Economic policy coordination in a regionally integrated area

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Introduction

The emergence of the second wave of the financial crisis demonstrated the hegemonic policy thinking, abandoned for a while at the peak of the first wave of the crisis in 2007-8, still envisages the question of economic policy coordination in terms of public deficit reduction and couples this recommendation with the control of inflation expectations by monetary policy, based on the use of various variants of interest rate rules.

This paper argues that, given the significant risks attached to the second wave of the crisis, it is both possible and urgent to organize policy coordination around an objective of full employment based on an approach inspired by the theory of the monetary circuit (Halevi and Taouil, 2002).[2]

The monetary circuit was introduced in the sixties and seventies to develop and formalize Keynes' concept of a monetary production economy (Graziani, 2003) and aims at providing a rigorous basis for Keynesian policy recommendations. The definition of money as a "third-part liability" (Parguez and Seccareccia, 2000) and the focus on the conditions for its creation and destruction in a dynamic context characterized by historical time and uncertainty imply that the macro economy is distinct from the aggregated results of the behavior of atomistic agents typical of the mainstream approach (neoclassical or neokeynesian). The latter tends to evacuate the role of distribution, which is instead at the heart of the circuit approach, by retaining the assumption of permanent maximum efficiency. A byproduct of the monetary circuit literature is that it offers a convenient way to model the monetary and banking sector of the macro economy, which is notoriously a deficient part of mainstream micro-founded macroeconomic theory.

Initially the circuit was analyzed mainly in the framework of a closed economy without State, where all money created and destroyed was considered to be private. Later it was enlarged to include public finance and the Government and recently discussions started also on the opening of the circuit to international trade, the present paper being proposed as a contribution in that direction.

The exciting development of this truly original brand of economic thinking is still in course, not only for what concerns its extension to the external trade but also for what concerns the use of its public finance variant to address public choice issues (Cingolani, 2010, 2011). In this context one can rely on the well established result that when the State is included in the monetary circuit, taxes do not finance government expenditures, but intervene at the end of the reflux phase of the circuit, when liquidity is destroyed (Parguez 2002; Seccareccia and Bougrine 2002; Mosler, 2010, pp. 13-30). Public finance is thus

[2] The monetary circuit literature, developed by authors such as Graziani, Parguez, Schmitt, Vallageas and others, can be viewed as a monetary variant of post Keynesian economics. The latter was developed by economists such as Eichner, Kregel, Davidson, Vickrey, Weintraub, John and James Galbraith, the pupils of Keynes of the Cambridge UK school (Pasinetti, 2007), Chick, Dow, Arestis, Sawyer, Kregel, Harcourt, the Italian Sraffian schools (Roncaglia, 2009), including followers of Sylos Labini, Pasinetti and Garegnani as well as applied economists such as Foa and others. In the latest years it became increasingly apparent that a synthesis of this broad range of contributions is possible and is implicit in the writings of Kalecki (Lopez and Assous, 2010). The convergence of the various schools post Keynesian streams has been highlighted in particular in the remarkable syntheses offered by Marc Lavoie (1992 and 2009 [2007]).

closely interconnected with monetary policy and in particular with the conditions for money creation and its destruction, money and public debt appearing as two complementary liabilities of the State that must be supplied in the amounts and composition required by the private sector to satisfy its saving desires, a result already clear to post Keynesian authors such as the late Nobel prize Vickrey (1994).

However, the interaction of monetary policy with fiscal policy is left out of the main line of argument of the paper, being implicit in the conclusion from this literature, retained here as an assumption, that interest rates are exogenous, essentially for their entire term structure. This is a logical consequence of the related idea that money is endogenous (Rochon, 1999, Parguez, 2001), which is by now accepted and exploited by the main central bankers of the world (Rochon et al. 2011). If interest rates are exogenous, the authorities can set them at the level they consider consistent with their other policy goals. In this perspective, full-employment concerned authorities should try to influence long-term interest rates in such a way as to keep them below the projected growth rate of income in nominal terms over the policy horizon. The rationale and relevance of this assumption can be discussed critically in forthcoming work. Here it is just noted that if this rule is applied for a sufficiently long period of time, the problem of public debt disappears automatically, whatever the initial level ratio of public debt to GDP. In other words, countries like Greece, widely thought to be bankrupt, would have no problem in honoring their debt obligations, without having to count on excessive external support. The sole condition for achieving this positive result is to keep a nominal (and/or real) growth rate above the interest rate the Government pays to its creditors. Conditions to achieve this could be coordinated by imposing the right policy mix at EU level.

The paper focuses instead on the rationale for fiscal policy coordination on the expenditure side in open economies where several interlinked region trade together. In this context, a difficult analytical point concerns the treatment of the exchange rate regime and the related discussion on the relevance of the external constraint. The position taken here is that the external constraint is binding for small regional economies and even for smaller regionally integrated areas, whereas it is irrelevant for large regionally integrated area whose currencies serve as international means of payment. An example of the former, analyzed in more depth in the text, is given by the economies of the Western Balkans, whereas an example of the second is represented by monetary blocks such as the Euro area, the US or Japan. It is argued that, somewhat paradoxically, in the first case the appropriate exchange rate regime is a fixed exchange rate, while in the second case floating rate are acceptable, although they represent probably a second best choice compared to a cooperative solution where they be kept stable.

The case developed in the paper for fiscal policy coordination on the expenditure side rests on the action of the foreign trade multiplier. In the proportion of intra-trade over total trade is sufficiently high, these areas tend to work as closed economies, even if they do not necessarily have a common fiscal policy. From a monetary circuit perspective, in a closed economy, the justification for functional finance is clear and this approach can be used to achieve the level of public expenditure necessary to stabilize the economy around full-employment, for instance through public investment (Seccareccia, 2005 and 2010). Therefore fiscal policy should be coordinated on the expenditure side to achieve these goals.

Another interesting aspect of the discussion on the relevance of the external constraint relates to the Keynesian-Kaleckian causality from investment to savings (Sawyer, 1996), for which the monetary circuit offers a straightforward explanation in a closed economy (Cingolani, 2011). It is sometimes assumed that the foreign constraint would reintroduce "scarcity" (Parguez, 1996). The presumption would be that in an open economy investment is not causal anymore with respect to domestic savings. The paper reviews through an example the working of the monetary circuit in an open economy context and shows that the opening of the circuit to international trade does not put into question the causality of investment on savings, although policy coordination is necessary to exploit this causality.

The paper is organized as follows: a first section discusses the exchange rate regime and the relevance of the external constraint. A second section introduces the external trade multiplier in a dynamic economic framework and argues that the latter can be usefully modeled with the tools of the monetary circuit. The third section is devoted to the analysis of the working of the monetary circuit in an open economy context. In the fourth section the analysis is applied to the case of the region of the Western Balkans. There an algorithm for policy coordination in the area is proposed building on Thirlwall's laws. The latter formalize the impact of the foreign constraint on regionally opened economies and provide the basis for policy coordination based on Harrod's trade multiplier. More general policy conclusions are drawn in the last section.

1. Interregional and international trade, the exchange rate regime and the irrelevance of the external constraint in a large regionally integrated economic area

At Bretton Woods Keynes proposed that, in case of a world trade imbalance, it is not only the deficit country that must bear the burden of adjustment but surplus countries should contribute to the rebalancing as well. He was unfortunately not able to convince the American delegation that preferred to put the US dollar at the center of the international monetary system. However, both Keynes and White agreed on the fact that a stable international monetary system should be based on fixed (although adjustable) exchange rates, in a context of capital controls. Indeed, despite the fact Keynes' Treatise on Money and its General Theory left open economy issues outside the main line of the argument, Keynes proposals at Bretton Woods were inspired by his closed economy results (Davidson 1997 and 1999).

Instead, during the ninety sixties and seventies, the failed attempt to reconcile Keynes with Walras led to reconsider the idea of floating exchange rates in a context where the pressure to lift capital controls progressively increased for other reasons. In a single open economy framework, Mundell and Fleming provided a model seeming well suited to describe the Bretton Woods system. They showed that, under fixed exchange rates, monetary policy should be assigned the target to achieve the external equilibrium (in this case the targeted fixed exchange rate), whereas fiscal policy should be assigned to the full employment objectives. However, the same model, under floating exchange rates, showed that the external equilibrium would ultimately be achieved by the free floating of the

exchange rate and that in this case both the monetary and the fiscal policy instruments could be devoted to the achievement of the internal balance. If an assumption of perfect capital mobility was added, fiscal policy would become completely ineffective (Gandolfo, ch. 11, pp.155-68).

A detailed review of the fixed-floating exchange rate debate would be interesting but goes much beyond the purpose of this paper. A few points should however be underlined to understand the position taken here that for a small regional economy that relies heavily on external trade, floating exchange rates are not an option.

1.1 Non-existence of equilibrium exchange rates under floating rates

In general floating exchange rates do not insulate an economy from external developments and therefore do not permit to achieve the external balance. The reason is that the level at which they settle is either indeterminate and/or unstable, being influenced by non-converging factors, such as expectations, that can be exploited and manipulated. This conclusion is obvious to post Keynesians authors such as Davidson and Moore who argued in favor of fixed exchange rates. In a monetary circuit context, the difficulty with floating exchange rates was perceived at an early stage by Schmitt (1975, pp. 85-101), who noted the logical impossibility to determine the exchange rates unless a true international money is developed. For Schmitt, national circuits cannot be interrupted. Once credit money is defined as a third party liability issued by the banking system, there is no way for that money to be destroyed in an act of exchange with a foreign currency, whereas, in the absolute exchange between the monies of two secondary banks, the money of one bank is destroyed when for instance it is transferred to another bank (Schmitt 1988, pp 4-5).

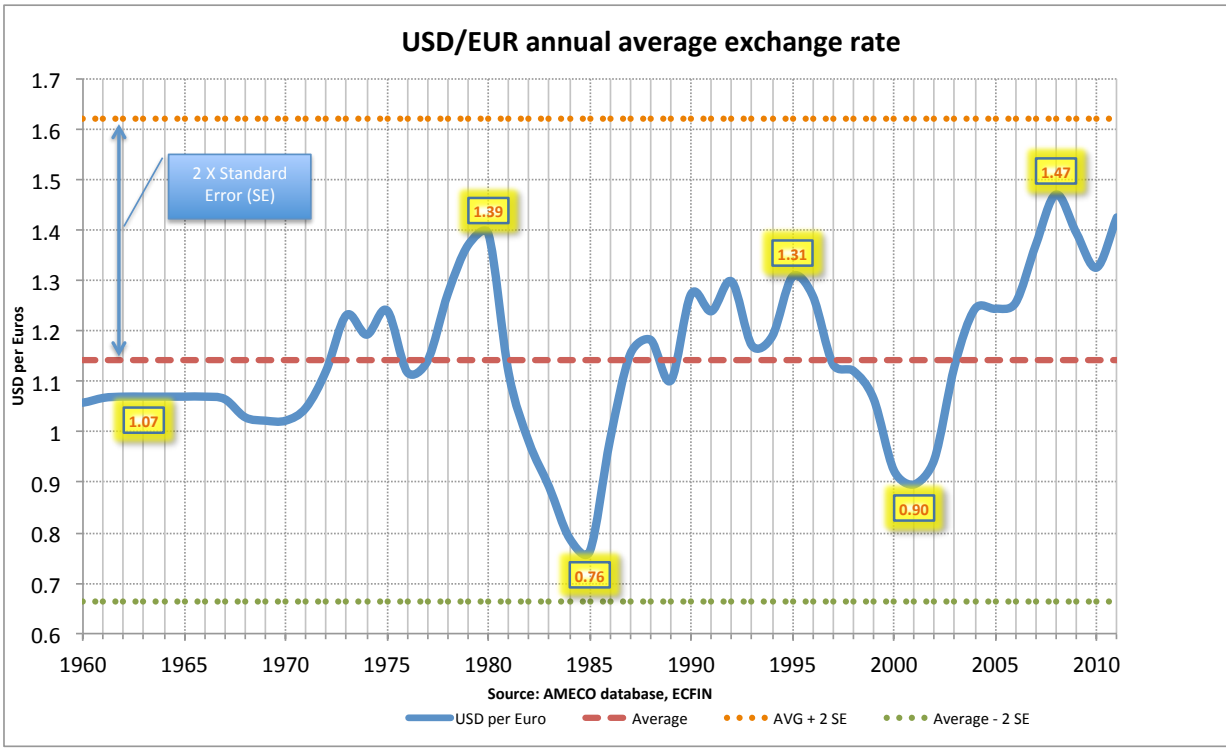
In a structuralist perspective, Lance Taylor (2004) used a variant of the closed economy two-country framework of Godley (1999) to develop a complete stock-flow "world" model where interest rates are determined endogenously and exchange rates are fully indeterminate. As noted in Godley and Lavoie (2007, p. 460, fn. 10), this conclusion is reached with a closure of the model in terms of uncovered interest parity, a hypothesis that Taylor recognizes not to fit the data very well.

In principle when complete stock-flow models are closed by the exchange rate rather than by an uncovered interest parity condition they are determined[3]. However, in this case exchange rates are determined at the intersection of all the net demands for foreign financial and fixed assets as well ad foreign goods. If uncertainty is introduced, even if it is determined, the price of the foreign currency in terms of the own currency may fail to have a stable equilibrium value, like it is the case for the price of many other financial assets[4]. This can be rationalized either in terms of the more radical non-ergodicity principle of Davidson (1982-83), in terms of "eductive instability" of rational expectations equilibria (Guesnerie, 2001 and 2005) or in terms of stability of expectations but convergence towards unexplained and exogenously determined moving conventions (Orlean, 1998). Being unforeseeable because depending on conventions, unstable expectations or non-

[3] The author is grateful to Marc Lavoie for clarification on this point.
[4] Whose returns went for many years well beyond reasonable levels even when adjusted for inflation, indicating excessive real returns . For the nineties, see for instance Aglietta, 2001, p. 37, Table XI.

ergodic factors, the exchange rate is subject to manipulation by private speculation of international capital flows and/or strategic policy manipulation (Estachy, 2010), and it is unlikely to settle at the parity where, for instance, the comparative cost theory would require it to be, thus rendering virtually impossible the achievement of the gains from trade.

It is true that Bénassy-Quéré, Béreau and Mignon (2008) argue that it is possible to define some empirically based equilibrium concepts for the exchange rates, in particular for the Euro-dollar rate. However results obtained show that based on medium-long term equilibrium concepts, at end 2005 the misalignment between the Euro and the USD would have been comprised between an overvaluation of 4.7% and an undervaluation of 67% according to the method used. On this basis, taking into consideration the 14% real exchange rate appreciation that took place between 2005 and 2007, the authors find that at end 2007 the equilibrium exchange USD/EUR rate would be comprised between 1.15 and 2.22 according to the method used (Table 9, p. 31), whereas the long-run Purchasing Power Parity would be comprised between 1.04 and 1.10 (Table 1 page 15). Since no method is obviously better than another, it is not surprising that it is hard to obtain reasonable econometric predictions of the exchange rates, as acknowledged also in Bénassy-Quéré (2002). In any case, looking at the chart of the long-term average exchange rate USD/EUR, whatever the fundamentals considered, the turning points in the chart can hardly be explained in terms of reversal of the fundamentals between the European and American economies, which cannot have shifted 5 times since 1973.



1.2 Implications for the external constraint in large and small economies

The comparative advantage doctrine assumes that exchange rates would set at the level where they equate the price of internationally traded goods taking into account productivity differences. In the model, as originally developed, there are no internationally traded

financial assets. If exchange rates can deviate durably from this equilibrium value, obviously the benefits of trade deriving from the working of comparative advantages can not apply. Indeed Keynes rejected the conventional approach to international trade (Milberg, 2002). But the rejection of the comparative advantage theory doesn't mean that the external constraint becomes automatically a reality, at least not for all countries.

In fact for large countries having a reserve currency the relevance of the foreign constraint can be expected to be limited. Galbraith, Giovannoni and Russo (2007)'s results show that the Fed's reaction function does not depend on inflation. This implies indirectly that for the US there is no external constraint, since it means that interest rates are fully exogenous and can be set by the FED independently from external factors such as foreign interest rates or imported inflation through the exchange rate channel. However, the result may be the effect of the special position of the US in the international payments system. As pointed out by Triffin (1960) with reference to the Bretton Woods system, the special position of the US as supplier of the only reserve currency convertible into gold, implied that they had to run an increasing current account deficit to satisfy the needs for international liquidity connected with the growth of world's payments (see also Taylor, 2010, pp. 309-10). After the collapse of the Bretton Woods system, the USD was not anymore convertible into gold, but it remained the main international reserve currency. Accordingly, the US still had to run a current account deficit for the same reason. Indeed in his last book Basil Moore (2006b) argues that the US' "free lunch" continued under the post-1973 regime of free or managed flexible exchange rates, which he sees as a positive thing because in this way the US created enough demand at world level to support overall growth.

