar, Cheltenham.

Martin, B. (2008): *Fiscal policy in a stock-flow consistent model: a comment,* Journal of Post Keynesian Economics, Vol. 30 (4), p. 649-667.

Marx, K. (1867, 1885, 1894): *Das Kapital, Vol. I, II and III,* available in `http://www.marxists.org/archive/marx/works/`

Mata, T. (2012): *Godley moves in mysterious ways: The craft of economic judgement in post-war Britain,* in D. Papadimitriou and G. Zezza (eds.): Contributions in Stock-Flow Modelling: Essays in Honour of Wynne Godley, Palgrave Macmillan, New York.

Mazier, J. & Tiou Tagba-Aliti, G. (2012): *World imbalances and macroeconomic adjustments: a three-country stock-flow consistent model with fixed or flexible prices,* Metroeconomica, Vol. 63 (2), p. 358-388.

McCombie, J., Pugno, M. & Soro, B. (eds) (2002): *Productivity Growth and Economic Performance,* Palgrave Macmillan, Basingstoke.

McCombie, J. & Thirlwall, A. (eds.) (2004): *Economic Growth and the Balance of Payments Constraint,* Palgrave Macmillan, Basignstoke.

McKinnon, R. (1973): *Money and Capital in Economic Development. Brookings Institution,* Washington, DC.

Medeiros, C.A. (2008): *Financial dependency and growth cycles in Latin American countries,* Journal of Post Keynesian Economics, Vol. 31 (1), p. 79-99.

Mirowski, P. (1984): *Physics and the 'marginalist revolution',* Cambridge Journal of Economics, Vol. 8 (4), p. 361-379.

Missaglia, M. (2007): *Demand policies for long run growth: Being Keynesian both in the short and in the long run?,* Metroeconomica, Vol. 58 (1), p. 54-74.

Moosa, I. (2003): *International Financial Operations,* Palgrave Macmillan, Basingstoke.

Mott, T. & Slattery, E. (1994): *The influence of changes in income distribution on aggregate demand in a Kaleckian model: stagnation vs. exhilaration reconsidered,* in P. Davidson & J. Kregel (eds.): Employment, Growth and Finance, Edward Elgar, Aldershot.

Naastepad, C.W.M. (2006): *Technology, demand and distribution: a cumulative growth model with an application to the Dutch productivity growth slowdown,* Cambridge Journal of Economics, Vol. 30 (3), p. 403-434.

Naastepad, C.W.M. & Storm, S. (2006): *OECD demand regimes (1960-2000),* Journal of Post-Keynesian Economics, Vol. 29 (2), p. 211-246.

Ndikumana, L. (1999): *Debt service, financing constraints, and fixed investment: evidence from panel data,* Journal of Post Keynesian Economics, Vol. 21 (3), p. 455-478.

Neftci, S.N. (1998): *FX short positions, balance sheets and financial turbulence: An interpretation of the Asian financial Crisis,* Working Paper No. 11, Center for Economic Policy Analysis, New School for Social Research.

Nikiforos, M. (2012): *On the 'utilization controversy': a theoretical and empirical discussion of the Kaleckian model of growth and distribution,* Working Paper No. 739, Levy Economics Institute of Bard College.

Noland, M. (2007): *South Korea's experience with international capital flows, in S. Edwards (ed.) (2007): Capital Controls and Capital Flows in Emerging Economies,* University of Chicago Press, Chicago.

Ocampo, J.A., Rada, C. & Taylor, L. (2009): *Growth and Policy in Developing Countries,* Columbia University Press, New York.

OECD (2007): *OECD Employment Outlook,* Paris.

—-. (2008): *Growing Unequal?: Income Distribution and Poverty in OECD Countries,* OECD, Paris.

—-. (2013): *OECD.StatExtracts.*

Onaran, Ö. & Galanis, G. (2012): *Is aggregate demand wage-led or profit-led?, Conditions of Work and Employment Series No. 40,* International Labour Office, Geneva.

Onaran, Ö., Stockhammer, E. (2004): *Accumulation, distribution and employment: a structural VAR approach to a post-Keynesian macro model,* Structural Change and Economic Dynamics, Vol. 15 (3), p. 421-447.

