Fiscal Policy and the Substitution between National and Foreign Savings

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Abstract

This contribution addresses the relationship between fiscal policy, the real exchange rate, national and foreign savings and investment. It shows how the mechanism of the Finance-Investment-Saving-Funding Keynesian circuit (FISF) works in open economies. This is undertaken in an attempt to demonstrate that real exchange rate changes affect the FISF-circuit in that it triggers the substitution between national and foreign savings. Thus, domestic investment causes savings, but the distribution of aggregate savings between its national and foreign components depends on the level of the real exchange rate. Finally, we show that if government budget deficits change relative prices in an economy, it worsens the current account balance by triggering substitution between national and foreign savings. Thus, the constraint on investment (and on growth) that is possible to emerge from this process, is one that emerges from external forces.

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JEL Classification: E22, F41

1. Introduction[1]

There are studies that deal with the relationship between national savings, foreign saving and investment. These studies deal with the determinants of national savings and, generally, the conclusion that emerges in this literature suggests foreign savings as one of these determinants when the access to foreign borrowing at international interest rates is limited (Loayza et al., 2000). In other words, if capital mobility is not-restricted, foreign savings passively fill the gap between national saving and domestic investment. The current account deficit (foreign saving absorption) is just the result of the intertemporal choices of domestic agents who can use foreign borrowing to smooth consumption through time. This means that foreign savings act as substitutes to domestic savings (Edwards, 1995). When the degree of international capital mobility is limited, domestic agents are constrained in their intertemporal choices by the amount of the available foreign finance, and foreign saving becomes a determinant of domestic saving. Although these studies deal with open economies, the issue of the exchange rate is set aside. The real exchange rate is not considered as a determinant of savings. It is endogenous and passively adjusts to produce the equilibrium between domestic investment and domestic saving plus foreign saving (current account deficit).

The empirical literature on the issue shows that foreign savings crowd out private savings in a less than one to one fashion, i.e. foreign savings are a determinant of national savings and the degree of substitutability between the former and the latter is an empirical matter (Fry, 1978; Edwards, 1995; Uthoff and Titelman, 1998; Carrol and Weil, 1993, Reinhart and Talvi, 1998).[2] In this literature savings are prior to investment. In Post Keynesian economics, however, investment 'causes' savings, as Keynes (1936, 1937a, 1937b) showed

[1] Marco Flávio da Cunha Resende wishes to thank the Ministry of Education-Brazilian Government, for the financial support by CAPES.

[2] Using household data for a sample of 10 countries Schmidt-Hebbel et al. (1992) find that foreign capital inflows tend to reduce household saving in the short run. The long-run effect of foreign saving on household saving is positive, however, due to the fact that the income growth from the investment financed by foreign lending is realized. Loayza et al. (2000) used both private and national savings for dependent variables. In the case of private savings, the resulting estimates show that an increase in external saving is partly offset by a decline of private saving in both the short and long run. Their results for national saving reveal a similarity in terms of sign and significance of the estimated coefficients. As pointed out by Loayza et al. (2000), these results agree with the standard view that external saving acts as a substitute rather than as a complement to domestic saving. Other empirical studies, Aizenman et al. (2007) for example, find that financial integration observed during the 1990s failed to offer new net sources of financing capital in developing countries. Their results suggest that neither significant substitution nor complementarity between domestic and foreign savings was in evidence.

using the concept of a monetary production economy and the Finance-Investment-Saving-Funding (FISF) circuit for a closed economy. Keynes (op. cit.) emphasized the driving role of investment and the role of the multiplier to present a picture in which output and employment would adjust to bring savings and investment into equality. In the monetary economy output is demand determined and savings is the residual. The role of savings is to fund investment, not to finance it (Studart, 1995).[3]

How does the Post Keynesian literature address the relationship between national savings, foreign saving and investment? Is the FISF-circuit valid for open economies? Is there a role for the real exchange rate in determining the level of domestic and/or foreign savings? Although there are many studies that deal with open economies in the Post Keynesian tradition (Davidson, 1992, 2007; Dow, 1993, 1999; Arestis and Glickman, 2002), to the best of our knowledge, there is no such study that shows how the FISF-circuit and its channels and mechanisms work in open economies. Moreover, there are very few studies in the Keynesian tradition that are concerned with the question of the role of the real exchange rate in determining the level of domestic and/or foreign savings (see, for example, Bresser-Pereira and Nakano (2002) and Bresser-Pereira and Gala (2008)).

The argument developed by Bresser-Pereira and Gala (op. cit.) relies upon national income accounts (accounting identities). They argue that the more the exchange rate appreciates, the higher the real wages of workers and salaries of the professional middle class, as long as the real price of internationally tradeable consumer goods (commodities) decreases with the appreciation of the real exchange rate. As a trade-off, capitalists' profits fall since the profit rate is the opposite of the wage rate.[4] Assuming that the propensity to consume of both workers and the middle class is much higher than capitalists' propensity to consume, aggregate consumption rises and national savings are reduced as a percentage of aggregate income. At the same time the exchange rate appreciation entails a current account deficit. Bresser-Pereira and Gala (op. cit) highlight, therefore, that domestic savings are a function of the real exchange rate and variations in the latter thereby lead to a substitution between national and foreign savings by demonstrating from the accounting identities why national

[3] Following the Keynesian literature, finance is the short-term credit required during the interregnum between the intention to invest and its achievement. Finance employs no saving and depends on short-term bank financing arrangements. Funding corresponds to the substitution of the short-term obligations by a long-term issue and requires the public to give up an amount of liquidity equal to real savings (see, for example, Davidson, 1986, for further details).

