A labour market-augmented empirical stock-flow consistent model applied on the Greek economy

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Abstract. This paper extends the empirical stock-flow consistent (SFC) literature through the introduction of distributional features and labour market institutions in a Godley-type empirical SFC model. In particular, labour market institutions, such as the minimum wage and the collective bargaining coverage ratio, are considered as determinants of the wage share and, in turn, of the distribution of national income. Thereby, the model is able to examine both the medium-term stability conditions of the economy *via* the evolution of the sectoral financial balances and the implications of functional income distribution on the growth prospects of the economy at hand. The model is then applied on the Greek economy. The empirical results indicate that the Greek economy has a significant structural competitiveness deficit, while the institutional regime is likely debt-led. The policies implemented in the context of the Economic Adjustment Programs were highly inappropriate, triggering the insolvency of the private sector. An increase of the minimum wage is projected to have a positive impact on output growth and employment. However, policies which would enhance the structural competitiveness of the productive sector are required in order to ensure the growth prospects of the Greek economy.

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1. Introduction

The policy of internal devaluation has been at the epicentre of the Economic Adjustment Programs (EAPs) implemented in the Euro Area (EA) and specifically in country-members such as Greece and Portugal (e.g. see European Commission 2012a). Aiming to foster export-led growth, the labour market was deregulated, i.e. the minimum wage was reduced and firm-level bargaining agreements have been prioritised, so as to drive down domestic prices and enhance cost competitiveness. This policy implies a redistribution of national income at the expense of labour, allegedly considered as necessary in securing viable output and employment growth.

Doubts have been cast over the implementation of such a policy in Greece as it totally neglects the regime of accumulation of the domestic economy, its particular institutional and behavioural characteristics, as well as its productive capacity (Argeitis *et al*. 2018). The aim of this paper is to assess the internal devaluation policy implemented in Greece through the use of an empirical Stock-flow Consistent (SFC) model. Papadimitriou et al. (2013) have already provided an early assessment of this policy with the use of the SFC Levy Institute Model for Greece (LIMG). In their analysis, internal devaluation is examined through the introduction of a negative shock in domestic prices. In this respect, the main tool for carrying out the internal devaluation policy, i.e. the labour market institutions, is absent while the adjustment is set exogenously.

The present paper contributes in this work, as well as to the overall empirical SFC literature, by introducing distributional considerations on aggregate demand and rendering prices endogenous to the labour market institutions. Specifically, the private expenditure function of the LIMG model is extended so as to take into account different propensities to spend according to each source of income, in a *quasi* similar to Zezza and Dos Santos (2006) fashion. Therefore, in the Labour Market-augmented SFC model (LMSFC), economic activity is not only affected by public and external demand, as is the case with the LIMG (Papadimitriou *et al*. 2018), but also by functional income distribution, albeit in a more provisional manner. In parallel, the minimum wage and the collective bargaining coverage ratio determine the wage share and in turn, the prices. In this respect it is feasible to examine the impact of internal devaluation on economic activity both in terms of cost competitiveness and domestic demand.

The estimated results and the associated projections indicate that the Greek economy has a significant structural competitiveness deficit, while the institutional regime is likely debt-led. The policies implemented in the context of the EAPs were highly inappropriate, triggering the insolvency of the private sector. An increase of the minimum wage is projected to have a positive impact on output growth and employment. However, policies which would enhance

the structural competitiveness of the productive sector are required in order to ensure the growth prospects of the Greek economy.

The rest of the paper is structured in the following manner. Section 2 attempts an overview of the theoretical arguments in favour of the internal devaluation literature, ensued by a critique. The structure of the model is presented in section 3. The estimation method, the data and the estimated results are discussed in section 4. Section 5 is dedicated to the examination of policy scenarios regarding an increase of the minimum wage and a reduction of part-time and temporary employment, while the last section concludes.

2. Internal devaluation and labour market institutions

The major aim of the internal devaluation policy is to enhance the cost competitiveness of the economy whenever the external devaluation is not an option, as in the case of a fixed exchange rate regime or a monetary union. An improvement in terms of relative prices would allegedly enhance the export performance of the economy. At the same time, imports become more expensive and thus, are substituted for domestically produced goods (Myant *et al*. 2016, p.10). Ultimately, the trade balance becomes positive, while output and employment conjecturally grow in a sustainable manner.

Main emphasis is paid on the Unit Labour Cost (ULC), as a measure of competitiveness, which takes into account the labour cost *per* employee and the labour productivity. Higher labour costs as compared to labour productivity indicate a loss in competitiveness and *vice versa*. Thereby, in the context of the internal devaluation policy, the reduction of the ULC becomes imperative. This could be achieved either by reducing labour costs *per* employee or by increasing labour productivity. The choice is not politically neutral. In mainstream economic thinking, it is usually preferable to reduce labour costs,[2] while on the Keynesian front the focus is laid upon enhancing productivity, mainly through increased public investment (Esping-Andersen and Regini 2000).

In the dominant thinking, the main determinants of prices are labour costs. Mark-ups, which distort the clearing-market pricing mechanism, are supposedly removed through product market deregulation. However, this policy has a secondary role in the construction of the EAPs or is harder to impose. Other economic and statutory costs are likely to affect the overall price level,[3] yet they have only a minor role, if any, in the planning of the internal devaluation policy. At least in the short term, the ultimate deflationary tool is the reduction of wages and total labour costs.

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[2] As noted by Blanchard (2007), public investment-led productivity growth pays out only in the medium-term, while it endangers the attainment of fiscal targets.
[3] For a full list of these costs see Obstfeld and Rogoff (1995, pp.199-202).

