The Finance-Investment and Saving-Funding Circuit in the Closed and Open Economies with Government

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Abstract

This contribution discusses the Finance-Investment and Saving-Funding (FISF) circuit regarding the closed and open economies with government. Moreover, we discuss the fiscal policy effects on aggregate demand and income in the FISF circuit context. Keynes explained the FISF circuit assuming a closed economy without government. In a recent paper, Arestis and Resende (2015) expand the above circuit to account for the open economy case, but without government nonetheless. The novelty of the current contribution is to analyse the above mentioned circuit in the closed and open economy context including government. We show that the basic features of the FISF circuit remain unchanged for the closed and open economies when government is considered in the circuit.

Keywords: Finance-Investment and Savings-Funding, open economy, government.

Jel Code: F41; E12; E21; E62

1. Introduction

The Finance-Investment and Saving-Funding circuit (FISF) was first elaborated by Keynes (1937a, b), in the case of a closed economy without government, and in his 1937 debate with Bertil Ohlin. This circuit includes among its main features the precedence of investment from savings and expenditure multipliers as a mechanism, which brings savings and investment into equality. There was in the Post-Keynesian literature a gap in relation to the FISF circuit functioning for the open economy. Arestis and Resende (2015) bridge such gap. However, the latter contribution develops the FISF circuit model for the open economy without government. This paper aims to contribute to the literature through exploring the FISF's mechanisms for the cases of the closed and open economies with government. Since Keynes (1937a, b) did not offer a formal model for his FISF framework, we intend to transform Keynes-Ohlin 1937 debate into a more structured and formalized theory. If the basic features of the Keynesian circuit remain unchanged for the cases of the closed and open economies with government, then Keynes (1937a, b) arguments related to the causality between savings and investment and to the role of the expenditure multipliers will be reinforced. In addition, the fiscal policy effects on aggregate income, accounting for the closed and open economies with government, are analysed in the context of the FISF circuit. These goals are important issues to strengthened Post Keynesian Theory.

To achieve these goals, this contribution is organized as follows. In the next section the FISF circuit is highlighted for the closed and open economies without government. In the third section the FISF circuit mechanisms are explored in the context of closed and open economies with government. Moreover, the government's role and the fiscal policy impact on aggregate income is emphasized. The final section summarises and concludes.

2. The *Finance*-Investment and Savings-*Funding* Circuit for the Closed and Open Economies without Government

According to Keynes (1937a, b), the FISF circuit first phase is finance. Entrepreneurs decide to obtain credit from the banks in order to be liquid during the period of producing investment goods. The credit is provided on a short-term capital advance for investment goods production, that is, entrepreneurs contract short-term debt from banks and such credit (finance) employs no savings.

This initial capital enables investment, which is associated with the capital goods (KG) production.[1] Then, investment occurs and income grows to the point of corresponding savings. This process of growth would be unfolded through the multiplier. There is at the beginning of this process income generation in the KG sector. Then, part of this income is used for consumption, thereby putting into operation the multiplier and boosting aggregate output and income. Savings are, therefore, a residual since they are that part of income not

spent on consumption. The role of savings is to fund investment and it is crucial for the sustainability of economic growth (Keynes, 1937a, b; Studart, 1995; Davidson, 1986).

Two aspects should be highlighted: investment is undertaken prior to savings and the amount of funding is the same as the amount of finance. Assuming, for example, that the initial investment is equivalent to $100 and that the marginal propensity to consume is zero, all income generated will be saved and then the funding value is equivalent to $100. Figure 1 presents this circuit for the closed economy without government.

Figure 1 HERE

Arestis and Resende (2015) discuss the FISF circuit for open economies without government. According to the authors, it must be borne in mind that many cases are possible for the FISF circuit, but the analysis of just one of them is sufficient enough to detail the channels through which the circuit works and to prove that the FISF circuit to open economies is valid. To do so, Arestis and Resende (2015) present two scenarios. In the first one, economies show a balanced current account and there are no capital flows between them (no entry or exit of capital in the financial account of the Balance of Payments). In the second scenario, there is trade on goods and services as well as capital flows between economies.

For the purpose of this study, the FISF circuit is presented and related to the first scenario of the circuit as given in Arestis and Resende (2015). The following assumptions are made by the authors: 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 their current accounts (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. Although Arestis and Resende (2015) present the circuit working mechanisms for both economies, Z and W, for the purpose of this study it is sufficient to discuss the FISF circuit only to economy Z. This is so in order to demonstrate that the FISF circuit for the open economy without government is valid and to achieve the required background that is useful to elaborate the FISF circuit in the case of the open economy with government.