At first sight the results of Galbraith et al. (2007) seem to confirm Alain Parguez's position, shared also by other "horizontalists", that under free floating exchange rates the external constraint does not exist. However, strictly speaking this is acceptable only when referring to the US, because for non reserve currency countries the relevance of the foreign constraint persists even under free floating. For instance Moore presents some econometric evidence that shows that both what he calls the Bank Rate (the rate set by the Central Bank) and the GDP growth, depend negatively from two variables he takes as indicative of the external constraint: the ratio of foreign exchange reserves to imports and the ratio of the current account balance to imports (2006b, p. 432). This result is obtained with regressions covering the 20 years period 1980—2000 for 50 countries (LCD and non-LCD). R squares are low, but this should not impact on the significance levels of the signs obtained.

The idea behind these regressions is that in countries without international reserve currency Central Banks keep interest high and activity below the full-employment level to avoid a depreciation of the exchange rate, which would feed domestic inflation[5]. Moore is thus amongst those post-Keynesians who believe that the external constraint can be binding even in a monetary economy and under flexible exchange rates.

Putting aside the issue of the international reserve character of the currency, it is possible to illustrate the effect of the degree of openness of an economy on the conduct of its anti-

[5] In terms of the Godley Lavoie models discussed below in 1.4, for these countries the closing international variable is necessarily the interest rate.

inflation policy by inserting the external sector into the price equation. This can be done starting from the national accounting identity of the goods and services account, which can be written in real terms:

$$X + TLS + M = IC + C + I + E \quad (1)$$

where:

X	=	Domestic output
TLS	=	Taxes less subsidies on products
M	=	Total imports of goods and services (intermediate + final)
IC	=	Intermediate Consumption
C	=	Final Consumption
I	=	Gross Fixed Capital Formation including change in inventories
E	=	Exports of goods and services (intermediate + final)

Taking p_X as the price of domestic output, p_M as the price of imports, $p=p_{IC}=p_C=p_I=p_E$ as the level of internal prices, assumed equal for all components of demand, and simplifying by taking TLS=0, in nominal terms the identity becomes:

$$p_X X + p_M M = p(IC + C + I + E) \quad (2)$$

Dividing by total supply in real terms X+M:

$$p = p_X \frac{X}{X+M} + p_M \frac{M}{X+M} \quad (3)$$

and defining the import or openness ratio as:

$$OR = \frac{M}{X+M} \quad (4)$$

(3) becomes:

$$p = p_X (1 - OR) + p_M OR \quad (5)$$

which shows that the openness ratio weights the impact of import prices on internal prices. The above definition of the openness rate is not used often. What is more frequently calculated is the import ratio $m = \frac{M}{GDP}$. The relation with the openness ratio as defined above can be seen assuming a fixed ratio s between intermediate consumption and GDP, which ban be shown to bring to:

$$\begin{aligned} m &= (s+1)\frac{OR}{1-OR} \\ M &= \frac{OR(s+1)}{1+sOR}(C+I+E) \end{aligned} \quad (6)$$

Import prices are the product of foreign prices by the exchange rate $p_M=ep_F$, which implies that also the exchange rate movements impact on internal prices in proportion to the openness rate. If the exchange rate is the only variable that changes:

$$p = p_X (1 - OR) + e p_F OR \quad \rightarrow \quad \Delta p = OR \Delta p_M = OR p_F \Delta e \quad (7)$$

For a continental economy such as the US or the EU, with an openness rate of the order of 10%, an exchange rate depreciation of 30%, increases internal prices by 3%. For a middle-sized non-Euro zone European economy, with an openness ratio of the order of 30% the impact is 9%, whereas for a small economy with an openness ratio of 60% the impact is 18%.

Of course the true impact of the exchange rate on prices will depend also from the price elasticities of exports and imports according to the well-known Marshall-Lerner conditions, but the point is that all other things equal the more a country is small, the more the import or openness ratio is high, the more a variation in the exchange rate will translate into internal prices. Pure free floating of the exchange is thus not a solution to insulate a small or middle-sized national economy from the rest of the world as long as exchange rates can be driven by factors differing from the "fundamentals" implicit in the comparative advantage doctrine. In this case, which, as discussed in the previous section, can be considered likely either because the exchange rate is indeterminate (Taylor, 2004) or because it is subject to asset portfolio adjustment resulting in unstable prices, if a country is small or middle sized, the foreign constraint binds also under free floating of the exchange rate. Indeed Moore (2006a) favors a single world currency, following the logic of Keynes proposals for an International Clearing Union.

1.3 An argument for fixed exchange rates based on the Employer of Last Resource theory

One of the reasons why exchange rates do not have equilibrium values to which they converge is that once currencies are dematerialized, there is no obvious anchor for their value. However, if one accepts the theory of the State as Employer of Last Resort (Wray, 1997) a natural anchor that is consistent with Parguez (2009, unpublished) concept of full employment equilibrium exchange rate is the value of one hour of work. The ELR theory asserts that to achieve full employment the State must hire each person willing to work at a price w_i per hour (see also Mosler, 2010). The currency unit can then be defined as a fraction of the working hour.

$$hl_i = \textit{One hour of work in country } i \qquad cu_i = \textit{currency unit of } i \qquad w_i = \textit{wage of } i$$

$$w_i = hl_i \quad \rightarrow \quad 1cu_i = \frac{1}{w_i} = \frac{1}{hl_i}$$

In that case it is clear on ethical grounds and true in static and stationary terms that:

$$hl_i = hl_j \qquad \forall\ i, j$$

.

A correction could be introduced if the starting conditions are different because of different productivities:

$$hl_i = \alpha hl_j \qquad 0 < \alpha < 1$$

.

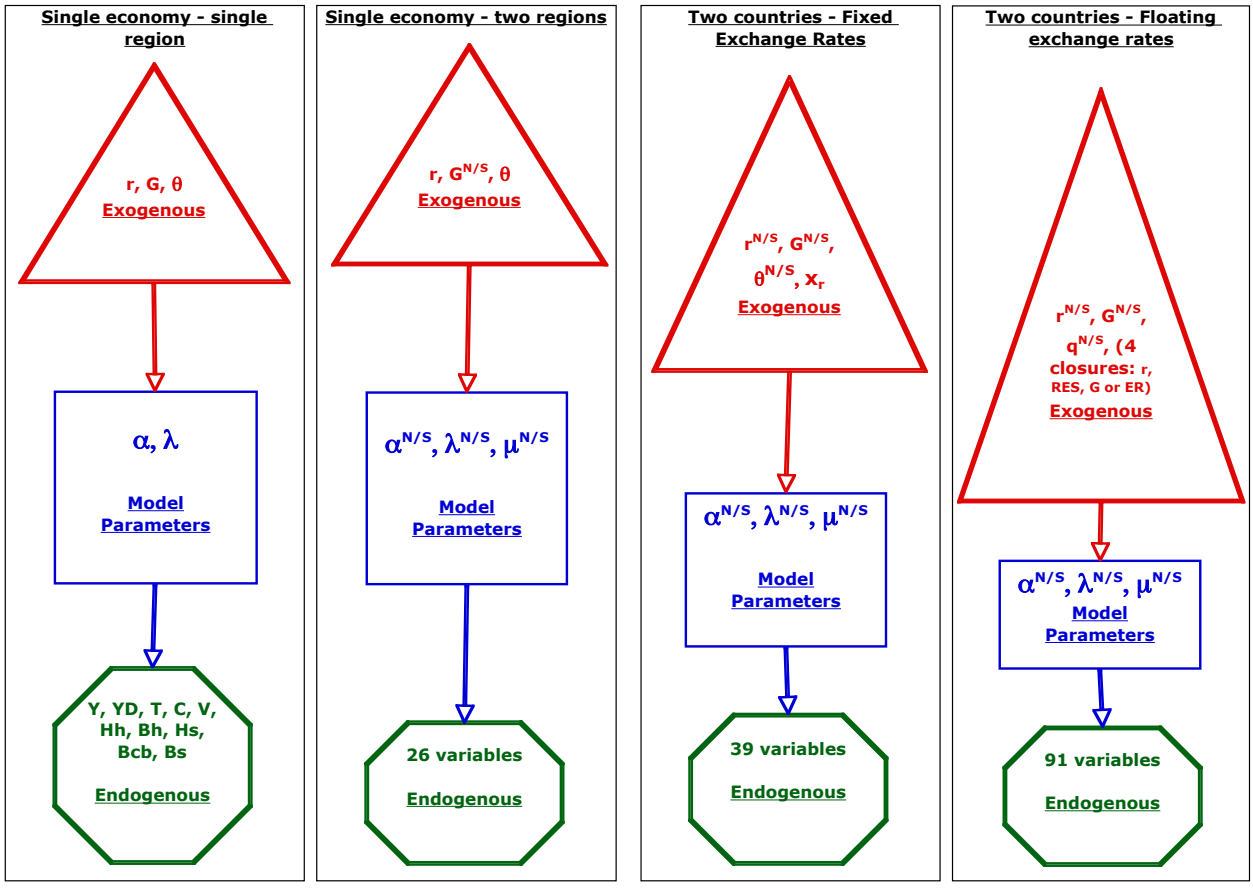
In any case in a stationary state, the exchange rates would be constant[6], either:

[6] Instead if one takes the spot exchange rate as indicative of its equilibrium value, according to this interpretation one hour of European labour would have been worth 0,76 hours of American labor in 1985 and 1.47 in 2007, having meanwhile fluctuated between 1.31 in 1995 and 0.9 in 2001. The same calculation could be done with a square meter of residential construction.

$$cu_i = cu_j \quad or \quad cu_i = \alpha cu_j, \quad with\ \alpha\ fixed$$

1.4 The stabilizing role of fiscal policy to correct regional imbalances in a regionally integrated area

Godley and Lavoie (2007) have developed a series of complete stock-flow models of increasing complexity that help understanding the potential stabilizing role of fiscal policy in a regionally integrated area governed by fixed exchange rates. These are summarized graphically in the chart below. The authors start from the simplest possible Keynesian model incorporating some features of the monetary circuit (first box on the left). In this model, which represents a single closed economy only private and public consumption are present. Households have the choice between holding two types of assets: money and State bonds. Their decision parameters α and λ govern their consumption and saving behavior. The exogenous economic policy variables are the rate of interest r, public expenditure G and the tax rate θ.



The first complication introduced by the authors in this simple model, is to divide the closed economy into two regions. As illustrated in the second box below, in that case public expenditures are differentiated between the two regions (North and South). Households are also differentiated in their parametric behavior between the two regions. This time an additional behavioral parameter is introduced: the import propensity μ, again differentiated between the two regions. Tax policy remains uniform across the country (θ) and the same is true for monetary policy (r). In this second model, in case of a current account imbalance between the two regions, the Government reestablishes immediately

the equilibrium by increasing its expenditures in the region where income has declined because of higher imports. As in the previous model the Government finances its expenditures by selling all the debt that households are ready to take at the prevailing interest rate and the rest is bought by the Central Bank and held as liquid assets by households.

The third model is very similar to the second, but the two regions become two countries with different currencies linked by a fixed exchange rate x_r. The difference with the previous model is that now also monetary policy and tax policy are distinguished between the North and the South. As in the previous model, a current account imbalance implies a deficit or surplus for the State in the relevant country (twin deficit). In this case, as in the Bretton Woods system, the country that runs the deficit can only finance it until it keeps a certain stock of international reserves, assumed to be given here by the currency of the Northern country. A balancing similar to that prevailing in the previous model is possible if the Central Bank of the Northern (surplus) country is ready to acquire all debt issued by the Southern State. In the previous model the situation was similar, but was not apparent since there was a single central bank. The situation described by this model fits well to the present European situation, where in fact there is no proper EU central bank (Heinsohn and Steiger, 2011) and the system works as a system of fixed exchange rate, thus being inherently unstable.

The fourth model introduces flexible exchange rates. In this case the external block can be closed by 4 different alternative endogenous variables: floating exchange rates, external reserves, interest rates and fiscal policy. Simulations of the model show that the only potentially stabilizing ones are the floating exchange rates and fiscal policy, because increasing interest rates are destabilizing and external reserves can only play a balancing role until they are exhausted. This illustrates the present impasse of the EU Southern periphery in this incomplete phase of EU integration, where, apart from Euro exit, the only choice offered to deficit countries is fiscal deflation. If the EU was a true Monetary Union and not a complex system of fixed exchange rates, with a sizeable federal budget, the automatic balancing working in the second model would obviously apply. Therefore the solution to present problems is to go further in EU integration by defining a true federal budget able to compensate for regional productivity differences. One can note that in principle the balancing solution offered by the second model could also be achieved by economic policy cooperation, so it can apply to a regionally integrated area where Governments decide to cooperate.

1.5 Conclusion:

In conclusion one might retain that in an area composed of small regional economies integrated by close trade links between each other it is preferable to have exchange rates fixed, with the possibility open for some adjustment. In these cases, fiscal policy should compensate for trade disequilibria, either by the establishment of a federal budget or by a mechanisms of policy coordination that achieves the same objective.

2. Dynamic analysis: the multiplier, the accelerator and the realization of profits in the monetary circuit

Emphasizing the difference between static and dynamic analysis, Robinson (1956, 1962 and 1974) argued that neoclassical theory can be associated to equilibrium and logical time, whereas post Keynesian analysis works in historical time, where equilibria are path-dependent (Dutt, 2005). For the purposes of the present text, it is however more convenient to broaden this distinction contrasting logical (or abstract) time to chronological (or calendar) time. In this perspective, the notion of logical time covers both stationary (or static) and historical/sequential (or dynamic) time[7], whereas chronological time refers to the actual time where one lives, where accounts are drawn and where economic policy errors are made. Since economic models are defined in logical time, while economic policy is decided and exerts its effects in calendar time, it is obviously important to clarify the relations between the two concepts. For instance the multiplier, which quantifies the impact of an exogenous variable on an endogenous variable (Artus, Deleau, Malgrange, 1986, pp. 123-130) is defined in general in logical time. If the exogenous variable represents a policy instrument, its effect on the endogenous target variable through the multiplier must be translated in calendar time before one can draw policy relevant conclusions.

Since in this paper the argument built in favour of economic policy coordination is based on the foreign trade multiplier, the discussion of the above is of interest for the conclusions proposed. As argued in some more detail below, in logical time the multiplier represents a sectoral equilibrium condition, in calendar time, when associated with the notion of accelerator and coupled with autonomous demand, the multiplier captures what neoclassical analysis would qualify as a disequilibrium phenomenon. The latter is fact a dynamic equilibrium, which diverges from the related static or stationary equilibrium. These distinctions are of relevance when assessing the value of the multiplier in monetary model inspired from the theory of the circuit[8].

2.1 The "static" concept of multiplier as condition for balanced growth

Paraphrasing Samuelson (1983 [1947]), Frisch (1936) and Hicks(1985), static analysis can be defined as the field where time indices are suppressed. In a model freed from time indexes, the multiplier appears as an equilibrium condition for balanced growth at sectoral level. A stationary equilibrium corresponds to a solution of a dynamic model where all variables remain constant and generalizes the notion of static equilibrium (Pigou, 1943). In such an equilibrium the combination of the multiplier and the accelerator defines a macroeconomic condition for steady growth Domar (1946), notwithstanding the fact that the notion of accelerator implies by definition to use at least one time lag, that would in turn make the analysis dynamic according to the criteria stated above.

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[7] From this point of view, the notion of "quantic time " introduced by Schmitt (1984) would also fall under logical time.

[8] These distinctions were perfectly clear to the participants to the economic debate in the "years of high theory", see for instance Vernengo (2001) for what concerns Keynes and Sraffa and Hansson (1982) for von Hayek and other writings appeared first mainly in German, such as those of the Swedish school. The argument is a logical consequence of the very strict conditions required for a correspondence between intertemporal and temporary equilibrium, which basically imply an assumption of rational expectations.

The interpretation of the multiplier as an equilibrium proportion between the consumption and the investment sector was stressed recently by Hartwig (2004, 2008). For him, the multiplier gives the condition for reproduction of a two sectors' economy, and can be interpreted in terms of effective demand, somewhat at the intersection between Marx and Keynes, along the lines of Robinson and Bhaduri (1980). If I is net investment, B consumption, and b the marginal propensity to consume, the condition for reproduction of the two sectors (or "departments") is:

$$B = \frac{b}{1-b} I$$

As underlined by Trigg (2006, p. 16), the above relation shows the link between the scalar and the 2 sectors Keynesian multiplier. Trigg and Lee (2005) have further generalized this idea and derived a fully multisectoral multiplier from Pasinetti's exposition of the concept of effective demand in terms of vertically integrated sectors (see also Trigg, 2006, p.19). The multiplier relation they obtain can be written:

$$nQ = \frac{1}{1-nc} nM$$

n = *Vector (1 x m) vector of vertically integrated coefficients*

Q = *Vector (m x 1) Output of consumption sector*

c = *Vector (m x 1) Output of consumption coefficients*

M = *Vector (m x 1) Output of investment sector*

The multisectoral multiplier links the labor required to produce investment goods (nM) and total labour employed (nQ). It is expressed in terms of vertically integrated sectors and has a form close to the original employment multiplier derived by Khan[9], with the scalar nc equal to the propensity to consume derived from a two department scheme inspired from the Leontief model. This relation can also be given an interpretation in terms of Marxian reproduction schemes, as developed in more detail in Trigg (2006).