The policy in question focuses mainly on enhancing flexibility in the labour market, which in theory contributes to the absorption of labour in the most productive sectors. In this way, the wage share in the tradable goods sector changes in relation to the wage share in non-tradables, creating more favourable conditions for a fall in prices (Obstfeld and Rogoff 1995, p.212). In particular, in a small open economy the export prices are determined by international trade, thus the overall price level depends on the prices of the non-tradable goods. In this respect, a lower wage share in the non-tradable sector implies that the aggregate price level would converge towards the level of international prices (*ibid*).

The internal devaluation policy has been strongly criticized on the grounds of postulating unrealistic assumptions and ignoring the institutional framework of the economies at hand. First of all, this policy has a large social cost due to the necessary increase in unemployment (Blanchard 2007). According to Muller *et al*. (2015) the emphasis on the ULC presents three main drawbacks. In the first place, it ignores the developments and prospects of borrowing costs and, above all, its impact on the profit margin of firms. Secondly, other determinants of competitiveness, such as the structure of domestic production, are being overlooked, rendering the price and exports relationship fragmented. Thirdly, it approaches exports as the key factor in GDP growth and national wealth creation, ignoring the effects of internal depreciation on domestic demand.

Felipe and Kumar (2014) note that the ULC ought to be treated as an indicator of the distribution of national income rather of competitiveness, while closely related to this is the fact that in the implementation of the internal devaluation policy the growth regime is not taken into account. In particular, the institutional characteristics of the economy determine whether the redistribution of income, driven by the implementation of the internal devaluation policy, has a positive or negative impact on economic activity.

In line with Bhaduri and Marglin (1990), in a wage-led growth regime, a decline of wages is expected to have a negative impact on GDP as there will be a significant decline in domestic demand. In this respect, the internal devaluation process fuels recessive dynamics in the economy and *vice versa*.[4] However, there is also a middle case in which the internal devaluation could drive exports but not investment. The internal institutional characteristics of the economy are not compatible with this policy, but the exporting sector is (Lavoie and Stockhammer 2012).

Finally, another major problem of the internal devaluation strategy is that it focuses on a long-term horizon, neglecting the short-term conditions. In particular, it examines the long-term production costs, considering that any measures aimed to remove labour market rigidities in

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[4] Interestingly, Calmfors and Drifill (1988) reach similar conclusions, though from a mainstream perspective. In their terminology, if output is highly elastic with respect to wages then a reduction of wages is likely to have a deflationary effect.

the short term will inevitably lead to an optimal long-term equilibrium. However, this analysis lacks any concerns regarding the existing conditions that determine the growth-path of the economy. In other words, there is no coherent and well-defined mechanism linking short-term policies with long-term results (Zezza 2013).

The policy of internal devaluation was implemented in Greece in two waves. In the first EAP the main focus was laid upon the reduction of the collective bargaining coverage, while in the second EAP, implemented in 2012, the main objective was the immediate adjustment of wages to the macroeconomic conditions. Initially, the labour market was deregulated through a) the suspension of the extension of all collective agreements, which no longer concerned non-contracting companies, b) firm-level contracts prevailed over the sector-level contracts and c) firm-level contracts were allowed to be negotiated by workers' unions, other than trade unions (European Commission 2012a). All three measures aimed at weakening trade unions, indirectly promoting wage adjustments and making decisive changes to the legal framework that covered industrial relations. As a result, the collective bargaining coverage ratio declined from 83.9% of employees in 2008 to 15% in 2014.

In the second wave, the minimum wage was reduced by 22%, while firing of employees was facilitated considerably (*ibid*). The lowering of the minimum wage was supposed to deliver a reduction of the aggregate wage structure, drastically reducing the labour costs of production. Similarly, the facilitation of firing aimed at creating more favourable conditions for the redistribution of labour from the least to the most productive sectors of the economy.

These measures had a drastic effect on the compensation of employee, which between 2009 and 2016 fell by 16%. However, the impact on the ULC was mitigated by a reduction of the labour productivity. Despite this, the ULC of the Greek economy, as compared to that of Italy, Spain and Portugal, which also implemented EAPs, either explicitly or implicitly, has improved considerably. In turn, this development led to a reduction of the wage share, which was already low in EA standards, and an increase of the profit share which is currently one of the highest in the EA (INE GSEE 2019).

None the less, this redistribution at the expense of labour did not have a significant effect on net exports (Passas and Pierros 2017). It remains questionable whether this policy could generate favourable and sustainable growth conditions for the Greek economy, i.e. if its growth regime is profit-led. Onaran and Obst (2016), following a structural approach, i.e. estimating separate econometric questions, indicate that the accumulation regime in Greece is wage-led. Similar conclusions are reached by Pierros (2019) who constructs a SVAR model for the Greek economy. The current paper adds to this type of empirical literature by addressing the same research question within the SFC framework.

3. The structure of the LMSFC

The LMSFC model extends the LIMG model mainly in two areas, namely the labour market institutions and the international trade. Labour market institutions, such as the minimum wage and the collective bargaining coverage ratio are considered as the main determinants of the wage share,[5] while a larger set of trading partners in the estimations, as compared to the LIMG, provides a better grasp regarding the export capacity of the Greek firm sector. However, the most important extension is related to the incorporation of the wage and the profit share. In the relevant literature, Burgess *et al*. (2016) use a Cobb-Douglas function in order to retrieve long-term shares of national income, while Passarella (2018) uses a Leontief production function at the service of the same goal. The approach adopted in this paper is somewhat similar to that of Zezza and Dos Santos (2006). The impact of distribution on the private expenditure depends on the different propensities to spend with respect to each source of income. This is achieved primarily by a proper disaggregation of private sector᾽s disposable income according to each source of income. This is evident in Table 1 which presents the Transactions Flow Matrix (TFM) of the LMSFC model.