[4] The appreciation of the real exchange rate corresponds to a shift in the relative price of tradable and non-tradable goods, which increases real wages and reduces profits.

savings decrease when real exchange rate appreciates. This can be shown by adopting the Post Keynesian framework and showing how FISF-circuit works for open economies.

We wish to show in this contribution that the distribution of aggregate savings between its national and foreign parts depends on the level of the real exchange rate. In addition, the FISF circuit to open economies and its link with the real exchange rate can be useful. The argument Bresser-Pereira and Gala (2008) present explains why national savings fall when there is an overvaluation of the real exchange rate. Nevertheless, why does the overvaluation of the real exchange rate increase foreign savings, which replaces decreasing national savings? Their argument can be strengthened to address the issues concerning fiscal policy from a Post Keynesian perspective; and as Kim and Roubini (2008) suggest, "Questions concerning relationships between fiscal policy, the current account, and the real exchange rate are of great analytical and empirical interest" (p. 362). The FISF circuit may be a useful tool to show that the government budget deficits do not bring forward a picture where investment is constrained by national savings as it is argued by the conventional wisdom (the twin deficits issue).

In what follows, we begin in section 2 by explaining the argument that the distribution of aggregate savings between its national and foreign parts depends on the level of the real exchange rate. In section 3 we show the FISF circuit and its channels through which the process of savings formation unfolds to closed economy as developed by Keynes (1937a, 1937b), and extends the analysis to the open economy case. Using FISF circuit to the open economy we show that the real exchange rate takes part in the process of national and foreign savings formation; and that this analysis is compatible with the Keynesian approach, which considers that it is investment that brings forward savings. Section 4 addresses fiscal policy issues by showing the relationships between the budget deficits, the national savings, the foreign savings, the real exchange rate and the domestic investment. Section 5 summarises and concludes.

2. Real Exchange Rate, National Savings, Foreign Savings

Bresser-Pereira and Gala (2008) explain the mechanism trough which the real exchange rate appreciation causes a decrease in national savings. They point out that an appreciation of the real exchange rate entails the substitution of national for foreign savings. Nevertheless, the authors show only part of the process as triggered by the appreciation of

the real exchange rate. Why does the overvaluation of the real exchange rate increase foreign saving, which replaces decreasing national savings? What is the mechanism related to the appreciation of the real exchange rate that leads to an increase in foreign saving? These questions may be answered by using national income accounts and FISF-circuit in the case of open economies.

In the case of the open economy, domestic investment equals national plus foreign savings, i.e. in the ex-post equilibrium capital goods supplied is the counterpart of national plus foreign savings. Furthermore, the domestic production of capital goods is not any more required for investment to take place insofar as part of the domestic output of consumption goods may be exchanged for capital goods at the international market. This portion of the output of consumption goods mirrors part of national savings although there is no domestic production of capital goods. Beside this, net exports mirror part of national savings. This can be further clarified utilizing the following national income accounts identity:

$$S - I = NX = CA = NFI = - FS \tag{1}$$

where S is national savings, I is domestic investment, NX are net exports of goods and services, CA is current account balance, NFI is net foreign investment and FS is foreign saving. On the other hand, assuming for the sake of simplicity that investment goods are just capital goods,

$$I = KGO + MKG - XKG \tag{2}$$

where KGO is domestic output of capital goods, MKG and XKG are imports and exports of capital goods respectively, and KGO + MKG - XKG is the implied consumption of capital goods. Thus,

$$S = NX + I = X - M + KGO + MKG - XKG \tag{3}$$

where X and M are national exports and imports of goods and services. For the sake of simplicity we assume that there are no external transactions on services and there are only two kinds of goods, consumption goods and capital goods. Thus, X = XCG + XKG and M = MCG + MKG, where XCG and XKG are exports of consumption goods and of capital goods respectively, and MCG and MKG are imports of consumption goods and of capital goods respectively. Therefore, equation (3) becomes:

$$S = NX + I = XCG + XKG - (MCG + MKG) + KGO + MKG - XKG, \text{ or}$$

$$S = NX + I = XCG - MCG + KGO = CA + I \quad (4)$$

Since from equation (2) I = KGO + MKG - XKG, equation 4 becomes:

$$XCG - MCG + KGO = CA + KGO + MKG - XKG, \text{ or}$$

$$XCG - MCG = CA + MKG - XKG \quad (5)$$

Equation (4) clearly implies that net exports of consumption goods are part of national savings. Similarly, equation (5) implies that when CA = 0, if XCG > MCG, then MKG > XKG, i.e. net exports of consumption goods are exchanged by (net) imports of capital goods in order to meet domestic investment demand. On the other hand, the effect of a real exchange rate change on trade balance is twofold. According to Pastore and Pinotti (1995, p. 41), the relative rise in the price of tradable goods (TGs) stimulates the substitution of consumption of TGs for non-tradable goods (NTGs). Furthermore, it stimulates the production of the former, increasing net exports if the Marshall-Lerner condition is met. Likewise, appreciating the exchange rate – i.e. an increase in the relative price of NTGs – affects the trade balance negatively.

One can obtain a similar result when adopting a model of mark-up pricing, where the economy does not necessarily operate at full employment.[5] A rise in the relative price of the NTGs can eliminate the less efficient producers of the TG type by squeezing their margins, insofar as it increases their production costs. Likewise, a decline in the relative price of NTGs enables the entrance of less efficient producers in the TGs sector, thereby increasing the exportable surplus and the net exports. A rise in the price of TGs relative to that of NTGs improves the trade balance. Following accounting identities an increase of the net exports is equal to the rise in national savings.

Therefore, assuming that the price elasticity of demand for imports of both capital goods and consumption goods and for exports of such goods is higher than zero, then an

[5] See, for example, Kandir (1989) and Pereira (1999) for further analysis of the mark-up model.

appreciation of the real exchange rate leads to a fall in (XCG - MCG) and to a rise in (MKG - XKG). In addition, according to equation (5) a fall in the CA should be higher than the fall in the net exports of consumption goods (XCG - MCG); this is due to the rise in net imports of capital goods (MKG - XKG).