2.2 The "dynamic" concept of multiplier as a causal link out of equilibrium

In the General Theory the multiplier is defined with reference to the marginal propensity to consume in a closed economy and is equal to the inverse of the saving propensity (i.e. the complement of the propensity to consume to 1). The multiplier measures the increase in aggregate income measured in wage units that follows an increase in net investment of one unit.

For Keynes the above definition refers to the logical theory of the multiplier, which "holds good continuously, without time-lag, at all moments of time" (Keynes (2010 [1936], p. 102). It is an equilibrium relation assuming that the increase in consumption consequent to an increase in investment was correctly anticipated by the industries producing consumption goods. Besides this logical concept, in reality the "consequences of an expansion in the

[9] In his famous seminal paper, Kahn (1972, [1931], p. 12) defined the employment multiplier as the ratio of secondary employment to primary employment. As discussed in the next paragraph, Keynes defines the multiplier in terms of investment. Assuming as Keynes did, that investment and employment multipliers coincide and that the supply of consumption goods is perfectly elastic, the multiplier of Keynes is equal to the ratio of total employment (primary plus secondary) to primary employment and is thus slightly different from that of Kahn.

capital-goods industries" … "take gradual effect", are "subject to time-lag and" intervene "only after an interval" (ibid).

As emphasized by Chick (1997, p.166-167), in addition to an equilibrium concept, the multiplier can thus be viewed also as the result of a process occurring in sequential time: "equilibrium relations are the culmination of causal forces", which can only "come into play, however, when the multiplier takes its dynamic form". This dynamic process obviously develops in time. Although Keynes did not enter too much into these details, according to Chick (1997, p. 166 and 180) the "logical time" of the equilibrium interpretation of the multiplier is not far from the concept of logical time developed by Joan Robinson (1962, chapter 2, pp. 23-29). This implies indirectly that Keynes' "process" multiplier develops into something not far from Robinson's "historical time", although Chick does not refer to the latter concept in her discussion.

Samuelson (1966, [1939a] and [1939b], [1943]) followed Hansen in linking the multiplier to the (linear) accelerator of investment in a dynamic setting, i.e. to the further effects of private investment induced by an initial injection of public expenditure. Samuelson (1972 [1970]) underlined the "non-equilibrium" nature of the multiplier in the lecture he gave on the occasion of receiving the prize of the Bank of Sweden in memory of Alfred Nobel:

> *"… the accelerator-multiplier … provides a typical example of a dynamic system that can in no useful sense be related to a maximum problem."*

The two way causal relationship between investment and income implicit in the interaction between the multiplier and the accelerator is also the main mechanism at play in the concept of super-multiplier developed by Hicks (1961 [1950]). When investment is autonomous (one would be tempted to say "an innovation" in modern econometric jargon), both the accelerator and the multiplier are "processes" that intervene in historical time, out of the equilibrium prevailing by assumption in logical time.

Goodwin (1994) also looked at Kahn's, multiplier during the adjustment process towards the equilibrium between investment and savings, i.e. as a disequilibrium process. For him, Kahn:

> *"formulated a precise, dynamic, sequential analysis of the successive behaviour of demand in consequence of given exogenous expenditure, whether investment or net public outlay or net foreign balance. By contrast, endogenous expenditure is the demand directly generated by current production and consumer spending out of receipts. Keynes, whilst giving adequate credit to Kahn for the discovery of this absolutely central concept, unfortunately used only the final level, or stationary fixed point, of the process and called it the multiplier. But in fact it is not a simple multiplier; there is no way that demand and output can be instantaneously shifted to a higher or lower level." (p. 73)*

The disequilibrium nature of the process is seen also in the interaction between the multiplier and a nonlinear accelerator (Goodwin, 1951).

2.3 Distributional aspects of the multiplier

Whether the multiplier is viewed as a short-term or long-term equilibrium or disequilibrium process, it has a distributional dimension. To be precise, the multiplier seen as a condition for balanced sectoral growth assumes constant distribution between wages and profits, whereas in a disequilibrium interpretation it reflects and is influenced by the interactions and feedbacks with distributional changes out of equilibrium.

Kalecki was another great precursor of the multiplier concept. He envisaged its study in connection with a theory of distribution that was retained also by the monetary circuit approach discussed below and is thus worth discussing in some detail. For Kalecki the multiplier depends on expected profits. To illustrate this point, one could start from the equality between expenditure and revenues distributed in a closed economy without State:

$$Y = C + I = W + \Pi$$

In this case W represents all wages paid to workers, including those working for the production of capital goods. ∏ is profits, C workers' consumption, I includes both expected net investment and capitalist consumption C_k. If workers do not save, expected profits are equal to net investment and capitalist consumption. Let's define the share of profits in value added as e. Obviously the share of wages is then ω=1-e and its inverse gives the multiplier:

$$e = \frac{\Pi}{Y} \quad \rightarrow \quad w = \frac{W}{Y} = \frac{Y - \Pi}{Y} = 1 - e$$

$$\begin{cases} \Pi = C_k + I \\ Y - W = \Pi \end{cases} \rightarrow Y - W = C_k + I \rightarrow 1 - \omega = \frac{C_k + I}{Y}$$

$$Y = \frac{C_k + I}{1 - \omega}$$

The inverse of the share of profits expresses the multiplier of expected profits on income. Since the decision variable for enterprises is the level of investment including capitalistic consumption (or under the retained assumption that households do not save, the level of expected profits), this variable can be marked with a hat. Capitalistic consumption can be distinguished in a part A that is autonomous and a part which depends on the revenues of capitalists Π, through a linear parameter λ, which is the propensity to consume out of profits. The multiplier can thus be further specified as:

$$\hat{P} = C_k + I = A + \lambda \hat{P} + I \rightarrow \hat{P} = \frac{A + I}{\lambda}$$

$$Y = \frac{\hat{\Pi}}{e} = \frac{A + I}{e\lambda}$$

The logic of Kalecki's multiplier is that effective demand, i.e. expected profits (that are going to fully finance investment and capitalistic consumption) will determine the level of income given its expected distribution given by e, which depends on the mark-up (cf. Parguez, 2008, (rel. 11) p. 56 and Lopez and Assous, 2010, (rel. 2.2) p. 30).

The formulation of the multiplier based on Kalecki's theory of profit draws attention to the importance of distribution for the magnitude of the multiplier. Although originally established in a one sector macroeconomic model it can be xtended in multisectoral models. It is noteworthy that whereas some of the conclusions of the one sector multiplier do not extend in a multisectoral framework, the dependence of the multiplier on distribution does, as shown for instance in a Sraffian interpretation of the multisectoral multiplier of Kurz (1985). A detailed discussion of the links of the Keynesian, Leontief; Kalecki's and Harrod multipliers with the distribution parameters are discussed in Miyazawa (1976) in a multisectoral setting (see also Triggs, 2006).

One can note that the Kalecki formulation of the multiplier, seen in a one sector macroeconomic model that includes also the external sector, reveals the narrow limits of competitive deflation policies. Following the annex of chapter 7 of Lopez and Assous (2010, pp. 172-173), dedicated to "Kalecki's Open Economy Macroeconomics", separating capitalistic consumption from investment, in an open economy without State the Kalecki's identity becomes:

$$\Pi = I + C_k + (X - M)$$

If k is the fix mark-up of prices on cost, W are wages and MP material costs, profits Π are given by (idem, p.70):

$$\Pi = (k-1)(W + MP)$$

domestic income is thus:

$$Y = \Pi + W = (k-1)(W + MP) + W$$

Noting j=MP/W for the ratio of material cost to the wage bill and k>1 the degree of monopoly or the rate of aggregate proceeds over aggregate prime costs, also equal to the ratio of average prices to average prime costs. The share of wages ω (ω≤1) in total income can be then expressed by:

$$\omega = \frac{W}{W + (k-1)(W + MP)} = \frac{1}{1 + (k-1)(j+1)}$$

It is clear from the expression for the share of wages that when nominal wages fall, the ratio of materials j to the wage bill will rise. The degree of monopoly k is also likely to rise. Then the share of wages ω is also likely to decrease.

If p is the price charged by firm, u is the unit prime costs, p' is the weighted average of prices in industry:

$$p = mu + np'$$

$$k = \frac{p}{u} = m + n\frac{p'}{p}$$

The Kalecki multiplier relation in the open economy is:

$$Y = \frac{P}{1-w} = \frac{P}{e} = \frac{I + C_k + (X - M)}{e}$$

where e is the profit share (e=1-ω). This shows that the effect of an autonomous increase in net external demand (X-M) will be higher the lower the profit share. Competitive deflation policies aim at decreasing domestic wages and costs and gain export market shares. If the Marshall Lerner conditions are fulfilled, they improve the balance of payments surplus X-M in the numerator of the Kalecki open economy multiplier. However, independently from the Marshall Lerner conditions necessary for a positive effect on the export surplus, the fall in the wage share ω can offset any potentially positive favorable current account effect. In this case, reducing wages do not have beneficial effects on domestic income, as it reduces the value of the multiplier for a given level of effective demand.

The suitability of wage austerity policies, presented often as an unpleasant but necessary consequence of globalization, can thus not be taken for granted even in an open economy. The reason is that the profit share is likely to increase as a result of a decline in nominal wages, reinforcing though the multiplier the deflationary impact of the initial wage modulation. The condition for successful mercantilistic policies is the combination between an undervaluation of the exchange rate and absolute productivity advantages. Together these ensure that the price elasticities offset the negative effects of deflation on income distribution.

As noted by Trigg (2006 p. 29), Kalecki's multiplier is also closely linked to Marx's reproduction scheme. It can also be translated in terms of an input-output model, clarifying the links with intersectoral multipliers such as those developed by Miyazawa (1976). In the same vein, Trigg and Phlips (2008) have also show the relation between the marxian concept of surplus value and Kahn's employment multiplier.

2.4 The multiplier and the realization of profits in the monetary circuit

2.4.1 Sequential time and single period vs. continuation analysis: The circuit develops Keynes' fundamental idea that in a monetary production economy money exists to satisfy the needs of production to transmit value to future periods, in a context where time is historical or sequential and fundamental uncertainty prevails. Money is therefore closely linked to the production cycle. During the "efflux phase" it is issued to create revenues, and in the "reflux phase", the revenues are spent and the money is destroyed. Money is thus created before the start of the production period based on the expectations of entrepreneurs and is destroyed in part or totally when the production period is finished and expectations are confronted with actual outcomes.

As noted by Hansson (1982) for Myrdal (1927), a fully dynamic temporary equilibrium analysis including expectations amongst the starting conditions, should be composed of a sequence of a "single period analysis", followed by a "continuation analysis". To streamline the argument and bring out its essential points, the texts that first developed the monetary circuit focused only on the single period, without entering into continuation analysis. This single period can be interpreted as a static (or stationary equilibrium), in which time plays *de facto* no role, or it can be taken as the starting point of a sequence to be completed by continuation analysis, which would set the basis for a true "dynamic" analysis[10]. Two main concepts of time are retained in this perspective in the circuit literature:

i) Historical, dynamic or sequential time in the tradition of Joan Robinson (1962 p. 23), for instance in authors such as Parguez and Graziani.
ii) Quantic time, a concept defined by Schmitt.

Static, dynamic or quantic concepts of time can be seen as abstractions that fall under the general heading of "logical time" and the circuit can be given an interpretation in terms of any of the above concepts. To compare the above variants of the monetary circuit, "logical time" can be transposed into chronological or calendar time. Clearly, when one tries to use

[10] Where money balances can be positive at the end of any period.

the theoretical model of the circuit in applied analyses, the relation of logical time to chronological or calendar time is of relevance. For instance, as discussed in Vallageas (2011 forthcoming, ch 6 and 7), since most data is observed during a precise accounting period, once the latter is defined, one should enquire about its boundaries and how they relate to those of the logical concepts of time defined for the theoretical model.

It is generally assumed, for the sake of generality, that the single period of the circuit starts at an instant 0 when no previous production has taken place and no assets nor liabilities have been carried out from previous periods[11]. The instant of time when the circuit ends, which defines its "closure", can then be chosen to be either as the instant:

i) when production finishes;
ii) when consumption has taken place; or,
iii) when all money created for production purposes has been destroyed;

with the possibility that some of all of these instants could coincide, like in Parguez (1980, pp. 436-437), where they are taken to be all the same. Therefore, when the accounting period is defined in calendar time, it can coincide with the sigle period's:

i) production time
ii) consumption time
iii) the time necessary for the destruction of all money created.

Obviously, depending on the choice between the three alternatives above, at the end of the accounting period there will be different types of assets and/or liabilities accumulated in the balance sheet of the (institutional) sectors or "social classes" composing the economy, which for simplicity can be taken to be the firms (who produce), the households (who consume and work) and the banking sector (which creates money). More precisely:

i) at the end of the production period firms have accumulated stocks of finished goods but have not necessarily sold them, so they have still in their liabilities the full amount borrowed from banks at the beginning of the production period. As a counterpart of the firms' liabilities to banks, households have a liquid financial asset corresponding to the revenues paid but not yet consumed. The banking sector has claims and liabilities on both sectors of the economy, corresponding to the total of the revenues produced.

ii) at the end of the consumption period the situation is different: if they have not consumed all their revenues, household keep some monetary balances or some financial assets, while enterprises are indebted to households and banks for the corresponding amounts. The banking sector balance sheet is still positive, with total claims and liabilities corresponding to the part of the revenues initially created not yet consumed.

iii) when all revenue produced has been consumed, if the economy is not in a stationary zero investment equilibrium, the enterprises find themselves with a physical asset accumulated that corresponds to their net fixed investment, the property of which could be partly shared with households. It is only at this time that

[11] A notable exception is Vallageas, (2011, forthcoming), who considers the case where the circuit starts with a loan taken by households to purchase a production already realized.

> the banking sector balance sheet comes back to zero because enterprises have already paid back all debts to them.

These positions can either be assumed to be replicated *ad infinitum*, in which case the single period of the circuit can be interpreted as a stationary equilibrium with constant rate of investment, or as the starting period of a continuation analysis to be developed.

Closing the circuit at any of the above instants implies different configurations of net assets and liabilities for the three agents considered by the canonical version of the model. Whereas conceptually the periods of production, consumption, revenue and money existence from its creation to its destruction can coincide in logical time (Parguez, 1980), this is less obvious in chronological time. For instance, if the accounting period is taken to be the year, all investment goods that take more than one year to be built are not finished at the end of the period (infrastructure for instance) and of course even less consumed. Similarly, even if it is produced within the yearly accounting period, a physical asset with a life exceeding one year, will not be fully consumed. In all these cases money balances held by consumers can be positive, the temporary equilibrium thus obtained can be in any relation with to the intertemporal equilibrium that must prevail on the optimal path.

This illustrates one of the possible sources of confusion in the interpretation of the circuit when the latter is identified with the single period of a sequence analysis. In this case a number of problems seem to arise, which are in fact for a large part non-issues. These include questions such as the "closure" of the circuit (if the circuit is not completely closed then there is "crisis"), the issue of the payment of interests (how could they be paid?) and that of the payment of profits (are profits realized in money or not?).