The first upper column denotes the sources of aggregate demand which sum up to the nominal GDP. The lower part of the column indicates the functions in which the national income is distributed. The novelty of the LMSFC is that it estimates the determinants of the wage share empirically, while treating the shares of the government, the self-employed, the external sector and the shareholders as exogenous. In this context, the profit share occurs residually, as shown in eq. (1), in which h represents the share while wages, profits, government, self-employed, shareholders and the external sector are denoted by the subscripts, *w, f, g, se, sh, row*, respectively.

This specification comes with one advantage and one drawback. On the positive side, if wages are reduced, then the wage share plummets and the profit share increases, *ceteris paribus*. This *ex post* derivation of profits clearly deviates from the typical target mark-up pricing procedure usually adopted in the post-Kaleckian framework (Lavoie 2014). However, as Lee (1999) points out, pricing procedures are not rigid, but firms are rather moving from cost-plus pricing to administrative pricing and back, in line with the economic conditions and developments. Therefore, the present specification is more flexible regarding the determination of shares.

On the negative side, the aggregation of the private sector does not allow a proper distinction of profits between those of non-financial corporations and banks. The profit share corresponds to the profits of the aggregated corporate sector in terms of GDP. In this context, it is implicitly assumed that the effect of profit share on prices, discussed below, accounts also

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[5] For an empirical work justifying this point of view see i.e. Guschanski and Onaran (2016).

for financial costs, i.e. the interest rate on loans. Thereby, under this setup the examination of conflicting claims between traditional capitalists and financiers is infeasible.

Table 1. Transactions Flow Matrix of the LMSFC

	Production	Private Sector	Government	Rest of the World	Sum
Private Expenditure	+PX	-PX			0
Government Consumption	+G		-G		0
Public Investment	+Ig		-Ig		0
Public Inventories	+INVg		-INVg		0
Exports of Goods	+XG			-XG	0
Exports of Services	+XS			-XS	0
Imports of Goods	-MG			+MG	0
Imports of Services	-MS			+MS	0
[Memo]	[GDP]	[-Private consumption]	[-Public consumption]	[-Trade Balance]	[0]
Compensation of Employees	-COMP	+COMPps		+COMProw	0
Compensation of Employees from Abroad		+COMProwps		-COMProwps	0
Income from Self-Employment	-MIXY	+MIXY			0
Indirect Taxes	-IT		+ITg	+ITrow	0
Subsidies	+SUBS		-SUBSg	-SUBSrow	0
Government Gross Operating Surplus	-GOSg		+GOSg		0
Interest (private sector debt)		-Rpsrow		+Rpsrow	0
Interest (public debt)		+Rgps	-Rg	+Rgrow	0
Interest (rest of the world debt)		+Rrowps		-Rrowps	0
Private Sector Income from Rent		+RENTps	-RENTps		0
Government Income from Rent		-RENTg	+RENTg		0
Earnings from FDI received from abroad		+FDIps		-FDIps	0
Earnings from FDI paid abroad		-FDIrow		+FDIrow	0
Dividends paid	-DIV	+DIVps	+DIVg	+DIVrow	0
Dividends received from abroad		+DIVrowps		-DIVrowps	0
Profits	-F	+F			0
Direct Taxes		-DTps	+DT	-DTrow	0
Social Contributions		-SOC	+SOC		0
Social Benefits		+BEN	-BEN		0
Other Current Transfers (private sector)		+CURRTRANSps	-CURRTRANSgps	-CURRTRANSrowps	0
Other Current Transfers (government)		-CURRTRANSpsg	+CURRTRANSg	-CURRTRANSrowg	0
Other Current Transfers (rest of the world)		-CURRTRANSpsrow	-CURRTRANSgrow	+CURRTRANSrow	0
Capital Taxes		-KT	+KT		0
Capital Transfers (private sector)		+KTRANSps	-KTRANSgps	-KTRANSrowps	0
Capital Transfers (government)		-KTRANSpsg	+KTRANSg	-KTRANSrowg	0
Capital Transfers (rest of the world)			-KTRANSrow	+KTRANSrow	0
Total	Private Sector Balance		Fiscal Budget	-Balance of Payments	0
Change in Government Debt		+ΔGDps	-ΔGD	+ΔGDrow	0
Change in Net Private Sector Liabilities		-ΔPSL		+ΔPSL	0
Sum	0	0	0	0	

$$h_f = 1 - (h_w + h_g + h_{se} + h_{sh} + h_{row}) \quad (1)$$

Be that as it may, profits in levels are given by the product of the profit share and the GDP, as in eq. (2). It should be noted that these profits are not netted with respect to the interest payments, since firms and banks are aggregated. In fact, they are closer to the definition of EBITDA of the aggregate corporate sector, though the dividend payments have been excluded.

$$F = h_f * GDP \quad (2)$$

As shown in eq. (3), the wage share is equal to the compensation paid to the domestic employees over GDP. Note that the compensation paid to foreign employees is treated exogenously.

$$h_w = \frac{COMP_{ps}}{GDP} \quad (3)$$

The share of the government sector is the sum of indirect taxes and the operating surplus of publicly owned enterprises minus the subsidies, over GDP.

$$h_g = \frac{INT + GOS_g - SUBS_g}{GDP} \quad (4)$$

Accordingly, the share of the self-employed, in eq. (5) is the mixed income over GDP, the share of the shareholders in eq. (6) is given by the dividend payments towards the institutional sectors, denoted by i, over GDP, while the share of the external sector in eq. (7) is equal to the compensation paid to foreign employees minus the subsidies, over GDP.

$$h_{se} = \frac{MIXY}{GDP} \quad (5)$$

$$h_{sh,i} = \frac{DIV_i}{GDP} \quad (6)$$

$$h_{row} = \frac{COMP_{row} - SUBS_{row}}{GDP} \quad (7)$$

One remark ought to be made upon this constellation regarding dividends. The flow-of-funds at the lower part of Table 1 is identical to that of the LIMG, holding the same properties. This means that the government has been implicitly assumed to hold no financial assets, yet it receives dividends. This is an inevitable inconvenience, as the introduction of publicly held financial assets would add to complexity, without providing any significant gains in terms of analysis. Notwithstanding this overt deficiency of the setup, the amount of financial assets held by the government is usually such that it permits this omission. In any case, dividends paid to the government are assumed to be strictly exogenous.