Thus, real exchange rate appreciation may lead to a fall in net exports and in national savings and to a current account deficit; the latter reflects net imports of capital goods without net exports of consumption goods as its counterpart, i.e. if CA = 0; then net exports of consumption goods are exchanged for (net) imports of capital goods as shown in equation (5). However, the real exchange rate appreciation leads to a picture where national savings fall, a current account deficit emerges and net imports of capital goods do not change by much. But, why the real exchange rate appreciation increases foreign savings, which replaces decreasing national savings? The answer may be associated with the proposition that investment precedes savings, and not otherwise, as it is shown below.

2.1. The relationship between exchange rate, investment and savings

The relationship between the real exchange rate, investment and savings in open monetary production economies is the focus of this section. A rise in the relative price of non-tradable goods leads to an increase in domestic demand for tradable goods, as well as to reduced domestic output of the latter, worsening net exports, thereby decreasing national savings. When the real exchange rate appreciates, part of the stimulus from domestic investment to the formation of savings leaks to the rest of the world, thereby affecting national and foreign savings. We elaborate further on this proposition in what follows.

Investment produces income and, via the multiplier, generates national savings in the closed economy (Keynes, 1988). In the open economy, exports also play this role: exports produce income and, via the multiplier, savings emerge. When the receipts of exports are exchanged for the imports of capital goods (KGs), this is equivalent to exports being domestic investment proper, i.e. as if they were the domestic production of KGs. Just as it happens with investment, exports produce income, consumption and national savings. The difference is that instead of producing KGs to meet investment demand, there will be production of goods to be sold in foreign markets; its receipts will be used to import KGs, thereby meeting investment demand. Just as the production of KGs carried out to meet investment demand, similarly exports produce income, consumption and national savings.[6]

[6] It must be borne in mind that the parcel of exports whose receipts are exchanged for the imports of

When the real exchange rate appreciates, the CA and savings decrease simultaneously. Both processes are related to the decline of net exports. From the accounting identities savings and investment are equal. Before the real exchange rate appreciation the portion of national savings related to net exports was a counterpart of domestic investment. If, however, the level of investment does not change after the relative rise in the price of the non-tradable goods, the expenditure on KGs will not be altered either. In this case, since the net exports are reduced after the exchange rate appreciation, the exchange of exported goods for the imports of KGs will be, at least partially, interrupted. In other words, a parcel of the imports of KGs – and, therefore, a parcel of investment – will no longer have a counterpart in national savings. After the real exchange rate appreciation, a parcel of imports of KGs – and, therefore, a parcel of investment – will have its counterpart in the absorption of foreign savings (CA deficit).[7] For the rest of the world (trade partners), net exports will have increased after the real exchange rate of the domestic country appreciates. This means that, after the exchange rate overvaluation, a part of the investment (the imports of KGs) of the domestic country boosts savings in the rest of the world, and not national savings in the domestic country. Equation (5) is a good tool to show this process.

It is not a matter, therefore, of lack of national savings for a given rate of investment, arising from an overvaluation of the real exchange rate. When there is an appreciation of the real exchange rate, and assuming that the initial level of domestic investment does not change, current account deficits rise, boosting savings in the rest of the world due to domestic investment. The stimulus to domestic income and (national) savings will likewise be reduced. Although in national income accounting terms national savings are related to the supply of capital goods, its decline is not brought about by a reduction in the domestic potential output of capital goods, but rather by a decline in net exports. This decline, in its turn, is associated to the larger share of aggregate consumption in national income.

Consequently, in this approach a real exchange rate appreciation leads to the substitution of domestic for foreign savings as Bresser-Pereira and Gala (2008) argue. Investment causes savings, but the latter is not necessarily restricted to the domestic economy. Domestic investment can boost savings overseas. In the domestic economy, the distribution of

consumption goods does not represent national savings.

[7] To simplify the argument, suppose that before the currency appreciation CA = 0, and X - M = 0. After the appreciation, a trade deficit arises, i.e. exports become smaller than imports. The excess of imports over exports does not correspond to national savings, but, rather, to the absorption of foreign savings.

aggregate savings between its national and foreign parts depends on the level of the real exchange rate.

In what follows in the next section we begin by showing the FISF-circuit and its channels through which the process of savings formation unfolds in a closed economy as developed by Keynes (1937a, 1937b). We then extend the analysis to the open monetary economy case. Adopting the FISF-circuit to the open economy we show that the real exchange rate takes part in the process of savings formation (including foreign saving).

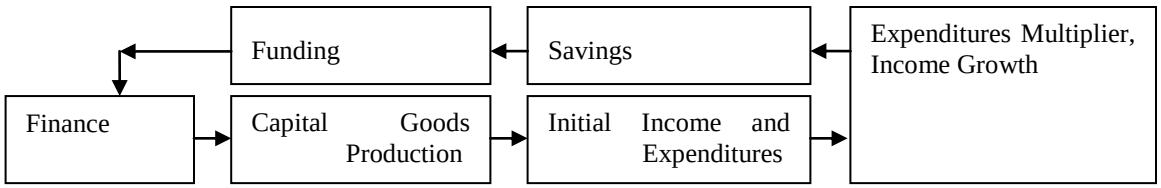
3. The FISF-Circuit to Open Economies

The Finance-Investment-Savings-Funding (FISF) circuit was elaborated by Keynes (1937a, 1937b) in the case of a closed economy and is shown in Flowchart 1. The FISF-circuit starts up with the finance required for the production of capital goods. As Keynes (1937a) points out, "I use the term 'finance' to mean the credit required in the interval between planning and execution (...) the entrepreneur when he decides to invest has to be satisfied on two points: firstly, that he can obtain sufficient short-term finance during the period of producing investment; and secondly, that he can eventually fund his short-term obligations by a long term issue on satisfactory conditions" (pp. 663-664).[8] This credit demand was called by Keynes *finance motive*. Then, investment occurs and income grows to the point of corresponding savings. This process of growth will be unfolded through the multiplier. There is at the beginning of this process income generation in the capital goods industry. Then, part of this income is used for consumption putting into operation the multiplier and boosting aggregate output and income. Savings are, therefore, residual since they are part of