As shown in the upper part of Figure 2, in the Z country, there is finance (Finance 1) for the production of exports in country Z and the receipts of exports are used to import KG. In addition, the production of exports entails income in the export sector of the economy Z. The lower part of Figure 4 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 Figure 2 corresponds to Figure 1. So, after the finance of the KG production, investment takes place with income rising 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 Figure 2, but entrepreneurs produce goods for exports and exchange such goods for KG in the international market, instead of them producing KG to meet domestic demand. 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 (Arestis and Resende, 2015). Just as in the case of investment, exports produce income, consumption and national savings, whose role is to fund investment.

Figure 2 HERE

The role of government has not been discussed so far in this scenario. On the one hand, government expenditures, from the aggregate demand point of view, contribute to trigger the Keynesian expenditures multiplier and income expansion. On the other hand, taxation reduces available income, which has the opposite result. In order to include the government in the FISF circuit, the process and mechanisms of currency injection and destruction through fiscal and monetary policies should be considered. Section 3 undertakes this task.

3. The FISF Circuit for the Closed and Open Economies with Government

The fiscal policy is implemented by the government and it is related to taxation and expenditures. That is, the FISF circuit must begin with the expansionary monetary and/or fiscal policies, leading to the money creation and currency circulation in the economy and boosting production, employment and income, as well as the activities of the financial system. At the initial stage of such circuit, the entrepreneurs decide to invest, leading to finance and investment - both types of spending, government spending and private investment, are considered in the Post-Keynesian approach as autonomous spending that precedes and stimulates employment and income generation.

After money injection by the government, when employment and income creation take place, the collection of taxes has a place in the FISF circuit with three different possible situations for the government's budget: equilibrium, surplus or fiscal deficit. For the sake of simplicity, we assume that all government tax collections come from direct taxes over income, charged on a 't' percentage as follows $0 < t < 1$.

3.1. The Closed Economy with Government

The FISF Keynesian circuit for a closed economy without government includes among its main features the precedence of investment from savings and the expenditure multipliers, as a mechanism which brings savings and investment into equality. Moreover, the finance is at the beginning of the circuit and funding is at its end. Thus, these features should remain in

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the circuit with government for the closed and opened economies if it intends to be a Keynesian circuit.

In what follows, we explain the role of the government in the FISF circuit for the closed economy (Figure 3). In section 3.2 a similar explanation is undertaken for the open economy (Figure 4). Assuming a government balanced budget, its expenditures will boost equilibrium aggregate output. In order to illustrate the argument, we show a simple exercise for the closed economy without government, assuming that the consumption function is $C = cY$ and investment function is $I = I_0$, where c is the marginal propensity to consume ($0 < c < 1$), $Y =$ aggregate income, $I_0 =$ autonomous investment. Therefore, assuming $c = 0.80$; $I = 300$, the equilibrium income, Y_E, corresponds to: $Y_E = [1/(1-c)] \times 300 = 5 \times 300 = 1500$.

Taking into account the government in such model, and assuming a tax rate $t = 0.25$, government's revenue is given by tY. In this model, if tax revenue (T) is equal to government expenditures ($G = T$), and assuming that $T = G = 500$, the aggregate income will rise to $Y_E = 2000$ and, therefore, income rises after taking into account the government in the model ($2000 > 1500$). When the level of aggregate income is at the equilibrium level, and at the end of the multiplier process, there is no effect on money creation or destruction since the money created is withdrawn via taxation. Hence, the balance sheets of private banks and Central Banks are not altered.

According to the Post-Keynesian approach, any expenditure from autonomous sources entails employment and income growth. This process of growth would be unfolded through the multiplier, boosting aggregate output and income grows to the point of corresponding savings. The latter, in turn, are residual since they are part of income not spent on consumption and show the same size of the autonomous expenditure that triggered the income growth process (Keynes, 1937a, b; Carvalho, 1992).

Thereby, and as shown in Figure 3, in the FISF circuit initial money is issued and treasury bonds are bought by the Central Bank (CB) - expansionary monetary policy. As can be seen from Table 1, there is a L_2 rise (CB monetary liabilities under Treasury control) that finances government expenditures (G). These are autonomous expenditures, which boost employment and income. Assuming a marginal propensity to consume less than unity, the expenditure multiplier process will boost income growth, and at the end of the process savings emerge as a residual with the same size of G and it can be taxed by government, leading to a balanced government budget ($G = T$). Nevertheless, if government chooses not to have tax revenue collection ($T = 0 < G$), then the parcel of aggregate income that is not consumed would be entirely equal to private savings (Spr). This emerges as a residual and can be used to finance government deficit through a bond issue. Spr would have exactly the same size as government expenditure. In both scenarios, government creates and withdraws money via tax revenue collection or via bond debt issuance. Figure 3 sheds some light on these issues.