3.1. The private sector

The gross income of the private sector is given by the vertical reading of the second column of Table 1. According to eq. (8), it is determined by the sum of the various sources of income, regardless if the latter is the outcome of productive or financial activities, augmented by the net transfer payments towards the private sector.

$$Y = COMP + MIXY + RENTIER + F + NetTrans \quad (8)$$

In particular, the compensation of employees comprises wage income both from the productive sector and abroad. The rentier income is the sum of net interest and net rent receipts, dividend payments and FDI related profits, while the net transfers include social contributions, social benefits and other current transfers. As typical, the difference between gross income and direct taxes yields the gross disposable income. Deducting private expenditure from the latter provides the gross savings of the private sector. A further deduction of capital taxes from savings and the inclusion of net capital transfers produce the financial balance of the private sector, or the net acquisition of financial assets. The allocation of these funds follows firmly the corresponding specification of the LIMG.

With respect to the main constituents of the gross income, the compensation of employees paid by the productive sector consists of wages and social contributions. Note that in the calculation of the gross income the social contributions are included both in the compensation of employees and the net transfers but with an opposite sign and thus they are cancelled out. The wage bill in eq. (9) is the product of the average wage w_{rate} and the level of employment. In turn the average wage depends on the real wage and the private expenditure deflator. Both the real wage and employment are estimated empirically.

$$WAGE = w_{rate} * N \quad (9)$$

A series of variables are treated as exogenous including net rents, profits out of FDI, dividends and other current and capital transfers. The interest payments depend on the effective interest rate and the lagged value of private debt.[6] We use the effective interest rate, instead of the standard one, for two reasons. First, the aim of the model is not to focus in detail on the financial implications of the model and second it allows the avoidance of the typical conundrum in estimating interest payments.[7]

Finally, for the estimation of the real private expenditure of the private sector the real household disposable income and the net real profits of the corporate sector area treated as separate explanatory variables. In doing so, direct taxes are divided between household and corporate taxes. In eq. (10), households' real disposable income depends on the gross household income, net of profits, and on the effective household income direct tax rate. The deflator denotes the private expenditure deflator.

$$YD_{h,k} = \frac{(1 - dt_{h,rate}) * (Y - F)}{ppx} \quad (10)$$

In a similar vein, the real net corporate profits $netF_k$ depend on the effective corporate direct tax rate and on the private expenditure deflator. Under this setup, the real private expenditure resembles the consumption function of Zezza and Dos Santos (2006). As is evident in eq.

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[6] The formulation is similar to the interest paid by the government in eq. (17).
[7] For a more detailed analysis on this topic see Passarella (2018) and Zezza and Zezza (2018).

(11), the real private expenditure depends linearly on the real disposable income net of profits, the expected real net corporate profits, the lagged real net financial wealth,[8] the new credit to households and firms and factors representing capital gains, such as the stock market index and the price of houses. The subscript k represents real values.

$$PX_k = f(YD_{hk}, netF_k, FA_{(-4),k}, Loans_k, SMI_k, Phouse_k) \quad (11)$$

According to this configuration, if real private expenditure is more elastic to real households' disposable income, then it is rather likely that the regime of accumulation is not profit-led and *vice versa*. It is crucially important to note that the disposable income of the private sector net of profits, takes into account the compensation of employees but also the income of the self-employed and the net transfers towards the corporate sector. Thereby, in this present constellation the model is not able to determine whether the economy is profit-led or wage-led but strictly whether it is profit-led or not.

3.2. The government

Public revenue *YG* consists of i) the gross operating surplus of and the dividends paid by the state enterprises (*GOSg* and *DIVpsg*), ii) the social contributions *SOC*, iii) other current and capital transfers, (*CURRTRANSg* and *KTRANSg*) and iv) direct, indirect and capital taxes (*DT*, *ITg* and *KT*).

$$YG = GOS_g + DIV_{psg} + SOC + CURRTRANS_g + KTRANS_g + DT + IT_g + KT \quad (12)$$

The first two elements in the right hand side of eq. (12) are considered as exogenous. The effective social contribution rate soc_{rate}, in eq. (13), is defined as the actual social contributions paid over the compensation of employees of the private sector and the mixed income of the self-employed.

$$soc_{rate} = \frac{SOC}{COMP_{ps} + MIXY} \quad (13)$$

The third source of public revenue, including both types of transfers, is considered as exogenous, while the fourth source, namely taxes, serves as the main instrument of fiscal policy in terms of public revenues. Commencing from the direct taxes in eq. (14) and eq. (15), the effective direct tax rates of households and firms dt_{hrate} and dt_{frate}, respectively, are calculated as a ratio of direct taxes paid by the households and firms over their respective income flow. The direct taxes paid from abroad are assumed exogenous. The effective direct tax rates are critical policy rates, acknowledging that the actual outcome serves as a mere proxy, since the progressiveness of the taxation system and the income distribution of the tax base, are neglected under this specific configuration.