—-. (2006): *Do profits affect investment and employment? An empirical test based on the Bhaduri-Marglin model,* in: Hein, E., Heise, A., Truger, A. (eds.): Wages, Employment, Distribution and Growth. International Perspectives, Macmillan, Basingstoke.

Ono, F. H & Oreiro, J. L. (2006): *Technological progress, income distribution and capacity utilization,* in N. Salvadori (ed.): Economic Growth and Distribution: On the Nature and Causes of the Wealth of Nations, Edward Elgar, Cheltenham.

Orhangazi, Ö. (2008): *Financialization and the US Economy,* Edward Elgar, Cheltenham.

Palley, T. (1996): *Inside debt, aggregate demand and the Cambridge theory of distribution,* Cambridge Journal of Economics, Vol 20 (4), p. 465-474.

—-. (2003): *The economics of exchange rates and the dollarization debate: the case against extremes,* International Journal of Political Economy, Vol. 33 (1), p. 61-82.

—-. (2008): *Financialisation: what it is and why it matters,* in E. Hein, T. Niechoj, P. Spahn and A. Truger (eds.): Finance-led capitalism? Macroeconomic Effects of Changes in the Financial Sector, Metropolis-Verlag, Magburg.

—-. (2010): *Inside debt and economic growth: a neo-Kaleckian analysis,* in M. Setterfield (ed.): Handbook of Alternative Theories of Economic Growth, Edward Elgar, Cheltenham.

—-. (2013): *Financialization,* Palgrave Macmillan, Basingstoke.

Palma, J.G. (2001): *Three-and-a-half cycles of 'mania, panic, and (asymmetric) crash': East Asia and Latin America compared,* in Chang, H.J., Palma, J.G. & Whittaker, D.G. (eds) (2001): Financial Liberalization and the Asian Crisis, Palgrave, Basingstoke.

—-. (2009): *The revenge of the market on the rentiers. Why neo-liberal reports of the end of history turned out to be premature,* Cambridge Journal of Economics, Vol. 33 (6), p. 829-869.

—-. (2012): *How the full opening of the capital account to highly liquid financial markets led Latin America to to and a half cycles of 'mania, panic and crash',* Cambridge Working Papers in Economics 1201, available in `http://www.econ.cam.ac.uk/dae/repec/cam/pdf/cwpe1201.pdf`

Palumbo, A. and Trezzini, A. (2003): *Growth without normal capacity utilization,* European Journal of the History of Economic Thought, Vol. 10 (1), p. 109-135.

Panigo, D., Depetris-Chauvín, E., Pasquini, R. & Pussetto, L. (2007): *Evolución y determinantes de la inversión privada en Argentina,* Documento de Trabajo, Centro para la

Estabilidad Financiera.

Panigo, D., Herrero, D., López, E., Montagu, H. & Toledo, F. (2009): *Modelo macroeconométrico estructural para Argentina,* Documento de Trabajo, Dirección Nacional de Programación Macroeconómica, Ministerio de Economía y Producción.

Panigo, D., Toledo, F. & Agis, E. (2008): *Poder de mercado, crecimiento y distribución funcional del ingreso en Argentina,* Working Paper, Dirección Nacional de Programación Macroeconómica, Ministerio de Economía y Finanzas Públicas.

Papadimitriou, D. (2008): *Promoting equality through an employment of last resort policy,* Working Paper No. 545, Levy Economics Institute of Bard College.

Papadimitriou, D., Zezza, G. & Nikiforos, M. (2013): *A Levy Institute model for Greece,* Research Project Reports, Levy Economics Institute of Bard College.

Pasinetti, L. L. (1962): *Rate of profit and income distribution in relation to the rate of economic growth,* Review of Economic Studies, Vol. 29 (4), p. 267-79.

Passarella, M. (2011): *A simplified stock-flow consistent dynamic model of the systemic financial fragility in the 'New Capitalism',* Journal of Economic Behavior and Organization, Vol. 83 (3), p. 570-582.

Pérez Caldentey, E. (2007): *Balance of payments constrained growth within a consistent stock-flow framework: An application to the economies of CARICOM,* in Economic Comission for Latin America and the Caribbean: Caribbean Development Report, Vol. 1.