Insofar as investment and exports are put aside the only autonomous expenditure is G, in Figure 3. Thus, at the end of the multiplier process the residue (equilibrium income less private consumption) can be taxed by government and, then, G = T. However, if government chooses not to have tax revenue collection (T = 0 < G) the residue becomes Spr that can finance government deficit through a bond issue, as it is shown at the bottom of Figure 3.

Figure 3 HERE

A third scenario, in which there is a government budget surplus, is possible when we consider investment expenditure in the model. Beside private consumption and government activities, as shown in Figure 3, there are in an entrepreneurial economy financial system activities and private investment. Therefore, taking into account the entrepreneurial sector and the financial system in such model for a closed economy with government, Figure 3 gets translated into Figure 4 (see below). At the beginning, there is no difference between them. The process starts by money issuance and treasury bonds are bought by CB. Nevertheless, after government expenditure emerges there is a L_2 decrease and a L_1 increase (CB monetary liabilities shifted from Treasury control to private banks and to the private sector – see Table 1). Assuming 'long run expectations' and liquidity preference level as given, the financial system capacity to provide finance relies on L_1 and on endogenous money supply by the banking system. Finance will be demanded for KG production when capitalists decide to invest. [2] Government and banks supply money. Assuming the Structuralist's view of endogenous money, government issues money but it is endogenously expanded by banks (Minsky, 1986; Rochon, 2003; Carvalho, 2013).

Figure 4 HERE

Therefore, after money creation by government, G and I are autonomous demand sources, which put into operation the multiplier. After the expenditure multiplier process takes place, part of income not spent on consumption is a residual that shows the same size of autonomous expenditures (residual = G + I). One share of this residual is equal to G and the other one is equal to I. In other words, after the economic growth process there would be as a residual the necessary resources that are exactly sufficient to finance G through tax revenue (G = T) and to fund investment (I = Spr). In this case, money issued by government is withdrawn through tax collection.

Although autonomous expenditures (G and I) create a residual with the same size of them, it should be noted that the smaller T compared to G, the bigger disposable income would be (income less tax payments). Moreover, the bigger the multiplier would be generating bigger aggregate income growth. In addition, the smaller T compared to G, the bigger the private savings would be compared to the funding needed to consolidate the short-term debt that emerges from finance. This savings 'overflow' in comparison to finance, can be used to

finance government spending which is bigger than its tax revenue (T < G) via Treasury bond issue by decreasing L1 and increasing L2. Thus, if there is a budget government deficit, the income growth is bigger, but at the end of the process, money creation is equal to its elimination – the money created via G is withdrawn after bond issue and/or by T.

Table 2 demonstrates through a simple model the identity that leads to G + I = T + Spr; namely, if G = T, then I = Spr; if T < G, then I < Spr; if G < T, then Spr < I. Lastly, when T < G, the government can choose not to issue bonds in face of its budget deficit, as will be shown in what follows.

Table 2 HERE

However, in a government budget deficit scenario, if government chooses not to finance its expenditure through issuing bonds and finance them partially via T and partially through money creation (which has been undertaken at the beginning of the FISF circuit when the CB has bought bonds from the Treasury), there would then be net money creation in the economy (its creation gets bigger than its withdrawal). Therefore, the monetary base increases as government budget deficit and money net creation rise. Thereby, there is an increase in the financial system's liquidity, and, so, banks liquidity preference would have to increase in order to keep constant the money supply.[3] If there is no reason for the liquidity preference to increase, the money supply in the economy increases after the government budget deficit (including bank money), pushing interest rates downwards and boosting investment. Consequently, the equilibrium aggregate income, which has already been positively affected by budget deficit, gets even bigger due to the increased finance and investment expansion.

Finally, if the government option is a budget surplus, economic growth and private savings would be smaller – the income residual (part of income that is not spent on consumption) that emerges at the end of the economic growth process will be equal to I + G; however, since G < T, the excess amount of T compared to G corresponds to a Spr reduction. Moreover, there is a decrease in the size of the expenditure multiplier and in the income growth. Since Spr decreases, there would not be funding enough to make up for the required finance, and, thus, outstanding short-term debts related to finance loans would have to be rolled over. So, financial fragility and the risk of the economic growth sustainability rise (Studart, 1995). This risk is even bigger when it is assumed that CB would not replace money in the financial system in order to offset net money destruction as G < T. The system liquidity level would be reduced since the monetary base shrinks after the fiscal surplus. As a consequence, debt roll over would become harder, unless bank liquidity preference becomes smaller. If it does not change, after fiscal surplus, the liquidity level and the supply of finance would be smaller, making debt rolling still harder and pushing interest rates up and investment downwards. As a result, equilibrium income, which has already been negatively impacted by government

fiscal surplus, would be even smaller due to finance and investment shrink. Furthermore, the financial system might lose its functionality and become incapable to assure a sustainable economic growth.