2.4.2 Schmitt and the multiplier: Interestingly for the purpose of the present argument, the question of the closure of the circuit has also implications for the definition of the multiplier, which, as noted by Schmitt (1971, p. 153), is closely linked to that of the realization of profits:

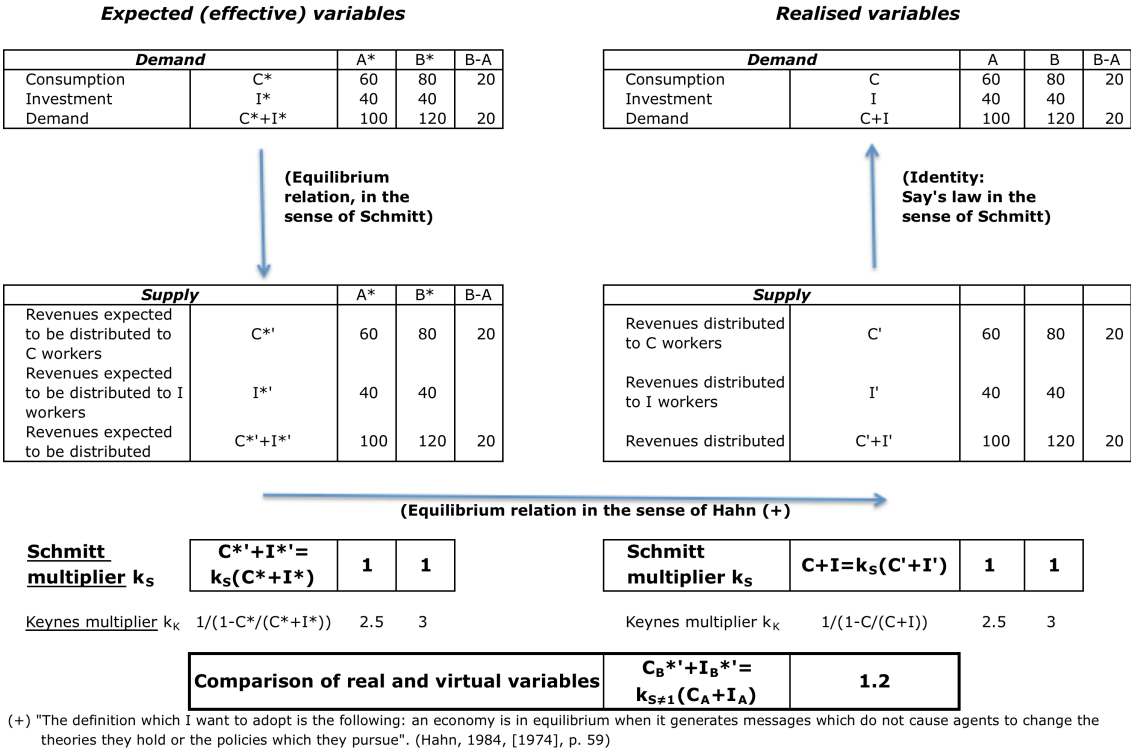
> *"La théorie du multiplicateur de Keynes paraît très éloignée du problème des profit-surplus. En réalité la parenté entre les deux domaines est étroite". (1971, p. 153)*

Indeed Schmitt developed his original analyses of the circuit starting from a reflection on the concept of multiplier (Schmitt, 1960, 1971 and 1972), which for him is either an equilibrium phenomenon or an identity (De Gottardi, 2000), which is true in the sphere of virtual variables as well as in that of real variables. Virtual variables reflect a mental process in which projected demand is equal to projected supply, actual variables are the result of an equalization of actual monetary demand to actual monetary supply. If virtual variables are marked with a "*" and realized ones without superscript, C is the value of consumption, I the value of investment, C' the revenue distributed in the consumption sector and I' the revenues distributed in the capital goods sector:

$$Y^* = C^{*\prime} + I^{*\prime} = k\left(C^* + I^*\right), \quad k_S = 1 \quad \textit{virtual variables}$$
$$Y = C + I = k\left(C' + I\right)', \qquad k_S = 1 \quad \textit{realised variables}$$

In virtual terms, total revenues that are expected to be distributed are equal to expected demand. Causality goes from demand to supply (from investment to savings) and the relation is an equilibrium relation. In the field of real (realised) variables demand is equal to

revenues distributed and the relation between investment and savings is an identity, where the causality goes from the supply of revenues to realized monetary demand (from savings to investment). In both cases the value of the multiplier is 1.



(+) "The definition which I want to adopt is the following: an economy is in equilibrium when it generates messages which do not cause agents to change the theories they hold or the policies which they pursue". (Hahn, 1984, [1974], p. 59)

The multiplier of Schmitt can be different from one only in a comparison between virtual and real variables[12]. The above diagram illustrates this idea graphically and numerically. If the realized level of income is the result of a real equilibrium "A", comparing this realized equilibrium to a virtual equilibrium "B*" with higher effective demand, the latter would obviously entail a higher level of revenue, which could be interpreted as the effect of the multiplier of higher "virtual" investments in circulating capital on revenue. Obviously, if one would compare the realized equilibrium B to the virtual equilibrium A*, one would still obtain a multiplier different from 1, while in both cases comparing expected and realized variables, (A* and A, B* and B) one would obtain a multiplier of 1. One can retain from this discussion that:

i) in the monetary circuit, all revenue created for undertaking production is included in the initial investment, not only that part that finances the production of "profit" (or investment) goods.

ii) hence, as noted by Schmitt (1971, notably ch. 4, pp. 73-107, and 1972, pp. 136-137), the important message of Keynes is not in the multiplier but in the multiplicand: a higher overall investment in fixed and circulating capital will generate a higher level of revenue. The Keynesian principle of effective demand, which pertains to the field of virtual variables is not invalidated but confirmed by the circuit:

> *"Il s'agit dès à présent de mettre l'accent sur le multiplicande, notion qui sauve totalement la théorie du multiplicateur, jusqu'à lui conférer une profondeur de signification encore plus grande" (1971, p. 105).*

[12] The author is grateful to Bernard Vallageas for clarification on this point.

"Si Keynes avait pu rester fidèle à son intuition, il aurait renoncé 'aux trous creusés dans le sol' et transformé la théorie du multiplicateur en théorie du multiplicande" (1971, p. 310).

iii) translated in calendar time, the model of Schmitt (1960, 1972), which was later defined theoretically in "quantic" time (Schmitt, 1984), implies an accounting period coinciding with the complete efflux-reflux period. In other words, it excludes a priori any possibility of hoarding money, in particular for entreprises.

2.4.2 Parguez and the multiplier: The possibility of positive hoarding is thus strongly linked with the possibility of the realization of profits in liquid form[13]. Indeed, in commenting Chick (1997, 2000), Parguez (2002b, 2008a) underlined that in the canonical model of the circuit, where all money is created by and for the private sector and is destroyed at the end of the period, the condition for the inter-temporal transmission of money, which is also the monetary condition for the existence of the Keynesian multiplier, is not fulfilled by definition, as all money must be destroyed at the end of the circuit period given that a strong reimbursement constraint is retained. To the extent that firms repay immediately the loans as soon as they accumulate cash, it is clear that monetary profits will never exist in the circuit. The only condition for the existence of profits realized in money in the canonical model without State and external sector, would be that household have positive hoarding. This would entail on the asset side of banks an immediate loan to enterprises, which by assumption they would use immediately to repay their debt, hence destroying the relevant liquidity.

The argument of Parguez points out that in a rigorous interpretation of the abstract theory of the circuit, described by the canonical model, where the production and the repayment period coincide, the multiplier cannot hold.

"It is therefore impossible for firms to retain profits in their monetary form under the initial assumptions of the multiplier theory. The non-existence of retained profits is the twin of the non-existence of hoarding. Here is the ultimate foundation of the demise of the multiplier: neither firms nor savers can foil the law of value, which enshrines the ephemeral nature of money." (Parguez, 2008a, p. 112)

In the same paper, Parguez modulates his position admitting the possibility of positive hoardings by firms if the State is in a permanent deficit or if the current account is in a permanent surplus. Retrospectively it appears however that the strict adherence of Parguez (2008a) to the canonical model of the circuit aims probably more at underlining the circuit criticism of the post Keynesian interpretation of the finance motive given by Chick (1997, 2000) and Davidson (1994, ch. 8, pp. 79-85; and, 2002, ch. 5 , pp. 87-103) amongst others, rather than anything else. Accordingly, the author would have chosen to remain within the limits of a stationary model of the circuit without investment to show why banks do not create money only for increased expenditures, as assumed by Chick and other "non-horizontalist" money endogeneists, but for the full financing of the entire production process as conceived initially by Schmitt (see also Parguez, 2008 and Graziani 1984, 1985a, 1987).

[13] Ee also Kregel (1988)

Indeed, Parguez (2008b) presents a one sector version of the Kaleckian model and derives an employment function which entails an expression of the multiplier of expected profits on employment. Let P(e,t) be expected profits for t and and r* the required rate of profit defined as the ratio of expected profits to labour income, the employment function is :

$$W_t = w_t N_t = \frac{1}{r*}\Pi_t^e \quad \rightarrow \quad N_t = \frac{1}{w_t r*}\Pi_t^e$$

W_t = *Wage bill*

w_t = *average wage*

N_t = *employment*

$r*$ = *target rate of profit*

P_t^e = *expected profits*

as noted by Parguez (2008b):

> *"1/r* plays the role of the employment multiplier to be substituted in a monetary economy for the Keynesian multiplier." (2008b, p. 56)*

Being defined as an inverse function of the required rate of profits, the above expression of the multiplier illustrates the Kaleckian link of the multiplier with distribution. As in the Kaleckian model, it is derived starting from the equality between the income and demand approach in the definition of national income. In a closed economy the latter says that the sum of consumption and investment must be equal to wages plus profits. In obvious notation: Y=C+I=W+Π. The derivation of this equilibrium relation might be seen as problematic if profits are not included from the beginning in the multiplicand, as noted by some authors that have discussed the issue. However, Schmitt definition of profits as a transfer (Schmitt, 1984; Bradley, 1993), admits implicitly the possibility that at the end of the circuit the second part of the above identity is respected in "the field of realized variables".

2.4.3 Vallageas' accounting approach to the monetary circuit: In the logic of the lucid and interesting accounting interpretation of the circuit proposed by Vallageas (2011 forthcoming), it can actually be argued that in fact there is no substantial difference between Schmitt's and Parguez's versions of the circuit, apart from the non-essential difference between sequential and quantic time, the latter appearing in fact as a rather abstract, and one would be tempted to say, rather esoteric, concept. The Schmittian result emphasized by Bailly (2003 pp. 374-378), that in a monetary economy profits can at most reach the level of total wages would therefore be of a general validity.

Vallageas (1986) already used the accounting interpretation of the circuit to show that the General Theory and the Treatise could be reconciled once the correct accounting aggregation of profits is performed. He noted in particular that the presentation of the multiplier in the General Theory is best understood if the latter is seen as a comment of the equations of the Treatise. In this perspective, the problem of the macroeconomic aggregation of profits explains that non-distributed profits should be excluded from national income. Vallageas (2001, 2010) used the same accounting framework to develop an input-output approach to national accounting. The latter defines an algorithm for the calculation of production prices, which allow to calculate profits in "income value". These include

essentially a correction for non-distributed profits and allow an aggregation of profits in the entreprise sector, which is independent from the breakdown of the entreprise sector.

As noted by Vallageas (2001), although rather close to the theory of profits of Kalecki, his approach is actually based on a breakdown between households and entreprises rather than between workers and capitalists. Bernard Vallageas noted also that in accounting, which deals with calendar time, profits are written on the liability side of the balance sheet and not on the asset side, like money balances. Moreover profit is a concept calculated as a balancing item measured at the instant when the accounting period ends, when production has already been fully financed.

2.4.4 Graziani and Trezza's open economy multiplier: Although he does not use explicitly the concept in his writings on the circuit, Graziani derives expressions very close to Kahn's sectoral employment multiplier for instance in Graziani (1985b, p. 213), whose descendance from Joan Robinson was later underlined also by Bhaduri (1996, 204-205). Moreover a detailed discussion of the open economy standard multiplier is given in Graziani e Trezza (1969, p. 55). In this contribution the authors develop the income block of the standard Keynesian model, where imports depend with different coefficients m_1 and m_2 from consumption and investment. In addition they assume that investment reacts to exports through a function f(E). The one sector open economy multiplier becomes in this case:

$$Y = \frac{E + (1 - m_2) f(E)}{s + m_1 - m_1 s}$$

E = *Exports* $\quad$ m_1 = *import propensity of consumption*

Y = *Income* $\quad$ m_2 = *import propensity of investment*

s = *Saving Ratio*

where the dependence of investment from exports reflects some of the ideas of the Kaldor and Verdorn's laws. In conclusion of this review of the multiplier for the main authors of the circuit, one can retain the idea that the circuit looks at the total investment in fixed and circulating capital as the crucial variable that embeds the expectations of entrepreneurs and determines effective demand. In a strict interpretation of the circuit, where the accounting period includes the reflux phase, the income multiplier of this quantity cannot be different from one, notably because hoarding is excluded. Even in this abstract framework, the theory of effective demand does not loose its explanatory power as the multiplicand substitutes for the multiplier in determining the unemployment level. If the accounting period finishes before the reflux phase, there is space for hoarding and for liquidity preference. In this case multiple equilibria are possible (Graziani, 2003, p. 147) and the circuit allows raising interesting questions on the way interest rates paid by banks on deposits are related to the interest charged by banks on loans to entreprises and on how the latter are related to the interest rate paid by entreprises on bonds placed in the public and to in the interest rates on public debt (Graziani 2003, chapters 5,6 and 7). This framework sets the basis for a discussion of the allocation of the total surplus generated in an economy between households, entreprises, banks, State and the foreign sector along Kaleckian lines, which has also implications for the way the welfare impact of different

public policies should be assessed (for an example of application to the financing of PPP in the road sector, see Cingolani, 2010).

The traditional Keynesian and post Keynesian, logical, process, sectoral and distributional views of the multiplier are thus reintepreted by the circuit, but maintain their validity as a tool for economic policy.

2.5 Harrod's foreign trade multiplier

The General Theory and the literature on the monetary circuit were largely developed in a close economy framework, but since the beginning the multiplier concept was developed also with reference to an open economy by Harrod (1957 [1933], pp. 119-124), who developed an early version of the multiplier as a relation between exports and income. Noting income as Y, exports as E, and the proportion of income devoted to goods produced abroad as I, Harrod writes a trade equilibrium condition between imports and exports as: iY=E, from which he derives the foreign trade multiplier:

$$Y = \frac{1}{i} E$$

Although this is a static relation, it is also derived by Harrod as a the result of a geometric series expansion where the initial export income E, is used in proportion (1-i) to buy home goods, giving the series : E + (1-i)E + $(1-i)^2$ + etc. As noted by Besomi (2000), it is not until he read the General Theory and wrote The Trade Cycle that Harrod (1936) understood the interpretation of its trade multiplier concept in terms of effective demand. Later Harrod (1939) was also one of the first to integrate the multiplier and the accelerator in a closed economy context, but never extended this integration in the field of the open economy.

As noted by Kaldor (1989, [1975]) Harrod's "process" version of Harrod's foreign trade multiplier implies a long-term view of the Keynesian multiplier and effective demand when it applies to the autonomous component of foreign demand and it is combined with the principle of acceleration [14]:

> *"In some ways I think it may have been unfortunate that the very success of Keynes's ideas in explaining unemployment in a depression — essentially a short-period analysis — diverted attention from the "foreign trade multiplier," which over longer periods is a far more important principle for explaining the growth and rhythm of industrial development." (1989, [1975] p. 407)*

In Kaldor (1989, [1970]), the argument is put in a regional setting and the longer-term element of effective demand is explicitly linked to the concepts of the accelerator and of Hicks' super-multiplier:

> *"From the point of view of any particular region, the 'autonomous component of demand' is the demand emanating from outside the region; and Hicks' notion of the 'supermultiplier' can be applied so as to express the doctrine of the foreign trade multiplier in a dynamic setting" ... (p. 318).*

[14] For Hicks ([1961 1950] p. 60-62) total investment is broken down between autonomous and induced investment. He defines the super-multiplier as the parameter that links autonomous investment to equilibrium output via the usual Keynesian multiplier and via the accelerator, which works through induced investment. When autonomous investment increases, equilibrium output adjust to the higher level of consumption associated with the increased revenue and to the higher level of induced investment determined by the acceleration principle. For Harrod all investment is induced and therefore the acceleration principle applies to total investment.

> *"... the growth of exports, via the 'accelerator', will govern the rate of growth of industrial capacity, as well as the rate of growth of consumption; it will also serve to adjust (again under rather severe simplifying assumptions) both the level, and the rate of growth, of imports to that of exports. "*

The inclusion of an autonomous term in total investment implies that the multiplier obtained must be interpreted as an out of equilibrium phenomenon, which supports a long-term argument for effective demand[15].

Dixon and Thirlwall (1975) proposed a formalization of Kaldor's ideas. They obtain the following expression for the equilibrium growth rate[16] of a country or region:

$$g_t = \gamma \frac{\left[\eta\left(w_t - r_a + \tau_t\right) + \delta\left(p_f\right)_t + \varepsilon\left(z\right)_t\right]}{1 + \gamma\eta\lambda}$$

g_t	=	*rate of growth of output at time t*	δ	=	*cross elasticity of demand for exports*
γ	=	*elasticity of output growth to export growth*	p_f	=	*rate of growth of foreign prices*
η	=	*price elasticity of demand for exports*	ε	=	*income elasticity of demand for exports*
w_t	=	*rate of growth of domestic money wages*	z	=	*rate of growth of world income*
r_a	=	*rate of autonomous productivity growth*	λ	=	*Verdoorn coefficient*
τ_t	=	*rate of growth of the mark - up on unitcosts*	r_t	=	$r_a + \lambda\left(g\right)_t$. *Verdoorn law for productivity growth*

$$\gamma = 1 \quad if \ \text{exports} \ are \ a \ \text{constant} \ fraction \ of \ output$$

$$\eta < 0$$

Their model shows that the growth rate of a region varies positively with r_a, z, ε, δ, p_f and λ and negatively with *w* and τ. Although the model applies to a single region or country, it can be used to compare two regions or countries. For instance it can be used to show that:

> "*the dependence of productivity growth on the growth rate per se is not sufficient to cause differences in regional growth rates unless the Verdoorn coefficient varies between regions or growth rates would diverge for other reasons anyway. It is equally clear, however, that it is the Verdoorn relation which makes the model circular and cumulative, and which gives rise to the possibility that once a region obtains a growth advantage, it will keep it.*" (p.