Perotti, R. (1992): *Income distribution, politics, and growth,* American Economic Review, Vol. 82 (2), pp. 311-316.

Philippon, T. (2012): *Has the US finance industry become less efficient? On the theory and measurement of financial intermediation,* NBER Working Paper No. 13437.

Pilkington, M. (2008): *Conceptualizing the shadow financial system in a stock-flow consistent framework,* Global Business and Economic Anthology, Vol. 2, p. 268-279.

Pivetti, M. (1991): *An Essay on money and Distribution,* Palgrave Macmillan, London.

Quantitative Micro Software (2004): *Eviews 5 User's Guide.*

Rajan, R. (2010): *Fault Lines,* Princeton University Press, Princeton, NJ.

Reinhart, C. & Rogoff, K. (2010): *Growth in a time of debt,* NBER Working Paper No. 15639.

Reyes, L., Clevenot, M. & Mazier, J. (2012): *Estimation and simulation of a financialized growth regime with a stock-flow consistent model,* mimeo.

Ricardo, D. (1951 [1821]): *Principles of Political Economy and Taxation,* 3rd ed., Vol. I of The Works and Correspondence of David Ricardo, ed.: Piero Sraffa, Cambridge University Press, Cambridge.

Robinson, J. (1965 [1956]): *The Accumulation of Capital,* Macmillan, London.

—-. (1962): *Essays on the Theory of Economic Growth,* Macmillan, London.

—-. (1977): *Portrait: Michal Kalecki,* Challenge, 20 (6), p. 67-69.

—-. (1980 [1978]): *Keynes and Ricardo,* Journal of Post Keynesian Economics, Vol. 1 (1), p. 12-18. Reprinted in J. Robinson (1980): Further Contributions to Modern Economics, Basil Blackwell, Oxford.

Rodriguez, F. & Jayadev, A. (2010): *The declining labor share of income,* Human Development Research Paper 2010/36, United Nations Development Programme.

Romer, P. (1986): *Increasing returns and long-run growth,* Journal of Political Economy, Vol. 94 (5), p. 1003-1037.

Rossi, P. (2010): *Currency speculation and exchange rates,* presented at the 14th conference of the Research Network Macroeconomics and Macroeconomic Policies, October 29-30, Berlin.

Rowthorn, R. (1989 [1981]): *Demand, real wages and economic growth,* Thames Papers in Political Economy, Autumn, p. 1-39. Reprinted in M. Sawyer (Ed.): Post Keynesian Economics, Edward Elgar, Aldershot.

Ryoo, S. & Skott, P. (2013): *Public debt and full employment in a stock-flow consistent model of a corporate economy,* Journal of Post Keynesian Economics, Vol 35 (4), p. 511-528.

Sadowski, Z. & Szeworski, A. (eds.) (2004): *Kalecki's Economics Today,* Routledge, London.

Sawyer, M. (1985): *The Economics of Michal Kalecki,* Macmillan, London.

Schoder, C. (2011): *Kaleckian vs Marxian specifications of the investment function: Some empirical evidence for the US,* MPRA Paper No. 29584.

Schumpeter, J. A. (1934): *The Theory of Economic Development,* Harvard University Press, Cambridge, MA.

—-. (1954): *History of Economic Analysis,* Oxford University Press, New York.

Scialabba, E. & Navarro, C. (2008): *Inconsistencias metodológicas en la medición de la inflación: Argentina 2005-2008,* presented at the 4th Conference of the Sociedad de Economía Política y Pensamiento Crítico Latinoamericano, October 22-24, Buenos Aires.

Seguino, S. (1999): *The investment function revisited: disciplining capital in South Korea,* Journal of Post Keynesian Economics, Vol. 22 (2), p. 313-338.

Seppecher, P. (2012a): *Monnaie endogene et agents heterogenes dans un model stock-flux coherent,* presented at the conference Political Economy and the Outlook for Capitalism, July 5-7, Paris.

—-. (2012b): *Flexibility of wages and macroeconomic instability in an agent-based computational model with endogenous money,* Macroeconomic Dynamics, Vol. 16 (2), p. 284-297.

Serrano, F. (1995): *The Sraffian Supermultiplier,* Ph.D. dissertation, Cambridge University.