3.2 Open Economy with Government

We keep the same assumptions of the last section in order to analyse the FISF circuit in an open economy taking into account government and entrepreneurs: there are 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 current account (CA) = 0. The purpose of Arestis and Resende (2015) to make this countries (W and Z) international trade specialization is different from our purpose. For these authors, this hypothesis was needed since they showed that the distribution of aggregate savings between its national and foreign parts crucially depended on the real exchange rate; i.e., real exchange rate appreciation shifts the stimulus from domestic investment to the formation of national savings that leak abroad. For our purpose, international trade specialization is needed since the Keynesian FISF circuit require that investment takes part on it, and as will be shown below it is possible when imports of KG from Z take place. As highlighted by Arestis and Resende (2015), this international trade specialization is a simplification that makes the argument easier to understand and the results are not misleading. The FISF circuit for the open economy with government and investment is shown in Figure 5.

Figure 5 HERE

Currency is issued and Treasury bonds are bought by CB, thereby L_2 increases. It would be used to finance G. After government expenditures, there would be a L_2 decrease and a L_1 expansion, which would give the financial system the necessary liquidity to supply finance that, in its turn, is the finance demand counterpart to the production of export goods – L_1 expansion means that the amount of reserves in private banks increases (L_1 rises) simultaneously with its increase in the non-banking sector of the economy and banks can endogenously rise or decrease money supply and finance according to their liquidity preference and strategy. The revenue gain from exports is entirely used to import KG and, thus, meet entrepreneur's investment demand. In other words, in country Z the finance is used for the production of export goods that engender, on the one hand, initial income and expenditures, and, on the other hand, export receipts. These receipts are used to import KG and initial income and expenditures trigger the multiplier. Thus, exports also play a role related to investment: exports produce income, consumption and savings. The difference is that instead of producing KGs to meet investment demand, there would be production of goods to be sold in foreign markets; the resulting receipts would be used to import KGs,

thereby meeting investment demand. At the same time, L2 expansion promotes G finances (and L_1 expansion), which, in its turn, entails initial increase in income and expenditure and triggers the multiplier effect and aggregate income growth. At the end of the economic growth process, the share of equilibrium income, which is related to government tax revenues and private savings, emerges as a residual.

In other words, due to the expenditure multiplier, residual income (equilibrium aggregate income less aggregate consumption) corresponds to the sum of T + Spr, which is exactly equal to the sum of initial expenses that bring about income growth, i.e., G + finance 1 (henceforth finance 1 = f1, and finance = investment). Once the aggregate income residual is equal to the sum of Spr + T, there is the exact amount of resources needed to produce funding and to counteract G through T and/or public debt issue – e.g., if T + Spr = G + fl, so, T – G = fl – Spr, hence, if T < G, thus, fl < Spr, and the budget deficit that corresponds to the difference G – T can be financed by public debt issue; this would capture the Spr surplus in comparison to fl. On the other hand, if G < T, so Spr < fl, there would not be sufficient funding to make up for finance. So, financial fragility and the risk of economic growth sustainability would rise, as shown in subsection 3.1. Table 2 sheds some light on these points.

The current account gets balanced and, thus, there is not external savings.[4] In relation to public sector, the expenditure side of fiscal policy and the expansionary monetary policy (broadening monetary base), as well as aggregate income, occur before tax revenue. At the end of the process money creation can be equal to its destruction (G = T + public debt issue). However, if G is bigger than T, the difference G – T (budget deficit) would have as its counterpart the debt issue or monetary base expansion (net money creation). In both cases, aggregate demand and economic growth would be boosted; thereby imports and current account deficit would rise – assuming that exports are exogenous. In this case, the other economy, W, would have a current account surplus.

This section aims to show how the mechanism of the FISF circuit functioning works in open economies with government in a context of current account equilibrium. It attempts to explain in detail the FISF circuit's *modus operandi* and to demonstrate its effectiveness. Therefore, a possible scenario is one where disregarding the government sector in the economy there would be a current account surplus in economy Z, i.e., exports would be bigger than imports, assuming the investment level as given. When the government is taken into account, assuming T < G, imports increase and current account gets balanced, as explained above.

It is found that in a model with two open economies, both with current account equilibrium and with government, investment still emerges before savings, which reinforces Keynes (1937a, b) argument related to causality between savings and investment in a closed economy. Furthermore, expenditure multiplier is the mechanism, which brings autonomous

expenditures (I + G + X) and residuals (equilibrium income less private consumption) into equality, as Keynes argued (1937a, b). Finally, expansionary fiscal policy has a crucial role to boost income growth in an economy in which money is not neutral. In a scenario where the economy is working below full capacity and there is current account surplus, expansionary fiscal policy would have benign effects. These effects include straight stimulus to production in the face of aggregate demand rising, as well as stimulus to liquidity and finance, promoting liquidity preference decreases and better long-run expectations; consequently, increased investment and economic growth emerge.