The latter case becomes likely if the regions have different economic structures. Dixon and Thirlwall use their model to show that the equilibrium rate of growth depends on the factors of competitiveness (trade elasticities), that a regional wage subsidy is equivalent to a devaluation in an open economy and, like a devaluation, can have temporary beneficial effects, and that, for what they consider reasonable value of the parameters, the tendency should not be towards regional divergence but towards constant regional differences[17].

Their model does not impose a balance trade condition or foreign balance constraint as the original Harrod's model. In this respect they note:

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[15] See footnote 8.

[16] Sportelli and Celi (2011) provide an interpretation of Harrod's open economy model in terms of chaotic dynamics,i.e. out of equilibrium.

[17] See Roberts (2007) who finds that the Kaldor-Dixon-Thirlwall model can be reconciled with Barro i Sala Martin well known conditional convergence results, normally interpreted as a validation of the neoclassical Solow growth model.

> *"at the national level, a built-in balance of payments constraint would make the model more realistic. No attention is paid in the present model to the fact that the rate of growth of output may generate a level of imports in excess of exports, necessitating demand contraction. At the regional level, it is difficult to conceive of a balance of payments constraint on growth, except to the extent that there may be a constraint on the regional money supply. There is certainly no requirement that exports and imports must balance to preserve the value of a currency in the foreign exchange market, which may be required at the national level. We have neglected here the consideration of balance of payments constrained growth in order to concentrate on the basic model. To incorporate such a constraint, however, may be a useful addition to the model, especially for application at the national level." (p. 213)*

The incorporation of a balance of payments constraint in the model was made later by Thirlwall in the literature which developed on Thirlwall's laws reviewed in the section below.

2.6 Thirlwall laws

Thirlwall (1979) introduced and discussed what was later become known as "Thirwall laws". Essentially these express a condition for growth to respect the balance of the current account trade balance that exports equal imports. Under the assumptions that price and terms of trade effects are negligible, the rate of economic growth consistent with the balance of payments equilibrium is given by the ratio of the growth of exports to the import elasticity to domestic demand. The relation is derived from standard specifications for the demand for imports and for exports, such as:

$$M_t = \left(P_{ft} E_t\right)^{\psi} P_{dt}^{\phi} Y_t^{\pi} \qquad (1)$$

$$X_t = \left(\frac{P_{dt}}{E_t}\right)^{\eta} P_{ft}^{\delta} Z_t^{\varepsilon} \qquad (2)$$

where:

M_t = *quantity of imports*
X_t = *quantity of exports*
Z_t = *world income*
Y_t = *domestic income*
π = *income elasticity of demand for imports*
ε = *income elasticity of demand for exports*
P_{ft} = *price of imports in foreign currency*
P_{dt} = *price of exports in home currency*
E_t = *home price of foreign currency*
ψ = *own price elasticity of demand for imports* ($\psi < 0$)
ϕ = *cross price elasticity of demand for imports* ($\phi > 0$)
η = *own price elasticity of demand for exports* ($\eta < 0$)
δ = *cross price elasticity of demand for exports* ($\delta > 0$)

Expressed in logs these become:

$$m_t = \psi p_{ft} + \psi e_t + \phi p_{dt} + \pi y_t \qquad (3)$$

$$x_t = \eta p_{dt} - \eta e_t + \delta p_{ft} + \varepsilon z_t \qquad (4)$$

where:

m_t = *log of the quantity of imports*
x_t = *log of the quantity of imports*
z_t = *log of world income*
y_t = *log of domestic income*
p_{ft} = *log of the price of imports in foreign currency*
p_{dt} = *log of the price of exports in home currency*
e_t = *log of the home price of foreign currency*

The conditions for balancing the current trade account of the balance of payments are:

$$P_{dt}X_t = P_{ft}M_tE_t \qquad (5)$$

or, in growth rates:

$$p_{dt} + x_t = p_{ft} + m_t + e_t \qquad (6)$$

substituting (3) and (4) in (6) one obtains the income level consistent with a balance of payments equilibrium y_{Bt}:

$$\begin{aligned} &p_{dt} + \eta p_{dt} - \eta e_t + \delta p_{ft} + \varepsilon z_t = p_{ft} + \psi p_{ft} + \psi e_t + \phi p_{dt} + \pi y_{Bt} + e_t \\ &p_{dt}(1+\eta-\phi) - p_{ft}(1-\delta+\psi) - e_t(1+\eta+\psi) + \varepsilon z_t = \pi y_{Bt} \qquad (7) \\ &y_{Bt} = \frac{p_{dt}[1+\eta-\phi] - p_{ft}[1-\delta+\psi] - e_t[1+\eta+\psi] + \varepsilon z_t}{\pi} \end{aligned}$$

One can note that this relations show that the effect of inflation on the home country depends on η+ϕ, that of foreign inflation on δ+ψ, with the effect of a devaluation (e>0) depending on η+ψ (for the Marshall Lerner condition to hold, this must be higher than 1 in absolute terms). If one assumes ψ=-ϕ and η=-δ , one gets from (7):

$$\begin{aligned} y_{Bt} &= \frac{p_{dt}[1+\eta+\psi] - p_{ft}[1+\eta+\psi] - e_t[1+\eta+\psi] + \varepsilon(z_t)}{\pi} \\ y_{Bt} &= \frac{(1+\eta+\psi)(p_{dt} - p_{ft} - e_t) + \varepsilon(z_t)}{\pi} \qquad (8) \end{aligned}$$

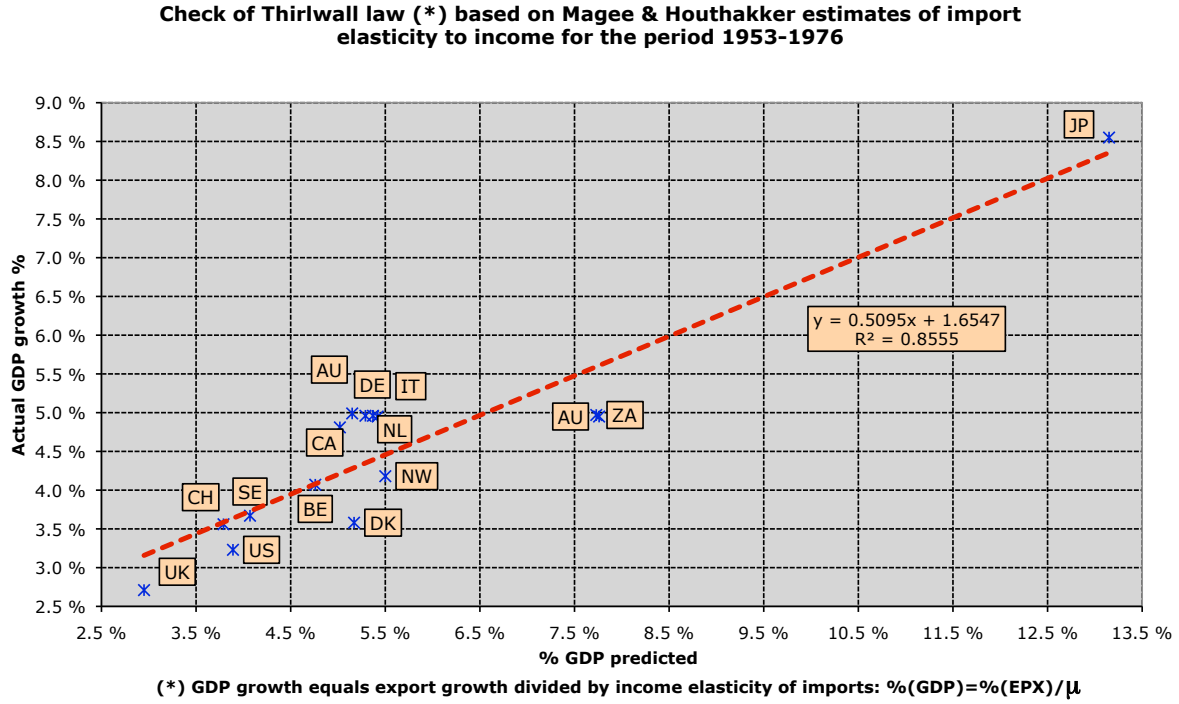
and if the Marshall Lerner conditions holds exactly (or if relative prices measured in common currency do not change over the long run):

$$\begin{aligned} 1 &= -\eta - \psi \\ p_{dt} - e_t - p_{ft} &\approx 0 \\ x_t &= \eta(p_{dt} - e_t - p_{ft}) + \varepsilon z_t = \varepsilon z_t \\ y_{Bt} &= \frac{(1+\eta+\psi)(p_{dt} - p_{ft} - e_t) + \varepsilon(z_t)}{\pi} \\ y_{Bt} &= \frac{\varepsilon z_t}{\pi} = x_t \qquad (9) \end{aligned}$$

which says that in the long run the growth of income consistent with the balance of payments current account balance, given the assumptions of little movement in international prices, is equal to the ratio of the growth of exports in volume divided by the income elasticity of import demand.

Thirlwall presents estimates of Kern Houthakker and Magee for the period 1953-1976, showing an income elasticity of the demand for imports for 18 countries, ranging from 0.85 for South Africa to 2.25 for Italy. He also reports the estimates by Cornwall for 12 countries for the period 1951-1973 of the import demand elasticity to income showing a range from 1.2 for Canada to 2.25 for Italy.

Overall, for the majority of the countries the actual GDP is close but slightly lower than that calculated with relation (9). Empirical evidence clearly supports the relevance of this "demand" interpretation. For instance, it is possible to draw the following charts from the data published in Thirlwall (1979).



(*) GDP growth equals export growth divided by income elasticity of imports: %(GDP)=%(EPX)/μ

As noted by Thirlwall (1979) in his introductory remarks, the empirical evidence in favour of relation (9) means that, contrary to what is implied by the neoclassical model, the growth of GDP is not constrained by supply factors (factor supplies and productivities) but by demand factors (export demand).

Mc Combie and Thirlwall (1999) also show how relation (9) can be linked to both the Harrod's static foreign trade multiplier and a dynamic variant of it, which can be interpreted in terms of Hicks' super-multiplier. In particular, relation (10) can be derived, which shows how the rate of growth of income consistent with the trade balance, which is equal by Thirlwall law to the ratio of the export growth rate to the import elasticity of demand, relates to the Keynesian and Harrod foreign multipliers:

$$y_B = \frac{1}{k}\left(\omega_X x + \omega_A a_B\right) = \frac{1}{\pi} \qquad (10)$$

$$k = \frac{1}{1 - c + ct_d + t_i - i + \mu} \qquad (11)$$

y_B	=	*"balanced" rate of growth of income*	p	=	*income elasticity of imports*
k	=	*traditional keynesian multiplier*	c	=	*marginal propensity to consume*
w_X	=	*share of exports in income*	t_d	=	*marginal propensity to tax (direct)*
x	=	*rate of growth of exports*	t_i	=	*marginal propensity to tax (indirect)*
w_A	=	*share of other autonomous expenditures in income*	i	=	*marginal propensity to import*
w_A	=	*rate of growth of autonomous expenditures*	m	=	*marginal propensity to consume*

In relation (10) the term $(1/k)\omega_x x$ represents the working of Harrod's foreign trade multiplier, which is also equal to $(1/\mu)$ under an X=M assumption, whereas the second term equal to $(1/k)\omega_A x$ represents the working of Hicks' supermultiplier, through the growth of autonomous demand that it is possible to obtain thanks to the fact that increased exports have eased the balance of payments constraint.

The initial article of Thirlwall (1979) generated a large literature, in which Thirwall's law (relation 9) was tested in various ways. Early empirical evidence is discussed notably in McCombie and Thirwall (1994 and 1997; see also Leon-Ledesma, 1999; and Lopez, 2000). More recent reviews of the empirical relevance of the Thirlwall laws and extensions of its interpretation are provided in Alleyne & Francis (2008), Azevedo Araujo and Tadeu Lima (2007), Garciamartín, Rivas and Diaz de Sarralde (2008), Garcia Molina & Ruiz Tavera (2009), Jeon (2009), Setterfield (2011), Thirlwall (2006 and 2011), Wells & Thirlwall (2003), Vera (2006). One can also refer to the volume of Arestis, McCombie and Vickermann (2006) for various reviews of these analyses.

2.7 Implications for economic policy coordination

Like monetary savings held in a short-time monetary equilibrium, net imports are a money leakage from the circuit of the revenues of domestic producers and consumers, since they are paid to producers and consumers of another jurisdiction. They therefore give rise to a net foreign liability that is recorded in the capital account of the balance payments as a capital entry. As such, an increase in the net propensity to import has the same effect on the multiplier as an increase in domestic savings: it lowers its value. This means that ceteris paribus a higher level of autonomous demand (investment demand, public expenditure or exports) is needed to reach the same level of output.

Kahn and Keynes who first developed the notion of the multiplier in relation with the concept of effective demand, clearly saw the implication of their discovery for economic policy coordination. In his seminal paper Kahn (1972, [1931] wrote:

> *"The more a country approximates to a closed system … , the greater is the ratio of secondary to primary employment. … A perfectly closed system, to go one step further, is the world as a whole. It follows, as is indeed quite obvious, that an international policy of ' public works ' would be far more efficacious from the point of view of each separate country than a purely local policy" (p.13). …*

> *"… the world is a closed system. It follows that an international policy of digging holes and filling them up again would result in a net gain to the united treasuries of the world, provided only that business men could be persuaded to be sufficiently spendthrift with the additions to their profits which such a policy would secure for them. Such a hope is almost certainly a vain one. But no account has been taken of the increase in the yield of taxation that would accompany an expansion of output and of employment. If the treasuries of the world were to gain as increased revenue an amount equal to the excess of the increase in unspent profits over the diminution in savings, the promotion, on an international scale, of perfectly useless 'public works' would still be profitable, even from a narrow budgetary point of view. We are probably still a little way off reality - but can it be so very far? To consider international action of this kind is perhaps a little premature." (p. 20)*

Similarly in the *General Theory* Keynes (2010 [1936]) noted:

> *"… a typical modern community would probably tend to consume not much less than 80 per cent of any increment of real income, if it were a closed system with the consumption of the unemployed paid for by transfers from the consumption of other consumers, so that the multiplier after allowing for offsets would not be much less than 5. In a country, however, where foreign trade accounts for, say, 20 per cent of consumption and where the unemployed receive out of loans or their equivalent up to, say, 50 per cent of their normal consumption when in work, the multiplier may fall as low as 2 or 3 times the employment provided by a specific new investment." (pp. 101-102)*

Indeed the proposals that led to the establishment of Bretton Woods were based on the interpretation of the multiplier in terms of effective demand and on the implications for policy cooperation. In this respect Davidson (notably, 1994, p. 265 and more recently 2007—9 pp.152-9) drew repeatedly attention, on the argument of Keynes (1941) that it is crucial to correct the major asymmetry in the international monetary system that puts the full burden of adjustment of a balance of payments imbalance on deficit countries:

> *"It is characteristic of a freely convertible international standard that it throws the main burden of adjustment on the country which is in the debtor position on the international balance of payments. … The contribution in terms of the resulting social strains which the debtor country has to make to the restoration of equilibrium by changing its prices and wages is altogether out of proportion to the contribution asked of its creditors. Nor is this all … The social strain of an adjustment downwards is much greater than that of an adjustment upwards … the process of adjustment is compulsory for the debtor and voluntary for the creditor. If the creditor does not choose to make, or allow, his share of the adjustment, he suffers no inconvenience. … whilst a country's reserves cannot fall below zero, there is no ceiling which sets an upper limit. The same is true if international loans are to be the means of adjustment. The debtor must borrow, the creditor is under no such compulsion."*

Like effective demand shortages, the current account imbalances discussed above are not only confined to the short-term. Given a pattern of international exchanges where countries are not all reaching external balance, it is very likely that any initial imbalance will be reinforced rather than corrected. This can be argued in terms of cumulative process such as those emphasized by Kaldor and Verdoorn. Indeed, whatever the underlying explanation, one observes that some countries are chronic excess savers and others chronic deficit savers (Guichard, 2009). Moreover the various empirical confirmations of the Thirwall laws quoted above, which concern in general countries whose domestic

currency is not an international mean of payments, mean that effective demand matters in the long-term in an open economy context.