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[8] Four lags are used with regards to financial wealth reflecting a lagged annual impact on private expenditure, given that the data used later on are quarterly.

$$dt_{h,rate} = \frac{DT_h}{Y-F} \quad (14)$$

$$dt_{f,rate} = \frac{DT_f}{F} \quad (15)$$

The indirect taxes are split between VAT revenues and revenues from other indirect taxes. The latter are treated exogenously. The VAT revenues are set according to the effective VAT tax rate, since a proper use of the statutory VAT rate would require a slightly more complex modelling approach, so as to take into account the VAT gap.[9] Therefore, the effective VAT tax rate vat_{rate}, is defined simply as the ratio of VAT receipts over GDP.

Finally, the capital taxes are treated exogenously since the capital stock is omitted in the formation of the LMSFC. Additionally, a part of capital taxes is accounted in the direct tax payments (European Commission 2014). Given this data unavailability, even in the event of a separate treatment of the capital stock, a calculation of the effective capital tax rate would have been a poor approximation.

The government expenditure in eq. (16) is consisted of i) public spending G, investment I_g and inventories INV_g, ii) interest payments on public debt R_g, iii) social benefits BEN and iv) other forms of expenditures like subsidies, current and capital transfers and the acquisition of non-produced non-financial assets.

$$GE = G + I_g + INV_g + R_g + BEN + Z \quad (16)$$

The first use of funds is considered exogenous, while the same applies for the fourth use of funds denoted by Z. The interest payments depend on the lagged public debt GD and the effective interest rate eir_g.

$$eir_g = \frac{R_g}{GD_{-1}} \quad (17)$$

Social benefits are divided between unemployment and other benefits. The latter are assumed to be in a constant relation with the GDP. The former depend on the effective unemployment benefit ratio, defined in eq. (18), as the unemployment benefit payments BEN_{un}, over the number of unemployed, UN.

$$ben_{rate} = \frac{BEN_{un}}{UN} \quad (18)$$

As typical the difference between public revenues and public expenditure yields the fiscal budget, corresponding to the financial balance of the public sector. Finally, the deduction of the interest payments provides the primary balance of the government.

3.3. The external sector

The formation of the external sector's identities is rather typical in the LMSFC and follows straightforwardly from the TFM. For instance, the trade balance corresponds to the net

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[9] See European Commission (2012b).

exports, which are exports minus imports of goods and services. The addition of income and interest payments and current transfers yields the current account, while the integration of capital transfers provides the balance of payments, or the inverse net lending/net borrowing position of the external sector. However, what deserves particular attention is the behavioural pattern determining the level of net exports.

With regards to the exports of goods and services, we integrate a demand effect, reflected in the national income of the main trading partners of Greece and one supply-side variable, which is the relative price of goods and services respectively. Equation (19) depicts the linear exports of goods function, in which i represents the trading partners under consideration.[10] The formulation of the real exports of services is identical.

$$XG_k = f(GDP_{k,i}, relpg,) \quad (19)$$

In eq. (20), the real imports of goods are a linear function of the real private expenditure, the deflated public spending, including gross capital formation, and the relative price of goods. In advance they are also affected by the level of the exports of goods. The main reason behind this inclusion is to examine the import content of the economy, or, simply put, the dependence of the productive sector on imported intermediate goods, which in the case of Greece it has been found to be particularly high (Pierros 2019). It becomes obvious that in the case of a large dependence on imports, the export-led growth envisaged by the proponents of the internal devaluation policy is infeasible.

$$MG_k = f(PX_k, G_k, relpg, XG_k) \quad (20)$$

An alternative specification would include the real GDP instead of the constituents of demand, if the statistical properties of the model require so. Needless to mention, the imports of services are estimated in a similar fashion. A final remark is related to the balance of payments, which, as in the case of the LIMG, it is determined *via* two identities. The first is given by the current account after incorporating capital taxes and transfers, while the second stems from the financial balances. Following Papadimitriou *et al.* (2013), the latter is assumed as the residual identity, which is not imposed on the system, but consistency demands that it holds at all times.

3.4. Labour market and labour productivity

Contrary to the standard approach in SFC models, in which the employment N depends on the real labour productivity *prod* and the GDP, the employment function is estimated

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[10] Trading partners include Germany, Italy, France, Cyprus, rest of the EA country-members excluding the former, UK, Bulgaria, rest of the EU country-members excluding the former, Turkey and the US. Their choice has been based on the fact that according to OECD data, they were the top trading partners of Greece in 2015.

econometrically, taking into account a set of demand and a set of structural factors. According to eq. (21), employment is a log-linear function of the real labour productivity, sources of demand, including private expenditure, public spending and exports and the educational level of the employees, with *edu* denoting the share of skilled workers, i.e. having completed successfully the tertiary education, in the total labour force.

$$N = f(prod, PX_k, G_k, X_k, edu) \quad (21)$$

The unemployment is the outcome of the labour force, involving persons aged between 15 and 64 years old, and growing at an exogenous rate, after deducting employment. Similarly, the unemployment rate *ur* is given by the size of the unemployed over the labour force.

According to Nikiforos and Zezza (2017) labour productivity in SFC models is usually considered as given or growing at a constant rate. The present study departs from this practice and estimates productivity empirically. In line with the work of Valdecantos (2012) and Passarella (2018), we introduce a Verdoorn effect on productivity, augmented by other structural factors. Apart from the demand effect, critical for the examination of the driving forces of labour productivity is the share of large corporations in total corporations *largecorp*. Specifically, large corporations employ a larger share of productive capital, they implement a crucial mass of physical investment and in which job positions are more specialised. Mayhew and Neely (2006) also refer to the importance of education and training of both employees and managers. The share of highly educated employees over the population size, *edu*, is taken under consideration. However, the lack of qualitative and quantitative data obstructs the integration of a similar variable with respect to managers. The R&D spending as share of GDP, *r&d*, is also considered as a driving force of technological progress. In addition, we employ the share of female employees in the total employment *fem*, as a proxy for the labour supply variation. In particular, the share of female employees reflects labour force utilisation, given that the employment of male employees is usually closer to full capacity and moves procyclically. The proposed specification is provided in equation (22), which is assumed to be log-linear.

$$prod = f(h_f, I_{g,k}, PX_k, X_{g,k}, largecorp, fem, edu, r\&d) \quad (22)$$

Of equal importance to the labour productivity is the determination of the real wage. In particular, the focus is laid upon the determinant of the average real wage, defined as the wage bill over the number of employees, adjusted for changes of the private expenditure deflator. In the SFC literature real wages, and consequently prices, are the outcome of conflicting claims. According to Kalecki (1971), wages depend on the relative strength of the labour unions to demand and actually receive higher wages and the associated institutions.