4. Summary and Conclusions

The present contribution includes the government in the Keynesian FISF circuit, integrating fiscal and monetary policy in the same system in conformity with an economy where money is not neutral and is endogenously determined. Through exploring the FISF's mechanisms for the cases of the closed and open economies with government we intended to fill the gap in the Post-Keynesian literature, where only the FISF circuit without government was established. In addition, an effort into a more structured and formalized theory was done.

We consider for the FISF circuits elaborated for the closed and open economies with government three different possible situations for the government's budget: equilibrium, surplus or fiscal deficit. For the government fiscal surplus case (G < T), we show that economic growth and private savings would be smaller. Moreover, there would not be sufficient funding to make up for the required finance, and, thus, outstanding short-term debts related to finance loans would have to be rolled over. So, financial fragility and the risk to the economic growth sustainability rise. This risk is even bigger when it is assumed that bank money will not rise and the CB would not enhance the quantity of money in the financial system in order to offset net withdrawal of money as G < T. If bank liquidity preference is not reduced, after the fiscal surplus, the liquidity level and finance supply will be smaller, making debt rolling still harder and pushing interest rates up and investment downwards. As a result, equilibrium income, which has already been negatively impacted by government fiscal surplus, would be even smaller due to finance and investment shrink. Furthermore, in the context of endogenous money the financial system might lose its functionality and become incapable to assure a sustainable economic growth in both the closed and open economies.

In a government budget deficit scenario, the smaller T compared to G, the bigger aggregate income growth would be and also the private savings compared to the funding needed to consolidate the short-term debt that emerges from finance; and this takes place in both the closed and open economies. This savings 'overflow' in comparison with finance can be used to finance government spending that is bigger than its tax revenue (T < G) via Treasury bond issues. Alternatively, if government chooses not to finance its expenditures through issuing

bonds and finance them partially via T and partially through money creation (which is undertaken at the beginning of the FISF circuit when the CB buys bonds from the Treasury), there is an increase in the financial system's liquidity, and, so, banks' liquidity preference would have to increase in order to keep constant the money supply. If there is no reason for the liquidity preference to increase, the money supply in the economy increases after the government budget deficit, pushing interest rates downwards and boosting investment. Consequently, the equilibrium aggregate income, which has already been positively affected by budget deficit, gets even bigger due to the finance and investment expansion.

For the closed and open economy with government cases, it is also verified that investment continues to precede savings, corroborating the argument of Keynes (1937) regarding the causality between savings and investment, elaborated for the closed economy without government. Besides that, the mechanism that equalises the autonomous expenditures (I + G + X) to the residue (equilibrium income less private consumption) is the expenditure multiplier, as Keynes argued (1937a). Moreover, for the closed and open economy with government cases the finance is at the beginning of the circuit and funding is at its end. Since government tax revenue collections are possible only after income emerges, government expenditure as an autonomous expenditure category precedes tax revenues. Finally, expansionary fiscal policy has a crucial role to play in terms of the increase in income in an economy where money is not neutral. For a scenario in which the equilibrium income level is below the full employment level and there is a current account surplus, expansionary fiscal policy would have positive effects on income without damaging the external equilibrium. These effects are directly related to the income stimulus from the increase in aggregate demand, as well as by the stimulus on liquidity in the financial system and on the supply of finance that both reduce the liquidity preference and lead to improvement of 'long-term expectations'; thereby boosting investment and economic growth. Therefore, the basic features of the FISF circuit remained unchanged for the closed and open economies when government (fiscal and monetary policies) is considered in the circuit. These results are important to strengthened Post Keynesian Theory.

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Table 1: Central Bank Balance Sheet

| Assets	Liabilities and Net Worth
A_1 : Treasury securities A_2 : Other assets	L_1 : Monetary Liabilities held by banks and the rest of the domestic non-federal sector L_2 : Monetary Liabilities held by the Treasury L_3 : Monetary Liabilities held by others plus net worth

Source: Tymoigne and Wray (2013, p. 24).