It is therefore natural to think of economic policy coordination as focusing at creating the level of autonomous demand necessary to create full employment at international level, as it was done successfully during the Bretton Woods period. Indeed for Mc Combie and Thirlwall note that:

> *When a country expands its domestic demand, it simultaneously increases the demand for its imports. This induces an increase in demand in the countries supplying those imports, which, in turn, increases the import supplying countries' demand for the initiating country's exports. This sets up a secondary multiplier effect and so on. The 'linked' multiplier explicitly allows for these feedback effects from the rest of the world. However, the values are not radically different from the conventional multiplier estimates. The value of the linked multiplier for the United Kingdom, for example, is only about 1.16, which compares with the unlinked multiplier of 1.10 (authors' estimates). The total effect, however, of a number of countries simultaneously expanding or contracting demand can be much larger than these linked multiplier figures suggest. The multiplier for the OECD countries as a whole is of the order of 3, more than double the average value for the individual countries. Thus, the expansionary (deflationary) impact acting through the foreign trade multiplier on a particular country, which results from a number of the larger OECD countries simultaneously increasing (reducing) their growth rates, can be substantial. This is even before we consider the ramifications of the super-multiplier. (Mc Combie and Thirlwall, 1999, p. 68)*

Based on the results of the first section, economic policy coordination can be discussed separately for one country inside a group of countries amongst which exchange rates are in principle adjustable and for a region inside a regionally integrated area.

2.7.1 National economic policy coordination: Goodwin (1980) offers an example, based on a rather general theoretical framework, of the possible way to establish policy cooperation that can be applied in cases of fixed and floating exchange rates to achieve desired levels of output, including with unchanging net foreign balances[18]. He notes that:

> *"It appears that to realize such a scheme technically nothing more is required than an IMF type clearinghouse." (p. 324)*
>
> *"With this information it is conceivable that, in the manner of indicative planning, national governments can be cajoled into a rough cooperation without sovereign power to force them. Thus, given a set of target changes, ∂pq^*, in GNPs, the required changes in aggregate outlays can be calculated" (p. 325)*

2.7.2 Regional economic policy coordination: Airov (1967) provided a rather comprehensive framework for calculating fiscal policy multipliers in a regional context. Airov started from Chipman's:

> *"key proposition in interregional fiscal-policy theory: if there are regional differences in over-all marginal propensities to consume, the level of national income is determined not only by the total level of government spending but by its regional allocation as well." Airov (1967, p. 83)* [19]

[18] Goodwin notes that his analysis would allow to reach an expanding international economy in the short-term but would not be sufficient to solve long-term problems and imbalances, in particular unemployment.

[19] *Chipman (1948, p. 188) noted: "Hence we may infer that public expenditure in a multi-system economy will generate a maximum increase in national income if it is all concentrated in that region which has the lowest marginal propensity to excess-save (which we may expect to be the most backward region). Similarly, assuming that workers' marginal propensity*

> *"Hence we may infer that public expenditure in a multi-system economy will generate a maximum increase in national income if it is all concentrated in that region which has the lowest marginal propensity to excess-save (which we may expect to be the most backward region). Similarly, assuming that workers' marginal propensity to excess-save is higher than capitalists', public expenditure is most effective if the on-site expenditure accrues in its entirety (or as much as possible) to workers." (Chipman 1948, p. 188)*

The regional trade multipliers capture the effect of regional trade. In reality economic and social integration involves more than merely trade and reflects also distributional feedbacks. A generalization of the trade regional links captured by the multiplier is provided by Miyazawa (1976, Ch. 2, pp. 29-42), who notably took into account the effect of income distribution. Miyazawa calculated the following "interrelational income multiplier" for 3 Japanese regions, the Middle, which is most developed, and the NorthEast and the West regions, which are
less developed.

Table X: Interrelational income multiplier for the three-region model

$$K = \left[I - VBC \right]^{-1}$$

Region of income origin / Region of income receipt	Northeast	Middle	West	Total
Northeast	1.55	0.07	0.04	1.66
Middle	0.32	1.57	0.29	2.18
West	0.06	0.07	1.60	1.73
Total	1.93	1.71	1.93	5.57

Source: Miyazawa (1976, p. 27)

K gives Miyazawa's decomposition of the multisectoral Keynesian multiplier into intraregional and interregional effects. As noted by Miyazawa the total for the columns give the total change in national households' income resulting from a unitary change in income of households in one region. They are slightly lower for the Middle region, because it tends to consume less. The row totals show instead the induced effect in a region of a unit increase in households' income in the region of origin. There the Middle region, which is the most advanced, has a much stronger multiplier effect, which is due to the fact that much of the income formation takes place in that region. As explained by Miyazawa:

> *"As shown in the column elements of the Middle area, the induced effects of the Middle on each region appear intensively in the Middle itself, which takes a value of 1.57, and appear negligibly in the Northeast and West, where the values are identically equal to 0.07. By contrast, the induced effects of the Northeast and the West on the Middle take the relatively high values of 0.32 and 0.29 respectively; that is to say, there is a considerably tendency for induced income to flow from the backward areas to the advanced area" (Miyazawa, p. 28).*

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to excess-save is higher than capitalists', public expenditure is most effective if the on-site expenditure accrues in its entirety (or as much as possible) to workers." (

2.7.3 Distributional effects and a possible framework for policy cooperation: Kalecki's identity and the derived multiplier can be used to discuss a possible implication of the above analysis for the discussion of policy choices. The identity says that:

$$\begin{array}{ccccccccc} \textit{Corporate} & & \textit{Government} & & \textit{Current} & & \textit{Households} & & \textit{Bank} \\ \textit{profits} & = & \textit{deficit} & + & \textit{Account} & - & \textit{savings} & - & \textit{profits} \\ & & & & \textit{surplus} & & & & \\ \Pi_{CORP} & = & (G-T) & + & (X-M) & - & S_H & - & \Pi_{BANK} \end{array}$$

In this identity, the current account balance can be broken down into a part, which is coming from a regionally integrated area and a part which is coming from the rest of the world.

$$\Pi_{CORP} = (G-T) + (X-M)_{RIA} + (X-M)_{RoW} - S_H - \Pi_{BANK}$$

The current account balance to the rest of the world can, as a first approximation, be seen as being a function of the budget deficit of the other countries of the regionally integrated area $(G\text{-}T)_{RRIA}$.

$$\Pi_{CORP} = (G-T) + (X-M)_{RIA}\left[(G-T)_{RRIA}\right] + (X-M)_{RoW} - S_H - \Pi_{BANK}$$

In the end, part of the foreign trade linkages can thus be endogenized again if there is policy coordination on the public deficit of the regionally integrated area $(G\text{-}T)_{RIA}$ along the lines of Goodwin (1980). If the multipliers are calculated correctly and remain sufficiently stable, potentially any negative external shock to the area could be offset in a functional finance logic. The respective Kalecki multiplier would be:

$$Y = \frac{(C_K + I) + (G-T) + (X-M)_{RIA}\left[(G-T)_{RRIA}\right] + (X-M)_{RoW}}{1-\omega}$$

An algorithm for policy coordination could thus be:

i) Calculate the target rate of growth consistent with socio-economic objectives including distributional aspects in regional terms.
ii) Calculate the induced investment needs based on the capital output ratio and other means.
iii) Identify available/created finance means in terms of domestic savings, external grants and loans.
iv) If any, finance the resulting current-account gap through a clearing mechanism between central banks.

For the success of such a strategy, in order to avoid inflationary financing of goods, services and assets, it is crucial to make a precise evaluation of investment and where necessary introduce the economic reforms and structural adjustments that are appropriate.

In order to illustrate these possibilities further, the next section details a complete example of the circuit in an open economy from an accounting perspective and in sequential time.

3. An accounting illustration of the open economy circuit for 2 economies

This section summarizes an example presented in more detail in the annex aiming at illustrating the working of the circuit in sequential time in a two-country model. For the home country all the main institutional sectors relevant for a two-production branches monetary production model are included (consumption and investment goods). The foreign country, representing the rest of the world, is consolidated instead in two sectors: the banking sector and the non-banking sector.

In order to reduce the number of flows relating to international transactions, a resident trade intermediary sector has been included in the home country. It is supposed to centralize all real transactions and payments with the foreign country, buying and selling all imports and exports of goods and services before they are exported or imported. It is assumed that the foreign country's currency is an international currency, but this is not the case for the home currency. The domestic sector producing for consumption is separated from the one producing for investment (resident households are also broken down between the two branches). An index of sequential time dates the transactions.

Initially (time 0) all balance sheets of the sectors retained start from zero, except for compulsory reserves of commercial banks at the central bank, for both the home country and the rest of the world, as shown in Table 1.

The circuit starts at instant 1 with the granting of a loan by the resident commercial banks to domestic entreprises (ΔLIF_{DE}) that provides them with the liquidity for the advanced payment of wages and other costs. This credit for "initial finance", sets in motion the circular process of production and income (Graziani, 1984). Increased loans cause domestic commercial banks to build supplementary reserves $\Delta RESDCB_1$ at the central bank. The case of an overdraft system is retained (Lavoie, 2003, p. 519). Symmetric developments occur in the foreign country.

Table 1:Initial balance sheet and transactions matrices of the efflux phase of the circuit

	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government	
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW
(0)	0	0	0	0	0	0	0	0	0	0
(1)					ΔDIF_{DEC}	$\Delta DBTIF_{DEC}$	ΔDIF_{DEI}	$\Delta DBTIF_{DEI}$		
(2)										

	Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank sector	
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW
(0)	$RESDCB_0$	DCB_0	$LDCB_0$	$DEPDCB_0$ $=(RESDCB_0)$	0	0	0	0	RES_{FCB0}	$D_{RESFCB0}$
(1)	ΔLIF_{DE} $=(\Delta LIF_{DEC}+\Delta LIF_{DEI})$	$D_0 = \Delta D_{DE} = \Delta D_{DEC}+\Delta D_{DEI}$					ΔDIF_{FNBS}	$\Delta DBTIF_{FNBS}$	ΔLIF_{FNBS}	$FD_0 = \Delta D_{FNBS}$
(2)	$+\Delta RESDCB_1$	$+\Delta DCB_1$	$+\Delta LDCB_1$	$+\Delta DEPDCB_1$					RES_{FCB}	$RESD_{FCB}$

The detailed flows relating to the payment of wages, realization of production, payment for consumption, investment and exports are detailed in the Annex 1.

If the accounting period closes after the repayment of the bank loans, but before the allocation of household savings, the balance sheet of the various sectors will look like it is shown in Table 2a and 2b.

Table 2a: Balance sheet matrix at the end of the reflux phase, domestic real sectors

	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government	
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW
I(a)					$+I_C+I_{MC}$	NWC_1	$+I_I+I_{MI}$	NWI_1		
I(b)	$+D_{CC}$ $(=W_C-C_C-M_C)$	$+S_{CC}$	$+D_{CI}$ $(=W_I-C_I-M_I)$	$+S_{CI}$	$+C_C+C_I+X_C$ $-I_C-I_{MC}-W_C$ $+\Delta DIF_{DEC}$ $-\Delta DFF_{DEC}$	$+\Delta DBTFF_{DEC}$ $=$ $+\Delta DBTIF_{DEC}$ $-\Delta REFLUX_{CEB}$	$X_I+I_C+I_I-I_I$ $-I_{MI}-W_C$ $+\Delta DIF_{DEI}$ $-\Delta DFF_{DEI}$	$+\Delta DBTFF_{DEI}$ $=$ $+\Delta DBTIF_{DEI}$ $-\Delta REFLUX_{DEI}$		
I(c)										

In Table 2a, at the “end of sequence I”, households producing for consumption have kept deposits of D_{CC}, which are equal to what they received as wages, W_C, less what they consumed from domestic (C_C) and foreign produced (imported) consumption goods (M_C). These deposits are balanced by their net worth or saving S_{CC}. Similarly households producing investment goods have deposits of D_{CI} and savings of S_{CI}.

Entreprises producing consumption goods have increased their fixed assets, initially nil, by the amount of investment produced by domestic (I_C) and foreign producers (I_{MC}). They have taken initial finance in the form of credit of $\Delta DBTIF_{DEC}$ and were able to repay an amount $\Delta REFLUX_{DEC}$, remaining with a net debt, corresponding to “final finance”, of ΔDFF_{DEC}. Their main revenues come from sales to all household and exports. It is assumed that at time (I), they keep part of their assets in liquid form. To the extent that the value of their assets exceeds their debt, they have a positive net worth NW_{C1}. The situation of enterprises producing for investment is under many aspects specular, although their revenue does not depend on domestic households but only on domestic producers, for an amount of domestically produced investment of I_C+I_I , and foreign markets, for an amount of investment goods exported of X_I.

Table 2b: Balance sheet matrix at the reflux phase, domestic monetary sectors and rest of the world

	Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank sector	
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW
I(a)	$RESDCB_1$ $=$ $RESDCB_0$ $+$ $\Delta RESDCB_1$ $-$ $\Delta RESDCB_2$ $+\Delta RESFCDCB_3$ $-\Delta RESDCB_4$	$DCB_1 = DCB_0$ $+ \Delta DCB_1$ $- M_{C\&E} + X_{RTI}$ $-\Delta DBTFF_{CB}$	$LDCB_1 =$ $LDCB_0$ $+\Delta LDCB_1$ $-\Delta RESFC_{CB}$	$DEPDCB_1 =$ $DEPDCB_0$ $+ \Delta DEPDCB_1$ $- \Delta DEPDCB_2$ $- \Delta DEPDCB_4$			I_{FE}	NW_{FE}	$RES_{FCB1} =$ RES_{FCB0} $+\Delta RES_{FCB+}$ $+LFC_{DCB}$ $-MFC_{FCBS}$ $-\Delta RES_{FCB2}$	$D_{RESFCB1}$ $=$ $D_{RESFCB0}$ $+\Delta D_{RESFCB1}$ $-\Delta D_{RESFCB2}$ $+DFC_{DCB}$
I(b)	$L_1 = +\Delta LIF_{DE}$ $-\Delta REFLUX_{DE}$	$D_2=D_0-\Delta D_1$ $=+D_{CC}+D_{CI}+$ D_{RTI}	$FCRES_1 =$ $-FC_M + FC_X$	$DEPFC_1 =$ $+DBTFC_{FCB}$ $+ \Delta DEPDCB_3$	D_{RTI}	S_{RTI}	$+D_{FH\&TI} =$ ΔDIF_{FNBS} $+W_{FNBS}$ $-C_{FNBS}+FC_M$ $-FC_{X-M}-FC_X$ $-\Delta DFF_{FNBS}$	$+S_{FH\&TI}$	$LFE_1 =$ ΔLIF_{FNBS} $-\Delta RFLX_{FNBS}$	$D_{FH\&TI} =$ $F_{D0}+W_{FNBS}-$ $C_{FNBS} -\Delta D_1$
I(c)								$DBTFF_{FCBS}$		

In Table 2b, the initial reserves that domestic banks had at the Central Bank ($RESDCB_0$ in Table 1), have changed due to the increase in loans to the domestic sectors and to the net accumulation of foreign reserves. They are now $RESDCB_1$. Indeed, corresponding to the deposits that households have kept in liquid form and any profit monetized by the trade intermediaries, there is a loan of domestic banks to domestic enterprises of L_1, which

corresponds to that part of the initial domestic finance that was not destroyed in the reflux phase.

The assets of the central bank, initially at $LDCB_0$, have now increased to $LDCB_1$. The increase is due in part to the net effects of commercial banks loans to the domestic sectors and in part to the accumulation of foreign reserves equivalent to the the balance of exports less imports. It is noteworthy that from the point of view of the domestic producers, initial finance loans, which are necessarily granted in domestic currency, cover the production of output sold domestically, of output exported (which brings foreign exchange), as well as output imported (for which foreign exchange is used). In the example, the part of the money created with the initial domestic loan covering imports is destroyed at the time when the foreign exchange is transferred to commercial banks (line 12 in the table in Annex 1), whereas the part for exports is destroyed at the time of the reflux with the rest of the loans (line 25 in the Annex). Concerning foreign currency, the domestic central Bank remains with a debt or a credit, depending upon the balance between exports and imports. If in the domestic economy imports exceed exports like in the example, the domestic central bank will keep a debt to the foreign central bank.

The foreign country issues an international currency, therefore also all the liquidity created for international transactions is domestic. It is destroyed in part at the time when the domestic country pays the foreign non banking sector for goods imported. At that time, the cash that is not needed to pay for exports is immediately reimbursed to the foreign banks, the rest being destroyed in the final reflux phase together with the money created for domestic transactions. To the extent that the foreign country's exports exceed its imports, the foreign central bank will keep a net credit to the domestic central bank.