Serrano, F. & Summa, R. (2012): *Mundell-Fleming without the LM curve: the exogenous interest rate in an open economy,* presented at the 16th conference of the European Society for the History of Economic Thought, May 17-19, Saint-Petersburg.

Setterfield, M. (ed.) (2010): *Handbook of Alternative Theories of Economic Growth,* Edward Elgar, Cheltenham.

Setterfield, M. & Cornwall, J. (2002): *A neo-Kaldorian perspective on the rise and decline of the Golden Age,* in M. Setterfield (ed.): The Economics of Demand-led Growth: Challenging the Supply-Side Vision of the Long Run, Edward Elgar, Cheltenham.

Shaikh, A. (2007): *A Proposed synthesis of Classical and Keynesian growth,* SCEPA Working Papers 2007-1, Schwartz Center for Economic Policy Analysis (SCEPA), The New School.

—-. (2009): *Economic policy in a growth context: A Classical synthesis of Keynes and Harrod,* Metroeconomica, Vol. 60 (3), p. 347-64.

Shin, H.S. (2009): *Securitisation and financial stability,* Economic Journal, Vol. 119 (1), p. 309-332.

Sims, C. (1980): *Macroeconomics and reality,* Econometrica, Vol. 48 (1), p. 1-48.

Skidelsky, R. (2000): *John Maynard Keynes: Fighting for Britain 1937-1946,* Penguin Books, Harmondsworth.

—-. (2003): *John Maynard Keynes 1883-1946: Economist, Philosopher, Statesman,* Macmillan, Londres.

Skott, P. (2010): *Growth, instability and cycles: Harrodian and Kaleckian models of accumulation and income distribution,* in M. Setterfield (ed.): Handbook of Alternative Theories of Economic Growth, Edward Elgar, Cheltenham.

—-. (2012): *Theoretical and empirical shortcomings of the Kaleckian investment function,* Metroeconomica, Vol. 63 (1), p. 109-138.

Solow, R. (1956): *A contribution to the theory of economic growth,* The Quarterly journal of Economics, Vol. 70 (1), p. 65-94.

Sosa Escudero, W. (1997): *Testing for unit-roots and trend-breaks in Argentine real GDP,* Económica, Vol. 43 (1-2), p. 123-142.

Steindl, J. (1976 [1952]): *Maturity and Stagnation in American Capitalism,* Monthly Review, New York.

Stiglitz, J.E., Ocampo, J.A., Spiegel, S., Ffrench-Davis, R. & Nayyar, D. (2006): *Stability with Growth,* Oxford University Press, Oxford.

Stirati, A. (2010a): *Interpretation of the classics: the theory of wages,* Departmental Working Papers of Economics No. 116, University Roma Tre.

—-. (2010b): *Changes in functional income distribution in Italy and Europe,* Departmental Working Papers of Economics No. 119, University Roma Tre.

Stock, J. & Watson, M. (2010): *Modelling Inflation after the Crisis,* NBER Working Paper No. 16488.

Stockhammer, E. (2004): *The Rise of Unemployment in Europe,* Edward Elgar, Cheltenham.

—-. (2005): *Shareholder value orientation and the investment-profit puzzle,* Journal of Post Keynesian Economics, Vol. 28 (2), p. 193-215.

—-. (2009): *Determinants of functional income distribution in OECD countries,* IMK Studies No. 05/2009, Hans Böckler Stiftung, Düsseldorf.

—-. (2013): *Why have wage shares fallen? A panel analysis oft he determinants of functional income distribution,* Conditions of Work and Employment Series No. 35, International Labour Office, Geneva.

Stockhammer, E. & Stehrer, R. (2011): *Goodwin or Kalecki on demand? Functional income distribution and aggregate demand in the short run,* Review of Radical Political Economy, Vol. 43 (4), p. 506-522.

Storm, S. & Naastepad, C.W.M. (2005): *Strategic factors in economic development: East Asian industrialization 1950-2003,* Development and Change, Vol. 36 (6), p. 1059-1094.

—-. (2009): *Labour Market Regulation and Labour Productivity Growth: Evidence for 20 OECD Countries 1984-2004,* Industrial Relations, Vol. 48 (4), p. 629-654.