[8]Keynes (1937a) also suggests that "the finance required during the interregnum between the intention to invest and its achievement is mainly supplied by specialists, in particular by banks (...) It (finance) employs no saving (...) on the other hand, there will always be exactly enough ex-post saving to take up ex-post investment (...)" (p. 666-669). Davidson (1994) argues that "Entrepreneurs most hold some cash balances between periods to assure themselves that when they enter into forward contracts for the hiring of inputs for production of capital goods they will be able to meet these obligations. The quantity of cash balances needed each period to meet these forward contracts for producing investment goods will be unchanged as long as planned investment is unchanged (...) Keynes argued ' if, for example, profit expectations exogenously increase, then at the initial flow of output and rate of interest, entrepreneurs will demand additional investment goods (...) the demand for money to pay for the production of these additional investments at any given interest rate will increase even before any additional employment and income are generated' (...), It is evident from The Treatise on Money and Keyne's finance motive notes in the 1937 issues of The Economic Journal that specifying the demand for money as a direct function of current income is a gross and somewhat misleading simplification of his liquidity analysis" (p. 122-123). Minsky's (1986) position on this theme is that "Investment is a process in time, and investment typically involves a large number of firms that produce inputs into the finished capital assets. Investment thus involves a complex of payments, which need to be financed (...) investment in our economy is a money-now-in-exchange-for-money-later transaction" (p. 213-214).

income not spent on consumption. The role of savings is to fund investment and it is crucial for the sustainability of economic growth (Studart, 1995).

Flowchart 1 – FISF Circuit to Closed Economy



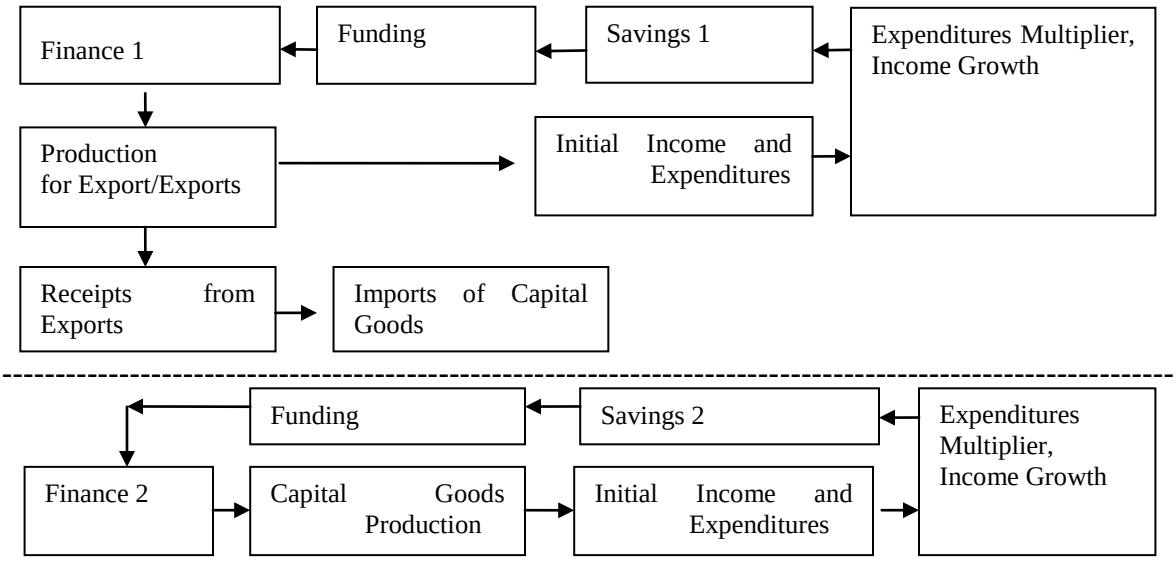
In what follows, we intend to show that FISF-circuit is also valid for open economies and it is a useful tool for the understanding of the role of the real exchange rate as a determinant of the distribution of aggregate savings between its national and foreign parts. The same steps of the closed economy FISF-circuit are present in the case of open economies, but its FISF-circuit is more complex due to the international financial system and to the fact that international trade is involved with this circuit. It must be borne in mind that many cases are possible, but we show at least one case that is sufficient enough to prove that the FISF-circuit to open economies is valid.

We begin by assuming two economies, W and Z, whose incomes are not necessarily at the full employment level. Both economies produce capital goods (KG) and consumer goods (CG). W exports KG to Z and the latter exports CG to the former in a way that both economies show that CA = 0. We further assume that net receipts of factor income from abroad, interest on the government debt paid to foreigners, and foreign transfers are all zero.

As shown in the upper part of Flowchart 2, there is finance (finance 1) for the production for export in country Z and the receipts of exports are used to import KG. Beside this, the production for export entails income at the export sector of the economy Z. The lower part of Flowchart 2 shows finance (finance 2) for the production of KG and it also shows the same FISF-circuit as shown by Keynes (1937a), i.e. the lower part of Flowchart 2 is equal to Flowchart 1. So, after the finance of the KG production, investment takes place leading income to rise in the KG sector thereby enabling the multiplier to operate. Then, output and employment adjust to bring savings and investment into equality. The same process unfolds at the upper part of Flowchart 2, but entrepreneurs produce goods for export and exchange such goods for KG in the international market, instead produce (instead producing by

themselves) KG to meet domestic investment demand.