Comments:

i) One can discuss briefly the main multiplier concepts discussed before with reference to this example. Strictly speaking, the Keynesian multiplier is given by the ratio of total income to investment. Since investment is defined in national accounts as investment by resident units, it includes the portion of invested goods, which is bought by domestic sectors abroad and excludes the part that is exported. The circuit multiplier in the version of Schmitt, equal to one, is given by ratio of final expenditures to revenues distributed (including wages W and distributed profits Π^D), which, by and large, in empirical analyses should correspond to the initial finance created by the banking sector $\Delta LIF_{D\&E}$. The foreign trade multiplier of Harrod, derived under the assumption of balanced trade (see sections 3 and 6) equals the ratio of imports over total revenue, and includes consumption goods in the numerator. These definitions show that, seen as conditions for sectoral balanced growth, the various multipliers refer to the balance between different concepts of autonomous, albeit constant, expenditures and are in turn influenced in variable but substantial ways by the exchange rate.

$$K_k = \frac{Y}{I} = \frac{C_C + C_I + I_I + I_C + X_C + X_I - M_C - M_I}{I_C + I_I + I_{MC} + I_{MI}}$$

$$K_{Schmitt} = \frac{C_C + C_I + I_C + I_I + X_C + X_I - M_C - M_I - I_{MC} - I_{MI}}{W_C + W_I + \Pi_C^D + \Pi_I^D} = 1$$

$$K_H^{(*)} = \frac{M_C + M_I + I_{MC} + I_{MI}}{C_C + C_I + I_I + I_C + X_C + X_I - M_C - M_I - I_{MC} - I_{MI}}$$

$^{(*)}$ *Assuming trade account balanced, see section* 2.5

ii) The definition of the accounting period is also worthwhile being elaborated upon. In the example above it was chosen to close the accounting period after the reflux phase, but before households have taken their decision on the allocation of their savings. This underlines the interpretation of the circuit in terms of what neoclassical analysis calls “disequilibrium” positions (Parguez, 1977b). As noted by Graziani (2003 for instance), there is no particular concept of equilibrium that prevails in the circuit. The existence of money allows to finance any position which neoclassical analysis would consider as a disequilibrium. Thanks to the presence of money, neoclassical “disequilibria” can be sufficiently stable to be of interest for economic and policy analysis. If one would close the accounting period after having left households allocating their wealth, the entreprises could substitute short-term lending from the banking sector with long-term finance in the form of bonds issued by them and placed with households. This would introduce an interest rate for bonds which is different from the interest rate asked by banks on their lending, from the interest rate banks pay on deposits and from the Central Bank interest rate. Graziani (2003, chapter 6) illustrates a model where these different interest rate convergence to an equilibrium which entails unemployment, stressing the fact that equilibrium conditions in the money market can generate unemployment, which is one of the points of Keynes that neoclassical and neokeynesian analysis have missed.

iii) One could also imagine that at that point part of household’s savings could go to the acquisition of foreign securities. This would change the external position of the domestic economy by the net amount of domestic and foreign securities bought. Assuming the exchange rate is a price clearing the spot and future market for foreign currency, this illustrates the fact, that it is the entire range of assets bought and sold abroad that influences the level of the exchange rate, as modelled by complete stock-flow descriptions of the economy such as those of Godley and Lavoie. Therefore, to the extent that the market exchange rates can coincide be with the fundamentals that are required to obtain comparative advantage, a coordination of economic policy aiming at guaranteeing the conditions for full employment should take into account and govern the movements in the exchange rate.

iv) Finally one can use this accounting framework to illustrate what would happen in case unemployment is prevailing in one or both countries and it would be

decided to fight it with a coordinated policy of investment in public expenditure for infrastructure and other socially desirable goals financed by new Government debt. A Government expenditure financed by debt starts the circuit in the same way as the initial finance taken by the private sector from commercial banks. To the extent that money is endogenous, it is indifferent whether the Government issues debt bought by commercial banks or pays by debiting its account at the central bank who then increases the reserves of the commercial banks who hold the accounts of the beneficiaries of these payments

Initially the situation will be as indicated in table 3, based on the Annex 2. The domestic Government is assumed to take a loan from the commercial banks, whereas the foreign Government pays out of its account at the Central Bank.

Table 3:Transactions corresponding to an efflux by both Governments

	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government	
	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW
(29)									$+DEPG_{DCB}$	$+DBT_{G1}$
(30)										
(31)					$+G_{EC}$	RLG_{EC}	$+G_{EI}$	RLG_{EI}	- G	
(32)									$+WK_{H\&E}$	
(33)										

	Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank sector	
	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW
(29)	$+L_G$	$+DEPG_{DCB}$	+ΔLCB2	$+\Delta RESDCB_5$			$+DEPG_{FCBS}$	$+DBT_{FNBS}$	ΔRES_{FCB2}	$+\Delta D_{RESFCB3}$
(30)	$+\Delta RESDCB_5$	+ΔDCB2								
(31)									$+\Delta L_{FNBS}$	$+ \Delta R_{FNBS}$
(32)										
(33)										

Once the money is credited to the account of enterprises the rest of the circuit follows, including payment of wages, imports etc. Assuming public expenditure is for investment, in the end the situation will look like indicated in Table 4.

Table 4: Balance Sheet Matrix after coordination on public investment

	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government	
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW
II(a)					$+I_{C1}+I_{MC1}$	NWC_2	$+I_I+I_{MI}$	NWI_1	I_G	$+DBT_{G2}$
II(b)	$+D_{CC1}$ $(=W_{C1}-C_{C1}-M_{C1})$	$+S_{CC1}$	$+D_{CI1}$ $(=W_{I1}-C_{I1}-M_{I1})$	$+S_{CI1}$	$+DEP_{EC}$	$+\Delta DBTFF_{DEC}$	$+DEP_{EI}$	$+\Delta DBTFF_{DEI}$		
II(c)										

	Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank sector	
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW
II(a)	$RESDCB_2$	DCB_2	$LDCB_2$	$DEPDCB_2$			$I_{FE}+IGF_{CNBS}$	NW_{FE}	RES_{FCB2}	$D_{RESFCB2}$
II(b)	L_{DE}	DEP_{DH}	$FCRES_1$	$DEPFC_2$	D_{RTI}	S_{RTI}	$+D_{FH\&TI1}$	$+S_{FH\&TI1}$	LFE_2	$D_{FH\&TI1}$
II(c)								$DBTFF_{FCBS2}$		

The main point to note is that the example assumes that the domestic expenditures originated by the Government are all spent locally, therefore the domestic currency reserves remain constant, while debt to the foreign central bank increases (reserves on the asset side are in gross rather then net terms). As long the two central banks agree on the need for their refinancing, the situation is stable and the exchange rate could even remained fixed. Indeed, as implicit in Schmitt (1988), this is precisely what is obtained

when a national central bank refinances the net negative treasury positions of commercial banks that have a shortfall of liquidity. The rate of exchange between the "moneys" issued by each bank is equal to 1 and this causes no problem.

4. An application to the economies of the Western Balkans

For geographic and historical reasons, the economies of the Western Balkans are strongly integrated from the trade point of view. A simplified version of the Kalecki identity can be presented based on recent EC ECFIN data, by consolidating the banking sector together with the corporate sector and households in order to put emphasis on the apparent debt behavior of the consolidated private sector, as done in table Y below:

Net lending and borrowing positions (% of GDP, 2010)

	Private sector balance *S-I*	Government balance *-(G-T)*	External sector BoP CA balance *X-M*
	<0 = net debt	<0 = net debt	<0 net external debt
Croatia	4.2	-5.7	-1.5
Fyrom	0.0	-2.5	-2.5
Montenegro	-23.0	-3.0	-26.0
Albania	-9.0	-3.0	-12.0
Bosnia & Herzegovina	-1.5	-3.8	-5.3
Serbia	-2.8	-4.5	-7.3
Kosovo	-15.7	-2.8	-18.5
Turkey	-3.3	-3.3	-6.6
Iceland	0.0	-7.8	-7.8

Source: EU C&PAC Economic Quarterly, DG ECFIN, April 2011

The table shows that all the countries in the Western Balkans have a substantial deficit in the current account in the year 2010, except perhaps Croatia and maybe Fyrom. This current account deficit is covered through capital imports, which are for a large part, private, resulting in increased private debt accumulation. As discussed before, over the long-term it is not sustainable to finance a systematic current account deficit through increased private debt. An extreme case is Montenegro where the private sector increased its indebtedness by 23% of GDP in 2010, all financed from abroad.

Table Z presents the average rate of growth of exports in volume between 2002 and 2010. As discussed in the previous section, this rate of growth divided by the elasticity of imports to income gives the growth rate of the economy consistent with a balance of payments equilibrium.

In general income elasticities of imports are found to be above 1 and significantly higher then the corresponding income elasticity of exports. This means that these economies will tend to widen rather than reduce their current account deficit when they grow more rapidly, and in any case that the growth of GDP will remain below that of exports. The last but one column in the table above gives the growth rate g_T consistent with the balance of

payments equilibrium based on the calculated elasticities. With the exception of Albania and Bosnia Herzegovina, this rate is low, indicating the need for external assistance.

$M = \mu_1 Y + \mu_0$	x = % growth of exports	Log regression			Double log regression			Double log regression		$g_T = x/g_T$	g
		$\mu 1$	$\mu 0$	R^2	$\mu 1$	$\mu 0$	R^2	$\mu 1$	$\mu 0$		
Albania	20.37	1.60	- 1.15	0.96	3.49	- 0.05	60.3%	1.86	-	10.98	5.65
Bosnia and Herzegovina	8.33	0.70	0.64	0.76			21.8%		-	11.90	4.00
Croatia	3.81	1.55	- 1.13	0.94	2.83	- 0.02	87.5%	2.05	-	1.35	3.27
Fyrom	1.55	0.94		0.53			10.4%		-	1.64	2.47
Kosovo	26.70	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Montenegro	5.05	2.85	- 3.80	0.95	4.15		75.9%	3.25	-	1.78	3.84
Serbia	3.88	1.20		0.92	3.12	- 0.04	78.3%	1.51	-	1.24	2.93
Turkey	7.41	1.99	- 1.98	0.97	2.88		86.9%	2.58	-	3.72	3.15

Non significant coefficient
Selected coefficient

Available estimates in the literature, based on more sophisticated regression techniques, show import elasticities which are even higher, therefore reinforcing this conclusion. As for Croatia Bobic (2010) find an income elasticity of imports of 2. For Fyrom, Kadievska-Vojnovic and Unevska (2007) find a value of 3.47, whereas, for Serbia, Petrović and retains value of 0.86.

5. Conclusions and policy implications

In a closed dynamic monetary economy evolving in sequential time there is no reason to expect an automatic tendency towards full employment. In such an economy, out of full employment equilibrium, the causality goes from investment to savings and acts through the multiplier, which can be exploited by economic policy.

An open economy with freely floating exchange rates that would set themselves in a stable manner at the level that reflects the real relative price of traded and non-traded goods would be de facto insulated from foreign developments and therefore would work as a closed economy.

However experience shows that freely floating exchange rates are not stable. The reason could be that the price of a currency is, like that of any other financial assets, very volatile, being influenced by non-converging expectations that can be exploited by speculation. If freely floating exchange rates do not insulate an economy from external factors, in principle some form of external constraint can arise, at least for countries that have a current account deficit. An exception is when the currency of a country is an international means of payment. Then, whatever the sign and size of the current account balance, even if the exchange rate does not set at its “fundamental” equilibrium level, there is no external constraint and the country works de facto as a closed economy, particularly, if like the US, external trade represents a relatively small part of its economic activity.

In general, if freely floating exchange rate could insulate from external trade, one would expect that all countries whose currency is not an international means of payment would opt for freely floating exchange rates. One observes instead that smaller economies, which are by almost by definition also those that are more open to external trade, often prefer stable or fixed exchange rate regimes, even if the generate sizeable current account surpluses. Typical examples are the Benelux countries, that have been always promoters of the Monetary Union in Europe, or countries such as Singapore or Hong Kong, which

have forms of currency Board arrangements. One of the reasons is that, given the potential high instability of the exchange rates, and given that for a small economy exchange rates have a strong influence on domestic inflation, countries prefer to stabilize them.

Therefore, for a small regional economy whose GDP relies heavily on external trade, floating exchange rates are not really an option, even if the country has the capacity to generate large current account surpluses and has guaranteed access to large foreign markets (ex. China). Even in this case, where the country will always have abundant international means of payment, there might still be an advantage in having some form of fixed exchange rate, in order to avoid large swings in imported inflation, as argued in section 1.2 above.

Obviously, with fixed exchange rates, other variables must be found that can compensate for external payments imbalances, while keeping the exchange rate fixed. Since external reserves are limited for a country whose currency is not an international means of payment and since it is costly to keep interest at high level for a long time, the only balancing variable in case of an external account imbalance in a fixed exchange rate regime is fiscal policy (section 1.4). If they want to balance their external accounts, countries with a current account deficit must reduce domestic economic activity by fiscal deflation, with high costs in terms of employment. This is one of the main meanings of the expression “external constraint”, which is a tough reality for small open economies with an excess of domestic investment over domestic savings. The relevance of the external constraint for such countries is confirmed by the empirical evidence on Thirlwall laws, examined in section 2.6.

If a group of small economies that are regionally integrated and have strong trade links, it is however possible in principle to ease the foreign constraint by the coordination of fiscal policy. It is reminded in section 2.7 that Thirlwall laws imply that the fiscal multipliers, normally of the order of 1.5 in domestic and insulated economies, should be doubled in an area regionally integrated by trade, such as that of the OECD countries, if fiscal policy coordination exploits the effects of the foreign trade multiplier.

Since in a single regionally integrated monetary area, there is no natural tendency to obtain full employment, as it is the case in any monetary production economy, policy coordination should be envisaged against a background of “unemployment equilibria” (neoclassical disequilibria) that it is the task of economic policy to correct. In such a framework the basic causality chain to rely upon for policy action is that going from investment to savings. The associated employment multiplier should thus be the central organizing concept for policy coordination, as suggested in the original paper of Kahn on the multiplier, which was written against the historical background of the Great Crash of 1929 and the resulting trend toward protectionism that ended with the Second World War.

Recently Goodwin (1980) has provided a general framework to extend this theoretical argument to international trade between different nations. Airov (1967) had already given a fairly general treatment in a context of trade between different regions. The idea is that the foreign trade multiplier can be exploited to limit or at the limit cancel, the impact of the external constraint. Some of the standard results are that Government expenditures should

be concentrated in lagging regions where they exert the greatest economic effects, and that advanced regions have an interest in supporting lagging regions. This is confirmed in particular if other factors of regional integration other than just trade are also considered. The results of Miyazawa for Japanese regions show that through the concept of the interrelational input-output table, which captures the effect of trade and distributional linkages amongst regions, it is possible to establish multipliers that confirm the strong interest for leading regions to support lagging regions. Miyazawa multipliers are in fact multisectoral variants of Kalecki's multiplier, which are easier to use to show how a coordination of economic policy could be established.

If full employment becomes again the central policy objective of economic policy, it should also become an objective of policy cooperation. The working of the foreign trade multiplier allows reaping the benefits of a fixed exchange rate regime, through policy coordination around an objective of full employment even in the absence of a federal budget. As illustrated by the example of section 3, it is indeed possible in principle to replicate the effects of a federal fiscal policy by coordinating "national" fiscal policy on full employment fiscal deficits, as suggested in Parguez (2011) and putting in place a clearing mechanism between central banks of the type proposed by Keynes at Bretton Woods. In that case, as argued in section 2.7.3, economic policy should set the target rates of economic growth consistent with full employment in each area, calculate the resulting investment needs and the way to cover them and, if necessary establish a mechanism for clearing between central banks to cover automatically long-term payment imbalances.

This type of clearing mechanism becomes a logical necessity if international or interregional trade occurs under permanent differential of absolute productivity. Trade imbalances, which will inevitably accumulate into the external positions of the various countries, could be cleared by transactions between the central banks, organized in the context of this agreed clearing mechanism. Such a mechanism seems also implicit in the proposals made at the time by Schmitt (1988, see also Cencini, 2010). It should not be more difficult for such a mechanism to maintain a fixed parity between the participating currencies than it is for a central bank to maintain a 1 to 1 conversion rate between the reserves of different commercial banks.