—-. (2012): *Macroeconomics Beyond the NAIRU,* Harvard University Press, Cambridge, MA.

Studart, R. (2006): *Integrating uneven partners: the destabilizing effects of financial liberalization and internationalization of Latin American economics,* in M. Vernengo (ed.): Monetary Integration and Dollarization: No Panacea, Edward Elgar, Cheltenham.

Sweezy, P. (1942): *The Theory of Capitalist Development,* Oxford University Press, New York.

Taylor, A. & Taylor, M. (2004): *The purchasing power parity debate,* Journal of Economic Perspectives, Vol. 18 (4), p. 135-158.

Taylor, L. (2008): *A foxy hedgehog: Wynne Godley and macroeconomic modelling,* Cambridge Journal of Economics, Vol. 32 (4), p. 639-663.

Tesfatsion, L. & Judd, K. (2006): *Handbook of Computational Economics, Volume 2: Agent-based Computational Economics,* Elsevier, Amsterdam.

Thirlwall, A. (1979): *The balance of payments constraint as an explanation of international growth rate differences,* Banca Nacionale del Lavoro Quarterly Review, Vol. 32 (128), p. 45-53.

Tobin, J. (1982): *Money and finance in the macroeconomic process,* Journal of Money, Credit and Banking, Vol. 14 (2), p. 171-204.

Tobin, J. & Buiter, W. (1976): *Long run effects of fiscal and monetary policy on aggregate demand,* in J. L. Stein (ed.): Monetarism, North Holland, Amsterdam.

Valdecantos, S. (2012): *Macroeconomic dynamics in Argentina in the light of a Structuralist-Post Keynesian stock-flow consistent model,* mimeo.

Valdecantos, S. & Zezza, G. (2012): *Reforming the international monetary system: a stock-flow consistent approach,* in M. Marcuzzo (ed.): Speculation and Regulation in Commodity Markets: The Keynesian Approach in Theory and Practice, Rapporto Tec-

nico No. 21, Dipartimento di Scienze Statistiche, Universitá di Roma La Sapienza.

Van Treeck, T. (2009): *A synthetic, stock-flow consistent macroeconomic model of 'financialisation',* Cambridge Journal of Economics, Vol. 33 (3), p. 467-493.

Vergeer, R. & Kleinknecht, A. (2007): *Jobs versus productivity? The causal link from wages to labour productivity growth,* TU Delft Innovation Systems Discussion Papers, IS 2007-01.

—-. (2010): *The impact of labour market deregulation on productivity: a panel data analysis of 19 OECD countries (1960-2004),* Journal of Post Keynesian Economics, Vol. 33 (2), p. 369-404.

—-. (2012): *Do flexible labour markets indeed reduce unemployment? A robustness check,* Review of Social Economy, Vol. 70 (4), p. 451-476.

Vernengo, M. (2006): *Technology, finance, and dependency: Latin American Radical Political Economy in retrospect,* Review of Radical Political Economy, Vol. 38 (4), p. 551-568.

Vianello, F. (1989): *Effective demand and the rate of profits: some thoughts on Marx, Kalecki and Sraffa,* in M. Sebastiani (ed.): Kalecki's Relevance Today, Macmillan, London.

Wicksell, K. (2001): *A new theory of crises, Structural Change and Economic Dynamics,* Vol. 12 (3), p. 335-342.

Wolff, E.N. & Zacharias, A. (2009): *Household wealth and the measurement of economic well-being in the United States,* Journal of Economic Inequality, Vol. 7 (2), p. 83-115

Wood, A. (1997): *Openness and wage inequality in developing countries: the Latin American challenge to East Asian conventional wisdom,* World Bank Economic Review, Vol. 11 (1), p. 33-57.

World Bank (2013): *World Development Indicators Database.*

Wray, L.R. (1997): *Government as employer of last resort: Full employment without inflation,* Working Paper No. 213, Levy Economics Institute of Bard College.

—-. (2000): *The Employer of Last Resort approach to full employment,* Working Paper No. 9, Center for Full Employment and Price Stability, University of Missouri-Kansas City.

You, J.I. & Dutt, A. K. (1996): *Government debt, income distribution and growth,* Cambridge Journal of Economics, Vol. 20 (3), p. 335-351.