Flowchart 2 - FISF Circuit to the Open Economy Z - Balanced Current Account

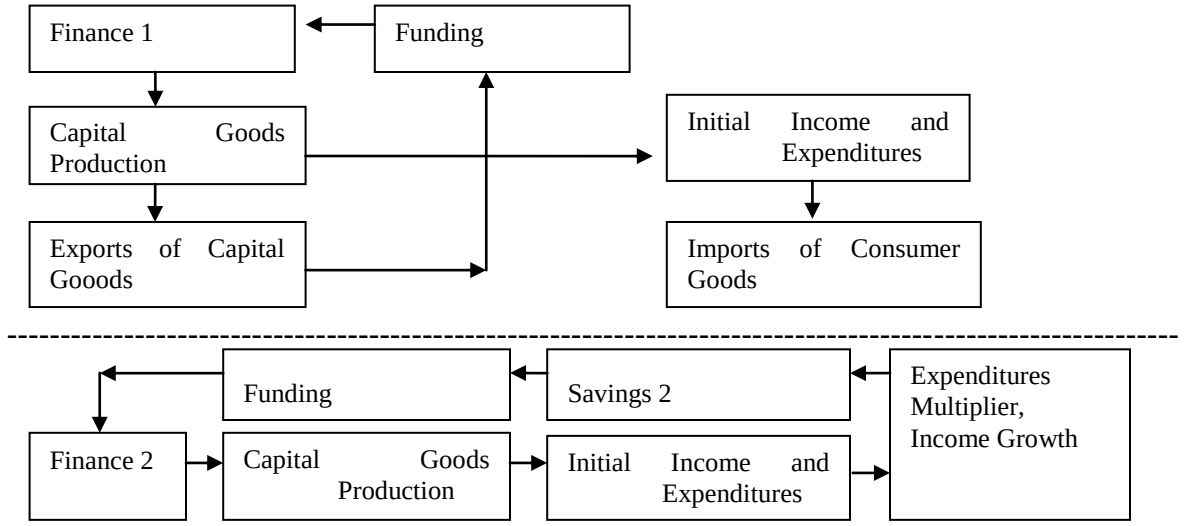


In the open economy case, exports also play the role related to investment: exports produce income and, via the multiplier, savings emerge. The receipts from exports are used to import KG, so that everything is as if exports were domestic investment proper, i.e. as if they were the domestic output of KG. Just as in the case of investment, exports produce income, consumption and national savings.

The FISF-circuit for the economy W is shown in Flowchart 3. A parcel of W output of KG is exported to Z. At the upper part of Flowchart 3, there is finance for KG production that is exported (Finance 1). Then, initial income is generated at the KG industry. To simplify the argument, suppose that all this income is used to import CG from Z. Since all income is used for consumption purposes there is no savings in this process. The KG exports provide both the funding for investment at W and the amount of foreign currency that is exactly necessary to import CG from Z. So, the W current account is at equilibrium.

At the same time, another type of finance takes place in W (Finance 2) in order to start up another set of production of KG (lower part of Flowchart 3). In this case, the FISF-circuit is the same as in the closed economy's FISF-circuit, and investment creates savings; at the end of the multiplier process savings are equal to the value of this parcel of KG production (Savings 2).

Flowchart 3 - FISF Circuit to the Open Economy W - Balanced Current Account

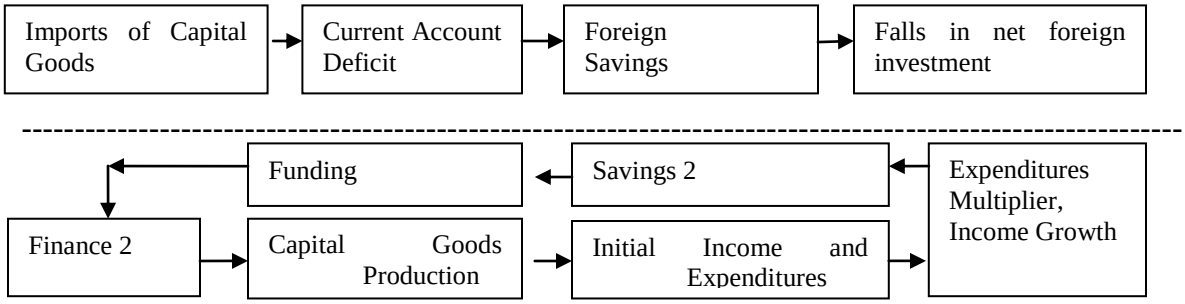


The W and Z current accounts are balanced in Flowcharts 2 and 3. However, what happens with the FISF-circuit in Z and W when the Z's real exchange rate appreciates? In this model with two countries, the real exchange rate overvaluation in one country entails, by symmetry, real exchange rate devaluation in the other country. The exchange rate appreciation in Z stimulates its imports and curtails its exports. The opposite happens in W. To simplify the argument, suppose that Z's exports fall to zero, whereas its imports do not rise. Let us also assume that the levels of investment in Z and W do not change. In this picture, imports from W drop to zero and its exports remain at the same level.[9]

An appreciation of the real exchange rate in Z entails the end of the production for exports and, as a consequence, there is no more an export sector in this country to bring forth income and savings. As shown by Flowchart 4, the only part of the Flowchart 2 upper part that remains unchanged is the KG imports, since investment in Z is the same before and after the exchange rate appreciation. These imports require finance by Z, which can be obtained from the international financial markets. As a result Z's current account turns into deficit and its financial account is such that the net foreign investment falls and the absorption of foreign saving increases after the real exchange rate appreciation in Z.