Following firmly and in a more sophisticated manner, Godley and Lavoie (2007, p.386) consider the determination of the real wage as a non-linear function of the employment rate

and of the labour productivity. The real wage increases in line with the employment rate, considering that near full employment conditions provide ample strength to the labour unions to attain higher wages. Accordingly, the nominal wage is assumed as a function of the real wage adjusting to the desired by the labour unions real wage.

In the present case the average real wage is assumed to be a log-linear function of the unemployment rate, the labour productivity and the tenure of employees, as reported in eq. (23). The minimum wage *minw* and the collective bargaining coverage ratio *collbarg*, are included as indicators of the dispersion of wages across all sectors of the economy. This dispersion, in particular with respect to the minimum wage, could have multiple readings. For instance, the significance of the minimum wage could reflect an economy which creates low-quality jobs or that there is a low to moderate income inequality.

$$(wage_{ratek}) = f(ur, prod, tenure, edu, minw, collbarg) \quad (23)$$

It should be mentioned that labour market institutions also include the flexibility of the labour market and in particular the promotion of part-time and temporal employment. In advance, active labour market policies affect the labour market conditions. For instance, the introduction of a large job creation programme is likely to have a considerable impact on the determination of wage and the relative strength of the labour unions. The integration of these features constitutes a topic for further research.

3.5. Price deflators

In the (post) Kaleckian literature, the price setting process practically determines the income distribution between employers, employees and financiers. As shown in eq. (24), domestic prices, mirrored by the price deflator of private expenditure, depend linearly on the profit share, the statutory VAT rate, the labour productivity, the price of energy and the price of imported goods. The interest rate on loans is excluded, as it would create endogeneity issues with the profit share. Instead, it is used as a substitute of the latter, if the profit share is found statistically insignificant.[11]

$$ppx = f(h_f, vat_{rate}, prod, penergy, \ pmg) \quad (24)$$

The first explanatory variable reflects the weight of profits on the formation of prices. The usage of the effective indirect tax rate is straightforward. The price of energy is treated as exogenous, though it could be modelled with respect to the oil prices and the demand of the domestic economy for energy. Finally, the price of imported goods is included in the calculations in order to capture the impact of the import content on domestic prices. Note, that the deflator of the public sector is assumed to follow the lagged growth rate of the private

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[11] Furthermore, the wage share or the average wage could be used as regressors instead of the profit share.

expenditure deflator. The price of exported goods in eq. (25) is identical to that of the private expenditure deflator, save the VAT rate. However, the VAT rate is included in the price of exported services given the large share of tourism in the output of the overall sector.

$$pxg = f(h_f, prod, pmg, penergy) \quad (25)$$

4. Data, econometric method and empirical results

The data employed in the construction of the LMSFC are quarterly, they cover a period from the first quarter of 1999 to the fourth quarter of 2016 and they have been retrieved from the sectoral accounts of Eurostat and the financial accounts of the Bank of Greece (BoG). Additional data have been drawn from the OECD, AMECO and the Fed databases. Also, data have not been seasonally adjusted. This practise comes with an obvious drawback, but in the authors' view the methods usually employed for adjusting series[12] generate a great loss of information which could prove trivial in the econometric estimations.[13]

With regards to the construction of the TFM, the integration of households, firms and banks in the private sector allows for a close approximation of the inflows and the outflows between the private, the public and the external sector. Problems regarding the construction of the "who pays whom" matrix, arise only in the case of interest payments and capital transfers. The interest payments of the public sector towards the rest two sectors have been divided according to the lagged value of the public debt held by the private and the external sector. Additionally, the capital transactions and the acquisition of non-produced, non-financial assets have been divided after observing the data.[14] Finally, whenever the time dimension of specific variables was smaller than the time dimension of the overall sample, the flow variables were assumed to be equal to their latest available value or grow at a constant rate, i.e. the trend of the past twelve quarters.

Due to space limitations it is infeasible to engage in a proper discussion of the econometric techniques applied in the estimations and the associated results. The routine applied in the estimations is discussed in the Appendix I, while the values of the estimated coefficients are presented in the Appendix II. However, it is important to discuss some specific empirical findings which are connected to the implementation of the internal devaluation policy.

Firstly, the coefficient of the private sector's disposable income net of profits, in the private expenditure function exceeds unity, i.e. it is equal to 1.39, implying that the spending pattern of the private sector, and especially households, is debt-led. Specifically, households' spending was financed by increased borrowing before the crisis, while after the crisis it is

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[12] For instance the Hodrick- Prescott filter or the CENSUS X-13 method in Eviews.
[13] In example seasonally adjusted series render the Granger-causality test biased.
[14] Some minor disturbances occur, which do not however affect the estimations.

financed by accumulated financial resources. In fact, since 2012 the consumption of households exceeds their disposable income, indicating that savings are negative, while their cash holdings and deposits are dropping (Koratzanis and Pierros 2017). Furthermore, the coefficient of net real corporate profits is particularly low, i.e. it is equal to 0.41, denoting the reluctance of the corporate sector to invest. In particular, their savings exceed their investment activity, thus their financial balance is positive (Argeitis *et al*. 2017). In this respect, the growth pattern of the Greek economy is clearly unsustainable, with the implementation of the internal devaluation policy aggravating the unsustainability conditions of the private sector.