Figure 1: The FISF circuit in the Case of a Closed Economy without Government
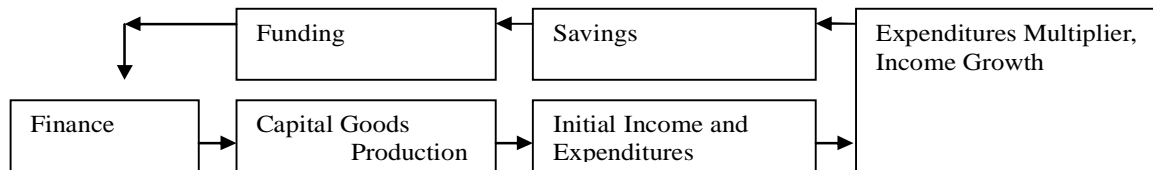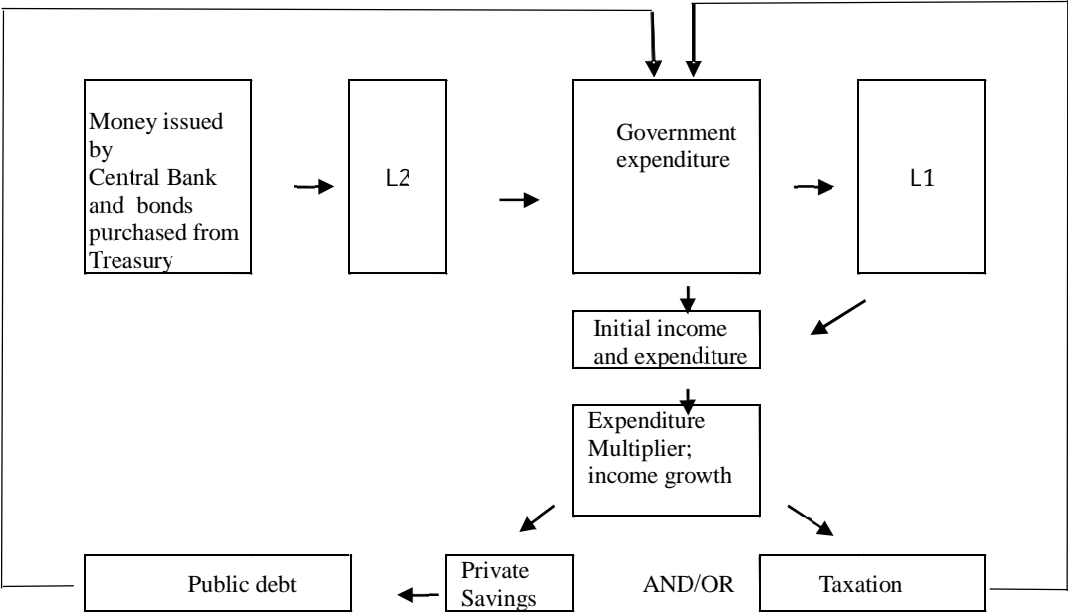

Source: Arestis and Resende (2015).