[9] This simplification makes the argument easier to understand and the results are not misleading. The overvaluation of the real exchange rate in Z with its exports falling should mitigate investment. However, an expansionary fiscal policy can be applied in order to maintain investment at the same level, i.e. fiscal policy can offset the worsening of the entrepreneurs expectations about the uncertain future caused by the currency overvaluation. Similar arguments can be presented for the W economy.

Flowchart 4 - FISF Circuit to the Open Economy Z - Unbalanced Current Account



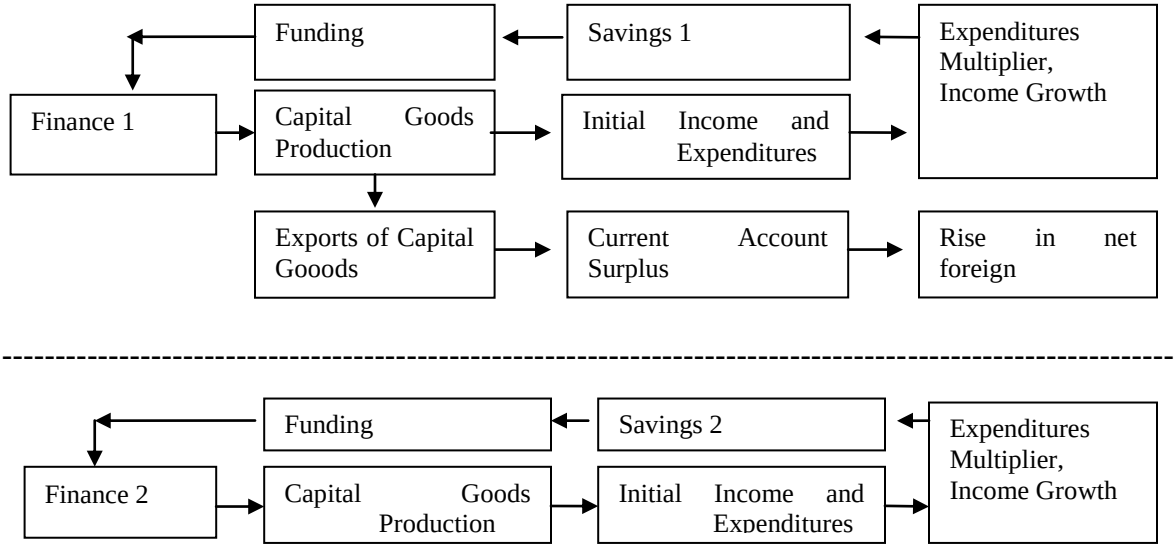
So, national savings are reduced by the change in the Z's real exchange rate level, whereas foreign savings increase. Since net exports are part of national savings, an appreciated real exchange rate mitigates net exports, national savings fall and the receipts in foreign currency available to import KG are lower, thereby worsening the current account balance and increase foreign savings. The net exports and the domestic savings that emanate from it, which were the counterpart of domestic investment, are reduced after the currency appreciation. If the hypothesis that investment remains unchanged is abandoned, the substitution between national and foreign savings should not necessarily be one to one fashion. If investment falls as a consequence of the exchange rate appreciation, KG imports may be reduced and the degree of substitutability between national and foreign savings becomes an empirical matter.

The devaluation of the real exchange rate in W is the counterpart of the real exchange rate revaluation in Z and, as it is assumed, imports from W fall to zero, whereas W's exports (of KG) do not change. In this case, the lower part of Flowchart 3 remains unchanged and its upper part becomes different, as shown in Flowchart 5. There will be finance for the KG production to be exported (Finance 1). Since the imports of CG drop to zero after the real exchange rate depreciation in W, the income due to KG production is used for consumption in the domestic market. The next steps are the same as those showed by Keynes (1937a): if the hypothesis made above prevails, i.e. all income due to KG output is used for consumption purposes, the multiplier will be infinite;[10] however, since the marginal propensity to consume is less than one, the multiplier implies limited income growth. At the end of this process there will be national savings and a current account surplus due to the net exports in W. This country will display net foreign investment rising, which is the

[10] In our model, before changes in the real exchange rate level take place, all income related to the KG exports by W is used to import CG from Z. However, the income related to CG exports by Z induces a lower consumption since the marginal propensity to consume is less than one in Z.

counterpart of the fall in net foreign investment in Z.

Flowchart 5 - FISF Circuit to the Open Economy W - Unbalanced Current Account



So, after the real exchange rate depreciation (appreciation) in W (Z), net exports grow in W since its KG exports remain unchanged and its CG imports drop to zero. This is the counterpart of KG imports from Z, i.e. KG exports from W and its national savings, which its net exports bring about, are the counterpart of investment in Z. In addition to this, aggregate investment equals national plus foreign savings in both W and Z countries.

So, after the real exchange rate appreciation in Z the stimulus from investment to create savings in this country leaks abroad. Domestic investment produces savings; nevertheless, the latter should not be necessarily restricted to domestic (open) economy. The distribution of aggregate savings between its national and foreign parts depends on the level of the real exchange rate.