Zezza, G. (2008): *U.S. growth, the housing market, and the distribution of income,* Journal of Post Keynesian Economics, Vol. 30 (3), p. 379-405.

—-. (2009): *Fiscal policy and the economics of financial balances,* Intervention: European Journal of Economics and Economic Policies, Vol. 6 (2), p. 289-310.

SUMMARY

This thesis extends the Kaleckian model of growth and income distribution, to include the influence of international financial flows. The focus is set on developing countries who borrow in a foreign currency, either through the public sector or the private sector.

After a literature review on the merits of Kaleckian models, this thesis performs an empirical analysis of the relation between functional income distribution and economic growth for a developing country, namely Argentina. The findings reject the view that a distributive change in favour of profits is a necessary requirement for sustained periods of high growth rates. It also notes a change in the behaviour of the balance of payments around the late 1970s/early 1980s, related to a process of financial deregulation and capital account openness.

As a result, we develop a Stock-Flow Consistent (SFC) model to integrate public and private sector borrowing on foreign currencies, with Keynesian features regarding the determination of inflation, investment and asset allocation. Among the results obtained, we show that public borrowing does not crowd out private investment, quite to the contrary; that the "twin deficits" view of the IMF does not necessarily holds and that the causality relation runs from external deficits to public deficits; that policies that stimulate consumption and not savings have a positive impact on GDP even in an open economy context, and that in order to solve trade and current account imbalances relative price changes will not be sufficient as long as the economic structure remains unchanged.

In the last part, we develop an open economy Kaleckian model of income distribution and growth, adding the impact of semi-autonomous international financial flows on income distribution and investment decisions, focusing on private sector behaviour. Our empirical testing of the model highlights the dangers that a large build-up of foreign debt might have on the balance sheet of the private sector and in the overall performance of the economy.

SAMENVATTING

Dit proefschrift onderzoekt in hoeverre economische groei in een open – geglobaliseerde – economie wordt beïnvloed door veranderingen in de inkomensverdeling. Om deze vraag te beantwoorden hebben we het canonieke ("loongeleide versus winstgeleide") groeimodel van Kalecki voor een gesloten economie uitgebreid naar modellen voor open economie die is geïntegreerd met de internationale financiële markten. Het onderzoek richt zich met name op ontwikkelingslanden die lenen afsluiten in buitenlandse valuta (via ofwel de publieke ofwel de particulier sector).

Hoofdstuk 2 is een kritische bespreking van de literatuur over modellen van economische groei en het model van Kalecki in het bijzonder. In Hoofdstuk 3 presenteren we een empirisch onderzoek naar de relatie tussen de functionele inkomensverdeling (de verdeling van het inkomen over lonen en winsten) en economische groei in een ontwikkelingsland, namelijk Argentinië. Op basis van de econometrische resultaten verwerpen we de stelling dat een toename in het winstaandeel een noodzakelijk voorwaarde is voor langdurige periodes van hoge economische groei in Argentinië. Uit de analyse blijkt dat de Argentijnse handelsbalans eind jaren '70/beginjaren' 80 veel meer begint te fluctueren als gevolg van de doorgevoerde financiële deregulering en het vrijmaken van het internationale kapitaalverkeer.

Het model van Hoofdstuk 3 is een model in stroom-grootheden en geeft derhalve geen goed beeld van hoe vermogensposities en schuldposities van huishoudens, bedrijven en overheid zich ontwikkelen over de tijd en weer terug-koppelen naar inkomen en produktie. Deze effecten worden wel gemodelleerd in een nieuwe generatie van economische modellen, de zogenaamde Stock-Flow Consistent (SFC) modellen, waarin de bepaling van zowel de stroom-grootheden als de voorraad-grootheden expliciet, consistent en compleet wordt beschreven. In Hoofdstuk 4 bespreken we de SFC model-benadering en laten we zien dat deze in zeker opzicht terug gaat naar de General Theory van Keynes. In Hoofdstuk 5 presenteren we een uitgebreid twee-landen SFC model. In dit model worden de inflatie, de investeringen, de werkgelegenheid, de allocatie van financiële activa en de economische groei volgens Keynesiaanse inzichten bepaald. In dit SFC model wordt het leengedrag van de publieke sector en de particuliere sector in buitenlandse valuta endogeen gemodelleerd. Uit de resultaten van simulatie-experimenten blijkt het volgende:

1. de particuliere investeringen worden niet noodzakelijkerwijze verdrongen door extra overheidsleningen; er is dus geen "crowding out";

2. de zogenaamde "twin deficit" hypothese van het Internationaal Monetair Fonds (IMF); een tekort op de handelsbalans kan resulteren in een tekort op de overheidsbegroting (in plaats van andersom, zoals door het IMF wordt verondersteld);

3. ook in een open economie leiden beleidsmaatregelen die de consumptie stimuleren (en de besparingen afremmen) tot hogere economische groei; en

4. het is niet mogelijk om onevenwichtigheden op de handelsbalans en lopende rekening van de betalingsbalans te reduceren door het aanpassen van enkel en alleen de relatieve prijzen van exporten en importen, zolang de economische structuur van een land ongewijzigd blijft; dat wil zeggen dat het effect van een de- of revaluatie niet voldoende sterk is om handelsbalanstekorten (-of een handelsbalanssurplus) te verkleinen.

In het laatste hoofdstuk ontwikkelen we een Kaleckiaans groeimodel voor een open economie, waarin we de effecten kunnen analyseren die semi-autonome internationale financiële kapitaalstromen kunnen hebben op de inkomensverdeling en de particuliere investeringsbeslissingen. Het theoretische model wordt empirisch getest voor twee ontwikkelings landen: Zuid-Korea en Mexico. Uit de econometrische resultaten blijkt dat het opbouwen van een grote buitenlandse schuld door de particuliere sector in die landen waarschijnlijk aanzienlijk negatieve gevolgen heeft niet alleen voor de particuliere sector zelf, maar ook voor de totale geaggregeerd economie.

CURRICULUM VITÆ

Pablo Gabriel Bortz was born in 1983 in Buenos Aires, Argentina. He obtained his Bachelor degree in 2006 from the Faculty of Economic Sciences, University of Buenos Aires. He completed his Master studies in the Latin American Faculty of Social Sciences (FLACSO) in Buenos Aires. From 2005 to 2009 he worked in the Ministry of Finance of Argentina. He started his Ph.D. studies in the Economics of Innovation section, at the Faculty of Technology, Policy and Management, Delft University of Technology.

LIST OF PUBLICATIONS

BOOKS

Michal Kalecki: Ciclo y Tendencia (Business Cycle and Trend), with Fernando Hugo Azcurra, Editorial Cooperativa, Buenos Aires, 2008, ISBN: 978-987-652-021-8.

ARTICLES

Manuscript in the referee procedure:

Foreign debt, distribution, inflation and growth in a SFC model, paper presented at the International Network for Economic Research (INFER) Workshop, Münster, 2012, and at the Research Network Macroeconomics and Macroeconomic Policies (FMM) conference, Berlin, 2012. Paper submitted to European Journal of Economics and Economic Policies: Intervention.

The role of innovations in Kalecki and Shumpeter. Paper submitted to The European Journal of the History of Economic Thought.

Papers presented at conferences:

Teoría del ciclo de Kalecki y Demanda de dinero en Keynes: un vínculo perdido?, paper presented at the 1º Conference of Political Economy, National University of General Sarmiento, 2007.

The role of innovations in Kalecki and Shumpeter, paper presented at the 12º Annual Conference of the European Society for the History of Economic Thought, Prague, 2008.

El rol de las innovaciones en Kalecki y Schumpeter, paper presented at the 2º Conference of Political Economy, Nacional University of General Sarmiento, 2008.

Foreign debt in a simple Stock-Flow Consistent Kaleckian growth model (co-authored with Servaas Storm), paper presented at Research Network Macroeconomics and Macroeconomic Policies (FMM) conference, Berlin, 2010.

Foreign debt, distribution, inflation and growth in a SFC model, presented at the Workshop "Non-standard Monetary Approaches in Macroeconomics", Centrum für Angewandte Wirtschaftsforschung, Westfälische Wilhelms-Universität, Münster, 2012.

Foreign private debt in a Kaleckian growth model, paper presented at Research Network Macroeconomics and Macroeconomic Policies (FMM) conference, Berlin, 2013.