Figure 2: The Finance-Investment and Savings-Funding Circuit in Z
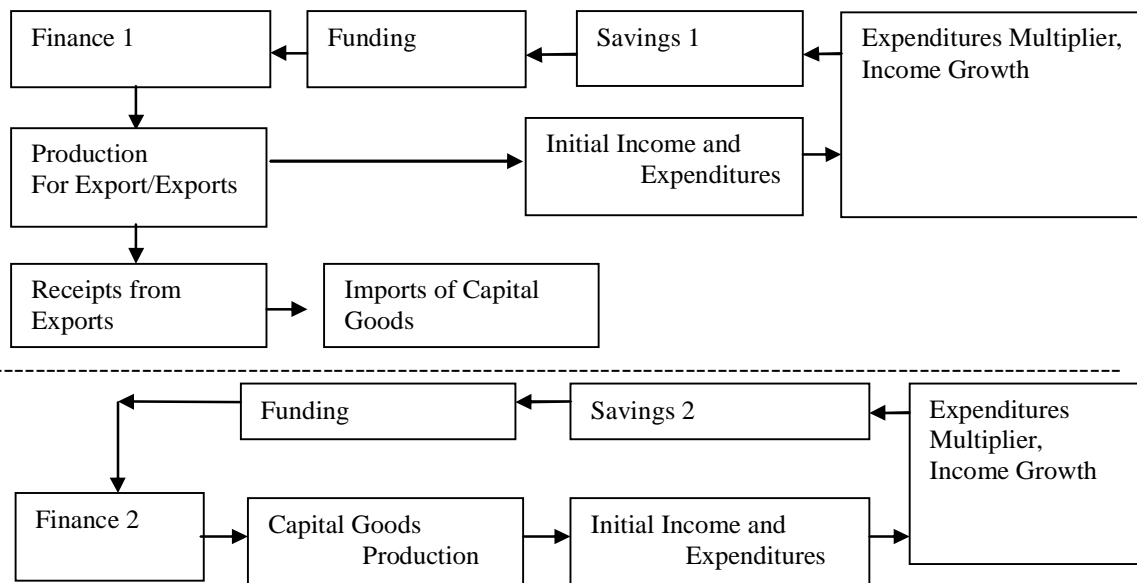
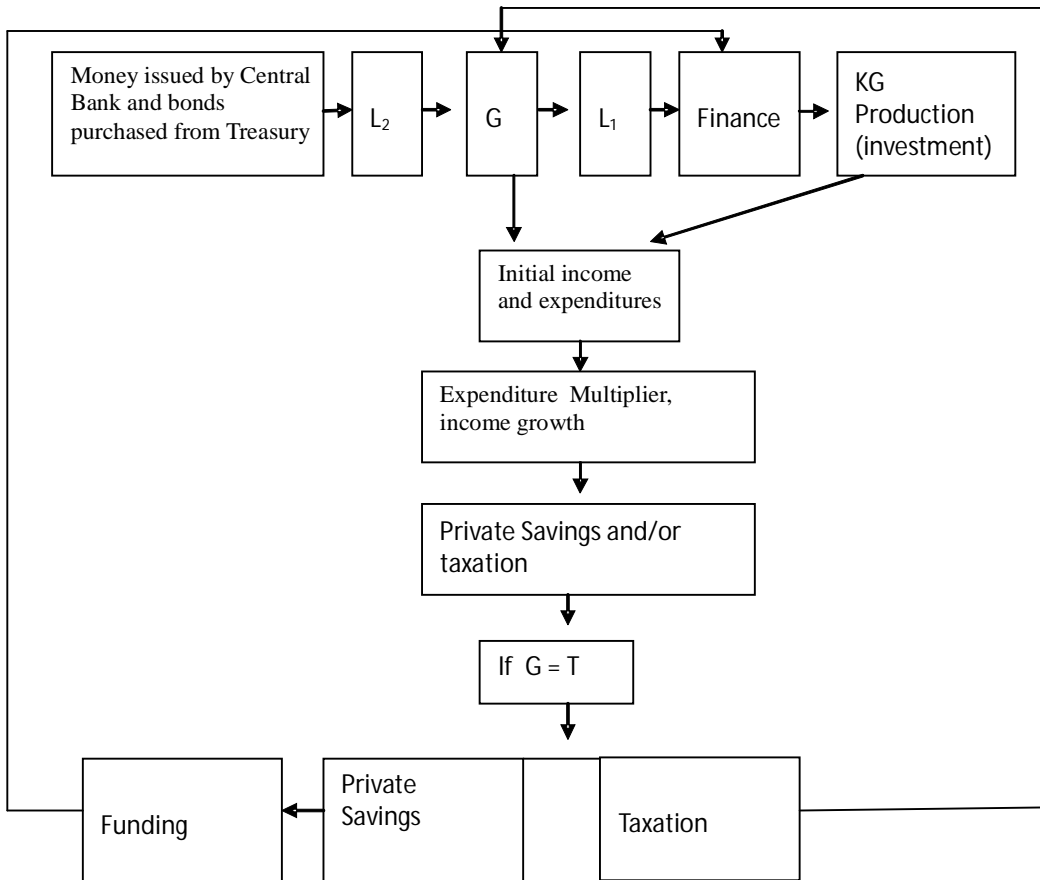
Source: Arestis and Resende (2015).

Figure 3: The FISF Circuit in a Closed Economy with Government and without Investment

Notes: L_1: Central Bank monetary liabilities with banks and private sector; L_2: Central Bank monetary liabilities with Treasury.
Source: Authors' Own Construction.

Figure 4: The FISF Circuit in a Closed Economy with Government and Investment

Notes: L_1: Central Bank monetary liabilities with banks and private sector.