4. Budget Deficits, National Savings Constraint and Investment

Krugman (1999) argues that the appreciation of the real exchange rate is the channel through which budget deficits can worsen the current account.[11] This author investigates if

[11] In general, authors that deal with the twin deficits hypothesis present the savings-investment identity in order to show the link from fiscal policy to current account: S - I = Y - E = X - M; or, Sp + Sg - I = X - M, where, S and I are national savings and investment, Y and E national income and expenditure, X and M national exports and imports of goods and services, and Sp and Sg private and government savings.

fiscal policy drives the current account and concludes that: "The view that real exchange rates have nothing to do with trade balance is, in the form in which it is often stated, a confusion between accounting identities and behavior (...) although an economy must respect accounting identities, looking at these identities can never be the full analysis. We must ask how the accounting identity is translated into incentives that affect individual behavior (...) There is a widespread, though not formalized, view among policymakers that fiscal policy affects the trade deficit directly, rather than through the channel of real exchange rate changes" (p. 4-7). Also, "In the standard view fiscal imbalances work through the real exchange rate: a budget deficit leads to a real appreciation, which reduces the competitiveness of a country's industry and thus leads to a trade deficit (...) McKinnon (1984) has argued strongly that the real exchange rate needs to be changed to adjust the trade balance only when an economy is insular, that is, closed to capital movement. He argues that when capital is mobile, savings-investment gaps are directly reflected in trade balances, with no need for relative price changes" (p.13-15). And, "However, we have seen that there is no direct channel by which the savings-investment balance somehow gets translated into the trade balance without affecting the real exchange rate (p. 24).

Although Krugman (op. cit.) criticises the statement that 'savings-investment gaps are directly reflected in trade balances, with no need for relative price changes', his argument about the twin deficits issue is incomplete or at least not clear. Krugman (1999) explains the twin deficits in the United States during the 1980s by what he calls the standard view and points out that: "In the standard view a budget deficit is not offset by an increase in private savings. Instead, it leads to a reduction in aggregate national savings relative to investment demand. This fall in savings leads to a rise in the real interest rate. The rise in the interest rate in turn (...) leads to a rise in the real exchange rate. With home production more expensive relative to foreign, imports rise and exports fall, leading to an external deficit" (p. 5).

Therefore, according to Krugman (1999) relative price changes are not the channel through which a reduction in aggregate national savings, due to the budget deficit, occurs. In his argument the reduction of national savings is not the consequence, but, instead, it is the cause of real exchange rate changes. Krugman (op. cit.) links directly the fall in national savings to the budget deficit. He (implicitly) assumes that the former depends on the latter. The savings-investment identity presented by Krugman (1999), $S - I = Y - E$, shows that national expenditure (E) and national savings (S) may be linked, but, as this author stressed, "although an economy must respect accounting identities, looking at these identities can

never be the full analysis. We must ask how the accounting identity is translated into incentives that affect individual behavior" (p. 5).

Krugman (1999) argument needs full explanation of the channels through which the budget deficit reduces national savings (relative to investment demand). As shown by the circular flow of income model, there is a corresponding real flow to money flow, and according to the income account identities net exports and domestic output of capital goods correspond to national savings, i.e. they are related to the real flow of national savings. Thus, changes in national savings are related to changes in net exports and/or in domestic output of capital goods. An explanation for the channels through which the budget deficit reduces national savings should be the decline of net exports due to the real exchange rate appreciation. Krugman (op. cit.) cannot advocate this proposition since in his argument the latter is a consequence of the fall in the national savings and not the other way round. Another explanation is that government expenditure or a budget deficit boosts growth and as a consequence imports rise and net exports fall without relative price changes. Although this is a possibility it does not necessarily happen. It can be possible, for example, that in the context of increasing returns, growth also boosts exports and the net exports do not change.

Finally, it should be argued that the reduction in national savings is due to a decline in the domestic output of capital goods and this, in turn, is due to the budget deficit. But why should the rise in government expenditure, or a budget deficit, reduce the domestic production of capital goods? The standard explanation is that for a given gross national product at full employment, a rise in government consumption requires a decline in the domestic output of capital goods and therefore a fall in national savings that is necessary for an increase in the domestic production of consumption goods. In other words, in the context of full employment, there is a substitution of the capital goods production by the consumption goods production due to the budget deficit. Krugman's (1999) argument is mistaken since it tacitly assumes that KG, intended to produce other KG, be transformed into KG intended to produce consumption goods in order to meet the increase in government expenditure and the decline in national savings.

In the open economy the output of capital goods and the net exports are associated with national savings. Thus, by overvaluing the real exchange rate, net exports and national savings are reduced and the current account worsens. In other words, with real exchange rate changes it is not necessary that KG, intended to produce other KG, be transformed into KG intended to produce consumption goods in order to explain the fall in national savings

due to a rise in government consumption. If a government budget deficit leads to a real exchange rate appreciation, net exports are reduced and therefore national savings decline without requiring this transformation.

However, Krugman (1999) argues that real exchange rate changes are a consequence of the reduction in national savings and not otherwise. Thus, his argument cannot explain the reduction in national savings by the decline in the net exports due to relative price changes. Although Krugman (1999) criticises the view that links directly budget deficit to trade deficit, this author does not go further to investigate the channels through which budget deficits and national savings are linked and, therefore, his analysis is at least incomplete.

In the Keynesian perspective investment is prior to savings and depends on the interest rate and on the subjective (conventional) expectation of the entrepreneurs about future demand and profits. On the other hand, the interest rate is determined in the context of the liquidity preference theory (Keynes, 1936, 1937a; Davidson, 2012). Therefore, from the Keynesian view savings are at the end of the circuit that starts by finance and investment and is a consequence of the income growth. Real exchange rate changes do not depend on savings. On the other hand, we have seen that the real exchange rate level affects the distribution of aggregate savings between its national and foreign parts. Thus, savings depend on investment, but, if in some way government budget deficits change relative prices, they are able to trigger the substitution between national and foreign savings and to affect the CA balance.