Secondly, the main driver of imports of goods is exports of goods, i.e. the coefficient is equal to 0.98, while private expenditure has only a limited effect on imports, i.e. the corresponding value is equal to 0.37. This finding indicates that there is a significant structural deficit of the domestic productive sector, which renders the attainment of export-led growth infeasible. Thereby, the primary problem of the Greek economy does not lie in its cost competitiveness but on its poor productive capacity and, specifically, the high import content of the exporting sector. In this respect, the implementation of the internal devaluation policy is clearly inappropriate, as it totally neglects any structural considerations.

Thirdly, and following firmly from the second finding, both the private expenditure deflator and the exports of goods deflator are heavily influenced by the price of imported goods. Therefore, the poor structure of the domestic sector does not only generate a limitation in terms of exporting activity but it also poses constraints in terms of cost competitiveness. It is also important to mention that the profit share has a larger impact on domestic prices as compared to the average wage. This likely follows from the size of the non-tradable sector in Greece, which has higher profit margins as compared to the tradable sector. This is another fact indicating that the internal devaluation policy is inappropriate for the Greek economy, as it not only failed to boost exports, but it also increased the profit margins in particular sectors (Pierros 2019).

Finally, the average wage has been found to be critically, as well as negatively, dependant on the unemployment rate, as expected, but also positively related to the minimum wage. It is likely that the corporate sector produces low-skill jobs (Argeitis *et al*. 2018), thus the minimum wage has a strong impact on the average wage. Furthermore, the collective bargaining coverage ratio has been found statistically insignificant. Instead, a variable reflecting the share of part-time and temporary employment in total employment has been used, which has produces negative pressure on the average wage.

5. Simulations

The LMSFC is consisted of 94 equations, among which 11 are behavioural. The system was solved simultaneously. However, many variables in the behavioural equations were found statistically insignificant. A trial and error approach was applied, which entailed the manual removal of insignificant variables, but also variables which generated collinearity or trivialised cointegration, ensued by another round of simultaneous estimation. This process was repeated up until the point in which all variables were significant, collinearity was at a minimum level and cointegration was not rejected by the relevant tests, while the coefficients were relatively stable.

Figure 1. Net acquisition of financial assets in million euro (1999:1-2016:4)
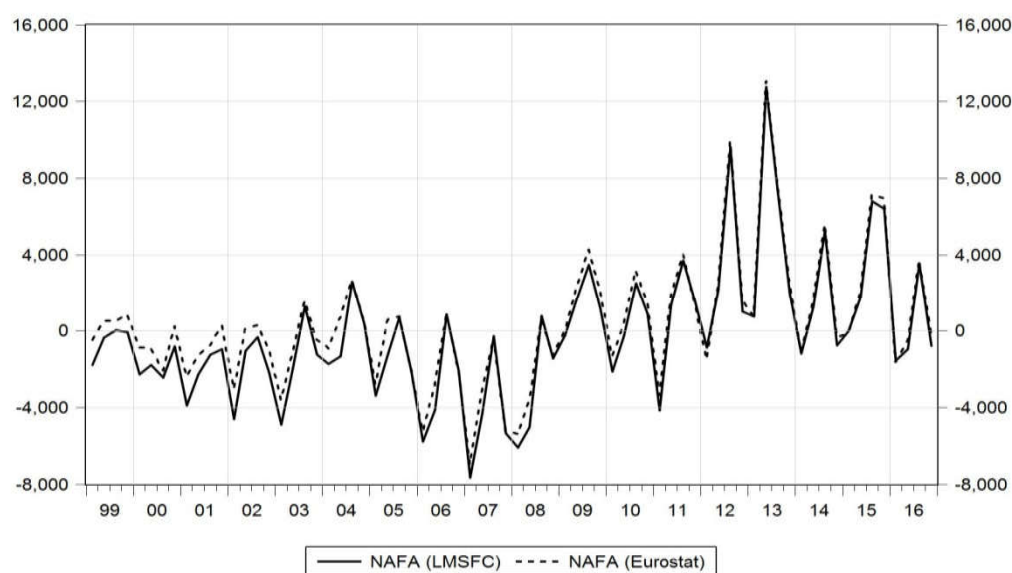
Having attained a solution of the model, in-sample projections were applied in order to ensure that the model replicates actual data efficiently. Figure 1 presents the Net Acquisition of Financial Assets (NAFA) by the private sector as estimated by the LMSFC model and compares them to the actual data. The model replicates the data fairly well, save the period 1999-2002, where a minor discrepancy is observed. This is likely related to the serial correlation with regards to the imports and exports of services which is presented in the start of the sample, as discussed in the Appendix I. The LMSFC replicates the evolution of the fiscal budget, in Figure 2, efficiently.