L_2 : Central Bank monetary liabilities with Treasury. G= Government expenditures.
T=Taxation
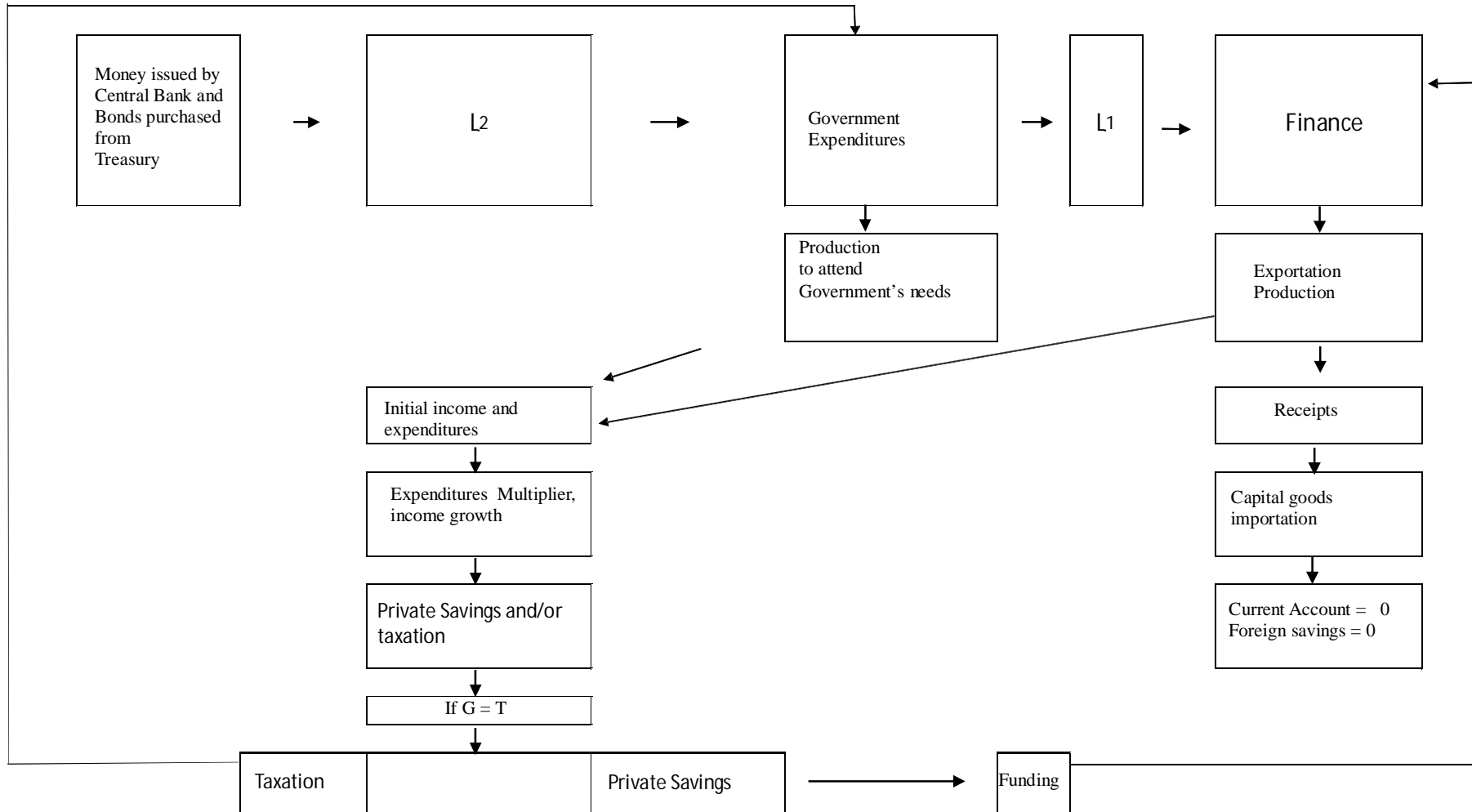
Source: Authors' Own Construction.

Table 2: The Identity between Autonomous Expenditures (G + I) and the Residual of Income at Equilibrium (T + Spr)

	Balanced Budget				Fiscal Deficit				Fiscal Surplus			
	c	t	G	I = f	c	t	G	I = f	C	t	G	I = f
	0.8	0.25	166.66	100	0.8	0.25	200	100	0.8	0.25	50	100
Aggregate Income multiplier	2.5				2.5				2.5			
(Y)	666.66				750				375			
Tax Revenue (T)	166.66				187.5				93.75			
Disposable Income (Yd)	500				562.5				281.25			
Priveate Savings (Spr)	100				112.5				56.25			
Agreggate Consumption (C)	400				450				225			
Spr – f1	0				12.5				-43.75			
T – G	0				-12.5				43.75			

Notes: c = marginal propensity to consume; t = tax aliquot; G = government expenditures; I = aggregate investment; f = finance.
Source: Authors' Own Construction.

Figure 5: The FISF Circuit in an Open Economy with Government and Investment

Source: Authors' Own Construction.

Endnotes

[1] We do not consider the share of the investment related to the civil construction and to the creation of stocks. This simplification facilitates the construction of the argument and does not compromise the conclusions.

[2] Regarding 'long-run expectations' and Liquidity Preference Theory, see Keynes (1936), Dow (1985) and Carvalho (2015).

[3] According to Minsky (1986), banks manage both sides of their balance sheet and can raise or decrease endogenously money supply and finance. They can even overcome restrictions ruled by the Monetary Authority through restrictive monetary policy and rising money supply when they consider this strategy a promising one. They can also do the opposite when their liquidity preference rises even in the context of an expansionary monetary policy.

[4] Introducing balance of payment considerations implies considering two currencies and two central banks, and there is also the problem of convertibility and rates of exchange. However, the assumption of a current account balanced for the countries W and Z is a simplification that overcomes these considerations and makes the argument easier to understand and the results are not misleading.