As Krugman (1999) argues, the appreciation of the real exchange rate is the channel through which budget deficits can worsen the CA. However, the process unfolds with a different causal nexus advocated by this contribution. In the Keynesian perspective the channel through which the budget deficit entails a CA deficit is not a decline in national savings that leads to a rise in the real interest rate and to a real exchange rate appreciation. In other words, there is no national savings constraint on investment. The current account deficit due to the budget deficit occurs when the latter leads through others channels to a real exchange rate appreciation. However, there is no systematic relationship between expansionary fiscal policy (budget deficit) and real exchange rate appreciation. It can be true in some cases, as for example in the context of full employment, in which case a budget deficit boosts aggregate demand and leads to inflation; the latter leads to the real exchange rate appreciation. However, in the context of an economic slump, budget deficits do not boost inflation and the appreciation of the real exchange rate does not happen

necessarily. Therefore, the power of the twin deficits hypothesis is low in the Keynesian view.[12]

When the budget deficit entails an appreciation of the real exchange rate national savings fall and the current account worsens (i.e. foreign saving rise), but it does not mean that investment is constrained by the reduction in national savings. As was shown above, real exchange rate changes do not affect the beginning of the FISF-circuit; it affects the final part of this circuit since it triggers the substitution between national and foreign savings. In this circuit investment takes place prior to the other variables, except for the finance. Income depends on investment and government revenues and saving depends on income. Thus, in the Keynesian perspective, even when government budget deficit affects the real exchange rate, fiscal policy is not able to lead the economy to a picture where investment is constrained by savings. Moreover, after the real exchange rate appreciation the sum between national and foreign savings remains the same if and when the level of investment remains the same.

If in some way government budget deficits change the relative prices of the economy, they can trigger the substitution between national and foreign savings and can lead to worsening the current account balance. Savings depend on investment, but, the real exchange rate appreciation leads the stimulus from domestic investment to formation of national savings that leak abroad. Thus, the constraint on investment (and on growth) that is possible to emerge due to budget deficits is one of external nature, although the link between budget deficit and real exchange rate appreciation is weak. Moreover, this external constraint on investment has a long-run character insofar as current account deficits may be financed by foreign currency in the short-run.

5. Summary and Conclusions

Few studies in the Post Keynesian tradition address the relationship between the real exchange rate, national savings, foreign saving and investment. Moreover, there is not a study that shows how the FISF-circuit and its channels work in open economies. Bresser-Pereira and Nakano (2002) and Bresser-Pereira and Gala (2008) show the mechanism

[12] In Krugman's (1999) view there is the following sequence: budget deficit → decline in national savings → rise in the real interest rate → real exchange rate appreciation → CA deficit. In the Keynesian view the sequence is different: budget deficit → possibility of real exchange rate appreciation → decline in net exports and as a consequence reduction in national savings and CA deficit → increase in (absorption of) foreign saving.

through which an appreciation of the real exchange rate leads to a decrease in the national savings. They also point out that variations in the former lead to a substitution between national and foreign savings.

Nevertheless, these authors show only part of the process triggered by the appreciation of the real exchange rate. Why does the overvaluation of the real exchange rate increase foreign saving, which replaces decreasing national savings? What is the mechanism related to the appreciation of the real exchange rate that leads to an increase in the foreign saving?

We answered these questions by using national income accounts and FISF-circuit to open economies to show in this contribution that the distribution of aggregate savings between the national and the foreign parts depends on the level of the real exchange rate. We demonstrate that the real exchange rate appreciation shifts the stimulus from domestic investment to the formation of national savings that leak abroad, increasing thereby foreign savings and decreasing national savings. This is undertaken in a Keynesian approach, which considers that it is investment that brings forward savings - domestic investment causes savings; nevertheless, savings should not be necessarily restricted to the domestic part of an open economy.

Finally, issues concerning relationships between fiscal policy, the current account, and the real exchange rate are addressed. Krugman (1999) investigates if fiscal policy drives the current account and concludes that the appreciation of the real exchange rate is the channel through which budget deficits can worsen the current account. Nevertheless, we show that his argument about the twin deficits issue is inconsistent or at least incomplete because it does not explain why budget deficits lead to a decline in national savings when the focus of the analysis is on the real side of the economy. According to Krugman (1999), relative price changes is not the channel through which the budget deficit leads to a reduction in national savings. Thus, the only possibility for the link between budget deficits and national savings rests on the hypothesis that KG, intended to produce other KG, be transformed into KG intended to produce consumption goods in order to meet the increase in government expenditure (budget deficit) and the decline in national savings. But, this hypothesis is not consistent since this transformation is not possible.

As we have seen, from the Keynesian view the process unfolds with a different causal nexus. If budget deficits change the relative price in the economy then they affect net exports and therefore national savings and the current account. However, the power of the

twin deficits hypothesis is low in the Keynesian view because there is no systematic relationship between expansionary fiscal policy (budget deficit) and real exchange rate appreciation.

In addition, we have seen that budget deficits may worsen the current account through the real exchange rate appreciation. However, it does not mean that investment is constrained by national savings. As we have shown in this study, saving is not prior to investment and real exchange rate changes affect the final part of the FISF-circuit since it triggers the substitution between national and foreign savings. In this circuit, investment is prior to the other variables, except for the finance. Thus, in the Keynesian perspective, even when government budget deficit affects the real exchange rate, and therefore the current account, fiscal policy is not able to lead the economy to a picture where investment is constrained by savings. When the fiscal policy affects the relative price it affects savings and the current account, but savings are at the end of the causal nexus; there is, thus, no savings constraint on investment.

If in some way government budget deficits change the relative price of the economy, it is possible to trigger the substitution between national and foreign savings and to worsening the current account balance. Savings depend on investment, but the real exchange rate appreciation shifts the stimulus from domestic investment to formation of national savings that leak abroad. Thus, the constraint on investment (and on growth) that is possible to emerge due to budget deficits is one of external nature, although the link between budget deficit and real exchange rate appreciation is weak.

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