An example of a regionally integrated area dependent on foreign savings is given in section 4, where data pertaining to the Balkan area is reviewed that show how much the region depends form abroad to sustain its current account deficits. Some simple calculations are presented to discuss the magnitude of the likely import elasticity to income, which is the basis for the calculation of Harrod's foreign trade multiplier. They illustrate that in the absence of a major structural change that would develop an export sector, the dependence of the Balkans on external trade is likely to persist. In this context, while a strategy for coordinated structural change is devised and applied in the medium to the long-term, a clearing mechanism such as that discussed above could allow to finance the external account deficit of the area. In line with the analysis of the monetary circuit, this solution is justified as long as the liquidity created for external assistance is used to generate real wealth creation in the form of wages and profits, as opposed to various form of quasi-rents. The question of the good use of the external support is thus crucial for the success of such a strategy. Such a solution could be discussed in principle also for other trade dependent areas linked to the EU.

Instead, in the context of a Monetary Union, the problem of fiscal policy coordination can be better solved through the establishment of a Political Union, with a single fiscal policy, as when money endogeneity prevails, such as in the Godley-Lavoie models analyzed in section 1.4, the “first best” solution is a “federal” fiscal policy. In this respect, it could be noted that at the time, the Mc Dougall report (1977), estimated the suitable minimal federal budget in an integrated monetary area to be of the order of 5-7% of GDP in the first years.

Unfortunately the federal budget at European level is still today of the order of 1% of GDP as it was then and this creates self-reinforcing tendencies towards deflation. There is indeed a rationale for budgetary restrictions at national level in a process of integration at supranational level, particularly when it has been decided politically that monetary integration would precede political integration. This is due to the fact that, as argued above for international trade, the operation of the foreign trade/interregional multiplier makes more efficient to use macroeconomic policy instruments at the federal level. However, this rationale is only justified if, together with the budgetary restrictions at national level, there is a parallel increase in the budget managed at federal level, otherwise the same trade multipliers will start to work in the other direction, exerting “automatic destabiliser” effects. The need for a substantial reorientation of the EU policy debate in this respect can be seen when one measures the distance of the recent European debate on the EU budget in a post 2014/2020 perspective from the analyses of the Mc Dougall report. The discussion has turned around the question of whether the budget should be increased by 5 or 7%, whereas at the time of the Mc Dougall report it was indicated that the appropriate size for the budget of a federation during the first years of Monetary Union was 5-7% of GDP.

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	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government		Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank. sector		Comments	References
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW		
(0)	0	0	0	0	0	0	0	0	0	0	(0) RESDCB$_0$	DCB$_0$	LDCB$_0$	DEPDCB$_0$ =(RESDCB$_0$)	0	0	0	0	RES$_{FCB0}$	D$_{RESFCB0}$	Initially it is assumed that banks have some reserves at central bank both domestically and abroad	All other balance sheets are empty

	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government		Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank sector			
	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW		
(1)					ΔDIF$_{DEC}$	ΔDBTIF$_{DEC}$	ΔDIF$_{DEI}$	ΔDBTIF$_{DEI}$			(1) ΔLIF$_{DE}$ =(ΔLIF$_{DEC}$+ΔLIF$_{DEI}$)	D$_0$ = ΔD$_{DE}$ = ΔD$_{DEC}$+ΔD$_{DEI}$					ΔDIF$_{FNBS}$	ΔDBTIF$_{FNBS}$	ΔLIF$_{FNBS}$	FD$_0$ = ΔD$_{FNBS}$	(1) Loan from Banks to Entreprises. Banks have to get compulsory reserves	IF stands for initial finance
(2)											(2) +ΔRESDCB$_1$	+ΔDCB$_1$	+ΔLDCB$_1$	+ΔDEPDCB$_1$					ΔRES$_{FCB1}$	+ΔD$_{RESFCB1}$	(2) Overdraft system with compulsory reserves. Table 21.11 p.523 Lavoie (2003)	Lavoie Marc. (2003a). "A Primer on Endogenous Credit Money", in Modern Theories of Money. The Nature and Role of Money in Capitalist Economies, Rochon Louis-Philippe and Rossi Sergio (ed.), Cheltenham, UK, Edward Elgar.
(3)	+W$_C$	+RLHC$_{DE}$	+W$_I$	+RLHI$_{DE}$	-W$_C$		-W$_I$				(3)	-W$_{EC}$					-W$_{FNBS}$			-W$_{FNBS}$	(3) Entreprises pay salaries to domestic households	The foreign non banking sector being consolidated, flows of wages cancel
(4)					+WK$_{HC}$		+WK$_{HI}$				(4)	+W$_{HC}$					+W$_{FNBS}$			+W$_{FNBS}$	(4) Real liabilities and WK assets are accumulated during the production period	
(5)					-WK$_{HC}$		-WK$_{HI}$				(5)	-W$_{EI}$									(5) Production is completed. Real Liabilities and WK are cancelled	
(6)		-RLHC$_{DE}$		-RLHI$_{DE}$	+STFG$_C$		+STFG$_I$				(6)	+W$_{HI}$									(6) Entreprises accumulate stocks of finished goods	
(7)	-C$_C$	- NW$_{Cc}$	-C$_I$	- NW$_{CI}$	-STFG$_{Ch}$		-STFG$_{Ii}$				(7)	-C$_H$= -(C$_C$+C$_I$)					-C$_{DFNBS}$ -I$_{DFNBS}$			-C$_{DFNBS}$ -I$_{DFNBS}$	(7) Part of the consumer goods are sold to consumers in the domestic consumption and production sectors	The foreign non banking sector being consolidated, flows of domestic consumption and investment cancel
(8)					+C$_C$+C$_I$		+STFG$_{Ii}$				(8)	+C$_H$= (C$_C$+C$_I$)					+C$_{DFNBS}$ +I$_{DFNBS}$			+C$_{DFNBS}$ +I$_{DFNBS}$	(8) Entreprises realise sales to consumers in the consumption and investment sector.	
(9)							-I$_{Ii}$				(9)										(9) Part of the investment goods are sold to the entreprises in the investment sector	
(10)							+I$_{Ii}$				(10)										(10)	
(11)					+STFG$_{Ic}$		-STFG$_{Ic}$				(11)	-M$_{C&E}$ = - (M$_C$+M$_I$+ I$_{MC}$+I$_{MI}$)	+FC$_M$	+DBTFC$_{FCB}$					+LFC$_{DCB}$	+DFC$_{DCB}$	(11) Entreprises in the investment sector transfer part of the investment goods to the entreprises in the consumption sector.	The central Bank borrows foreign currency from the foreign central bank. Commercial banks start debiting the local currency accounts of domestic consumers and producers who pay for resident trade intermedries for imports.
(12)					-I$_C$		+I$_C$				(12) -ΔRESDCB$_2$		-ΔLDCB$_2$	-ΔDEPDCB$_2$							(12) The Central Bank destroys central money in the reserves of commercial banks and transfers to them the equivalent in foreign currency (Deleplace, 2006 p.107).	Entreprises in the consumption sector pay for the investment goods they buy.
(13)	-M$_C$		-M$_I$		-I$_{MC}$		-I$_{MI}$				(13) +FC$_M$	+MLC$_{RTI}$ = + (M$_C$+M$_I$+ I$_{MC}$+I$_{MI}$)	-FC$_M$		M$_{CRTI}$=M$_C$	RL$_{RTI}$ = (WKMC$_{RTI}$ +WKMI$_{RTI}$ +WKIM$_{RTI}$ +WKIMI$_{RTI}$)					(13) Consumers and producers pay imported consumption and investment goods to resident trade intermediaries.	Commercial banks credit the deposits accounts of resident trade intermediaries, who thus receive payment in local currency from consumers and producres. They accumulate a short term real liability to them. Resident consumers and producers have correspondingly a real working capital claim on them. Commercial banks receive foreign currency from central banks.
(14)	+WKMC$_{RTI}$		+WKMI$_{RTI}$		+WKIMC$_{RTI}$		+WKIMI$_{RTI}$				(14) -FC$_M$	-MLC$_{RTI}$ = + (M$_C$+M$_I$+ I$_{MC}$+I$_{MI}$)			-M$_{CRTI}$						(14) Resident trade intermediaries give away their deposits in local currency	The Domestic Commercial Banks transfer the foreign currency to trade intermediaries.
(15)											(15)				+FC$_M$						(15) Resident trade intermediaries get foreign currency in exchange	
(16)											(16)				-FC$_M$		+FC$_M$	+ΔDEPFNBS$_1$			(16) Resident importers pay exporters in foreign currency	
(17)											(17)				+SFG$_M$		-SFG$_{C&I}$ = SFG$_M$				(17) Resident trade intermediaries receive imported goods. .	These are consumption and investment goods produced abroad, thus correspond to physical exports of the foreign country
(18)	-WKMC$_{RTI}$		-WKMI$_{RTI}$		-WKIMC$_{RTI}$		-WKIMI$_{RTI}$				(18)				-SFG$_M$ = (M$_C$ +M$_I$ +I$_{MC}$ +I$_{MI}$)	-RL$_{RTI}$ = (WKMC$_{RTI}$ +WKMI$_{RTI}$ +WKIM$_{RTI}$ +WKIMI$_{RTI}$)	-FC$_{X-M}$	-ΔDEPFNBS$_2$	-MFC$_{FCBS}$	-ΔDEPFNBS$_1$	(18) Imported goods are transferred to resident consumers and producers. . This extinguished previous real claims and liabilities.	The foreign non-banking sector uses the liquidity gained to repay the part of the initial loan that was taken for producing the goods it exported, except that liquidity it needs to pay for imports. This destroys the foreign liquidity for net exports.
(19)											(19)				+DEPFC$_{RTI}$		-FC$_X$				(19) The foreign non banking sector pays resident trade intermediaries	
(20)											(20) +FC$_X$				-DEPFC$_{E&I}$						(20) Resident trade intermediaries change their foreign currency at the commercial banks	The domestic commercial banks increase their reserves at the domestic central bank, who credits their deposits accouns in local currency. Domestic banks credit the deposits to the account of resident trade intermediaries.
(21)											(21) -FC$_X$										(21)	Commercial banks transfer the foreign currency to the central bank
(22)					-STFG$_{CX}$		-STFG$_{IX}$				(22) +ΔRESDCB3	+DEP$_{RTI}$	+FC$_X$	+ΔDEPDCB$_3$	+DEPLC$_{E&I}$						(22) The central bank increases the reserves of the commercial banks and take their foreign currency	Domestic entreprises transfer the exported goods to resident trade intermediaries
(23)											(23)	-DEP$_{RTI}$			+STFG$_{X&I}$						(23) They transfer the corresponding stock of finished goods to the trade intermediaries	
(24)					+X$_C$		+X$_I$				(24)	+DEP$_{DE}$			-DEPLC$_{E&I}$						(24) Domestic exporters get paid	
(25)					-ΔDFF$_{DEC}$	-ΔREFLUX$_{DEC}$	-ΔDFF$_{DEI}$	-ΔREFLUX$_{DEI}$			(25) -ΔREFLUX$_{DE}$ = -(ΔDBTTIF$_{DEC}$ + ΔDBTIF$_{DEI}$)	-ΔD$_1$			-STFG$_X$		+STFG$_{C&I}$				(25) Resident trade intermediaries deliver the goods to the foreign private sector	The domestic producers repay their loans to domestic banks, who destroy the money they created
(26)											(26) -ΔRESDCB$_4$	-ΔDBTFF$_{CB}$	-ΔRESFC$_{CB}$	-ΔDEPDCB$_4$							(26)	Reserves are destoyed as well, in proportion.
(27)											(27)						-ΔDFF$_{FNBS}$	-ΔRFLX$_{FNBS}$	-ΔRFLX$_{FNBS}$	-ΔD$_1$	(27) The final finance phase of the circuit destroys the liquidity created by commercial banks abroad	
(28)											(28)								-ΔRES$_{FCB2}$	-ΔD$_{RESFCB2}$	(28) The corresponding central bank liquidity is destroyed as well	

	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government		Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank sector		
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	
I(a)					+I$_C$+I$_{MC}$	NWC$_1$	+I$_I$+I$_{MI}$	NWI$_1$			I(a)	RESDCB$_1$ = RESDCB$_0$ + ΔRESDCB$_1$ - ΔRESDCB$_2$ +ΔRESFCDCB$_3$ -ΔRESDCB$_4$	DCB$_1$ = DCB$_0$ + ΔDCB$_1$ - M$_{C&E}$ + X$_{RTI}$ -ΔDBTFF$_{CB}$	LDCB$_1$ = LDCB$_0$ +ΔLDCB$_1$ -ΔRESFC$_{CB}$	DEPDCB$_1$ = DEPDCB$_0$ + ΔDEPDCB$_1$ - ΔDEPDCB$_2$ - ΔDEPDCB$_4$			I$_{FE}$	NW$_{FE}$	RES$_{FCB1}$ = RES$_{FCB0}$ +ΔRES$_{FCB1}$ +LFC$_{DCB}$ -MFC$_{FCBS}$ - ΔRES$_{FCB2}$	D$_{RESFCB1}$ = D$_{RESFCB0}$ +ΔD$_{RESFCB1}$ -ΔD$_{RESFCB2}$ +DFC$_{DCB}$	I(a)
I(b)	+D$_{CC}$ (=W$_C$-C$_C$-M$_C$)	+S$_{CC}$	+D$_{CI}$ (=W$_I$-C$_I$-M$_I$)	+S$_{CI}$	+C$_C$+C$_I$+X$_C$ -I$_C$-I$_{MC}$-W$_C$ +ΔDIF$_{DEC}$ -ΔDFF$_{DEC}$	+ΔDBTFF$_{DEC}$ = +ΔDBTIF$_{DEC}$ -ΔREFLUX$_{CEB}$	X$_I$+I$_C$+I$_I$-I$_I$ -I$_{MI}$-W$_C$ +ΔDIF$_{DEI}$ -ΔDFF$_{DEI}$	+ΔDBTFF$_{DEI}$ = +ΔDBTIF$_{DEI}$ -ΔREFLUX$_{DEI}$			I(b)	L$_1$= +ΔLIF$_{DE}$ -ΔREFLUX$_{DE}$	D$_2$=D$_0$-ΔD$_1$ =+D$_{CC}$+D$_{CI}$+ D$_{RTI}$	FCRES$_1$ = -FC$_M$ + FC$_X$	DEPFC$_1$ = +DBTFC$_{FCB}$ + ΔDEPDCB$_3$	D$_{RTI}$	S$_{RTI}$	+D$_{FH&TI}$ = ΔDIF$_{FNBS}$ +W$_{FNBS}$ -C$_{FNBS}$+FC$_M$ -FC$_{X-M}$-FC$_X$ -ΔDFF$_{FNBS}$	+S$_{FH&TI}$	LFE$_1$ = ΔLIF$_{FNBS}$ -ΔRFLX$_{FNBS}$	D$_{FH&TI}$ = FD$_0$+W$_{FNBS}$- C$_{FNBS}$ -ΔD$_1$	I(b)
I(c)											I(c)							DBTFF$_{FCBS}$			I(c)

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Annex 1

	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government		Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank sector	
	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW	ΔAssets	ΔLiabilities & NW
(29)									$+DEPG_{DCB}$	$+DBT_{G1}$	$+L_G$	$+DEPG_{DCB}$	$+\Delta LCB2$	$+\Delta RESDCB_5$			$+DEPG_{FCBS}$	$+DBT_{FNBS}$	ΔRES_{FCB2}	$+\Delta D_{RESFCB3}$
(30)											$+\Delta RESDCB_5$	$+\Delta DCB2$								
(31)					$+G_{EC}$	RLG_{EC}	$+G_{EI}$	RLG_{EI}	- G										$+\Delta L_{FNBS}$	$+\Delta R_{FNBS}$
(32)									$+WK_{H\&E}$											
(33)																				
(34)																				
(35)																				
(36)																				

	Households (consumption)		Households (Investment)		Entreprises (consumption)		Entreprises (Investment)		Domestic Government		Domestic banks		Domestic Central Bank		Resid. trade intermediaries		Foreign non-banking sector		Foreign cons. bank sector	
	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW	Assets	Liabilities & NW
II(a)					$+I_{C1}+I_{MC1}$	NWC_2	$+I_I+I_{MI}$	NWI_1	I_G	$+DBT_{G2}$	$RESDCB_2$	DCB_2	$LDCB_2$	$DEPDCB_2$			$I_{FE+}IGF_{CNBS}$	NW_{FE}	RES_{FCB2}	$D_{RESFCB2}$
II(b)	$+D_{CC1}$ $(=W_{C1}-C_{C1}-M_{C1})$	$+S_{CC1}$	$+D_{CI1}$ $(=W_{I1}-C_{I1}-M_{I1})$	$+S_{CI1}$	$+DEP_{EC}$	$+\Delta DBTFF_{DEC}$	$+DEP_{EI}$	$+\Delta DBTFF_{DEI}$			L_{DE}	DEP_{DH}	$FCRES_1$	$DEPFC_2$	D_{RTI}	S_{RTI}	$+D_{FH\&TI1}$	$+S_{FH\&TI1}$	LFE_2	$D_{FH\&TI1}$
II(c)																		$DBTFF_{FCBS2}$		