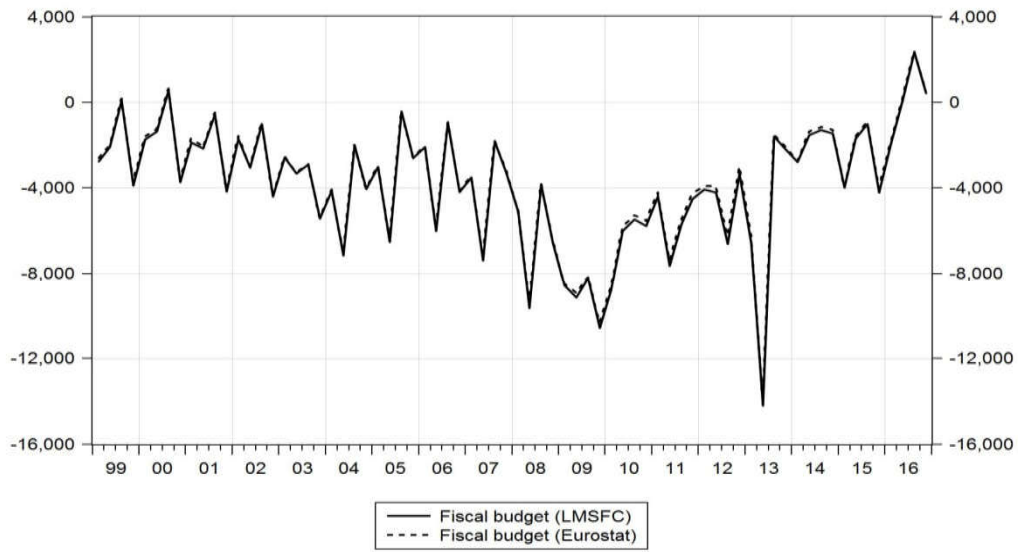Figure 2. Fiscal budget in million euro (1999:1-2016:4)

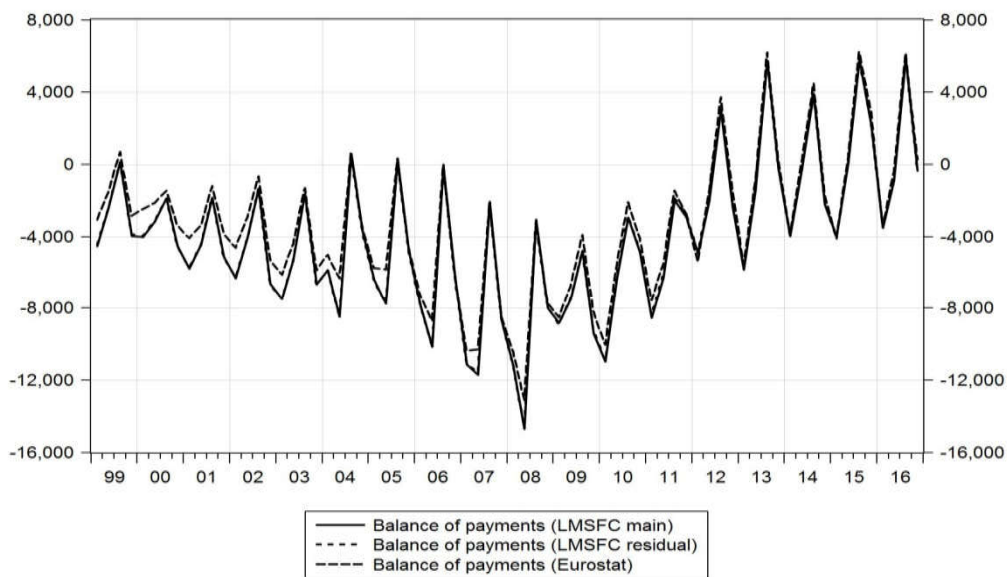Figure 3. Balance of payments in million euro (1999:1-2016:4)

Figure 3 serves a dual purpose. Firstly, the LMSFC replicates actual data well, ban an initial period between 1999 and 2002. This is again attributed to the presence of serial correlation which vanishes afterwards. In conjunction with the serial correlation observed in Figure 1, the discrepancy cancels out. Secondly, the model is consistent as the balance of payments calculated *via* the residual function is perfectly equal to the one retrieved by the main equation.

Having examined the consistency and the efficiency of the LMSFC model, a set of policy scenarios is taken under consideration. In particular, policy changes are introduced in the model in its out-of-sample projections, which are then compared to the baseline scenario.[15] Specifically, we examine a) two scenarios regarding an increase of the minimum wage in the first quarter of 2019 and b) a decrease of the share of partial and temporary employment in total employment again in 2019:1. It is worthy to mention that in the out-of-sample projections, the exogenous variables, i.e. public consumption, were held constant. More importantly, data regarding external trade were taken from the World Economic Outlook of IMF (2018). Given that, the current projections of the IMF regarding the world economy are more pessimistic (IMF 2019), the following scenarios ought to be viewed strictly as indicative.

Commencing from the first scenario, a one-off increase of the minimum wage by 10% in the first quarter of 2019 (Scenario 1) is compared to a gradual increase of the minimum wage by 2.5% each quarter of the same year (Scenario 2). The results in terms of real GDP and employment are presented in Figures 4 and 5. In both scenarios the impact on real GDP is positive. The 10% increase of the minimum wage, which the SYRIZA government introduced in February of 2019, is projected to yield an additional 0.7% of growth on real GDP. The overall outcome of a gradual increase of the minimum wage by 2.5% would have added 0.9% to real GDP growth.

In terms of employment, the overall outcome is somewhat similar. In Scenario 1 the unemployment rate is projected to fall by almost 0.7%, while in Scenario 2 the reduction as compared to the baseline scenario is equal to 0.85%. It would not do great injustice to argue that the Greek economy is not profit-led, since a redistribution of the national income in favour of labour has a positive impact on aggregate demand. However, the overall effect both in terms of output and employment is moderate. One would expect that this is owed to an increase of the balance of payments, following an increase of domestic demand. However, the actual mechanism is somewhat different. Fiscal consolidation and in particular the high tax rates mitigate the impact of an increased wage share on domestic demand.

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[15] Given that the data used in the LMSFC model end in 2016q4, short-term projections regarding the evolution of the real GDP are of no use. However, it is important to notice that for 2017 the growth of real GDP was estimated to be equal to 1.3%, being slightly off its actual value by 0.2%, while for 2018 the growth was projected to be equal to 2.1%, exceeding the actual growth rate by 0.2%.

Figure 4. Impact of a rise of the minimum wage on real GDP (2017:1-2023:4)
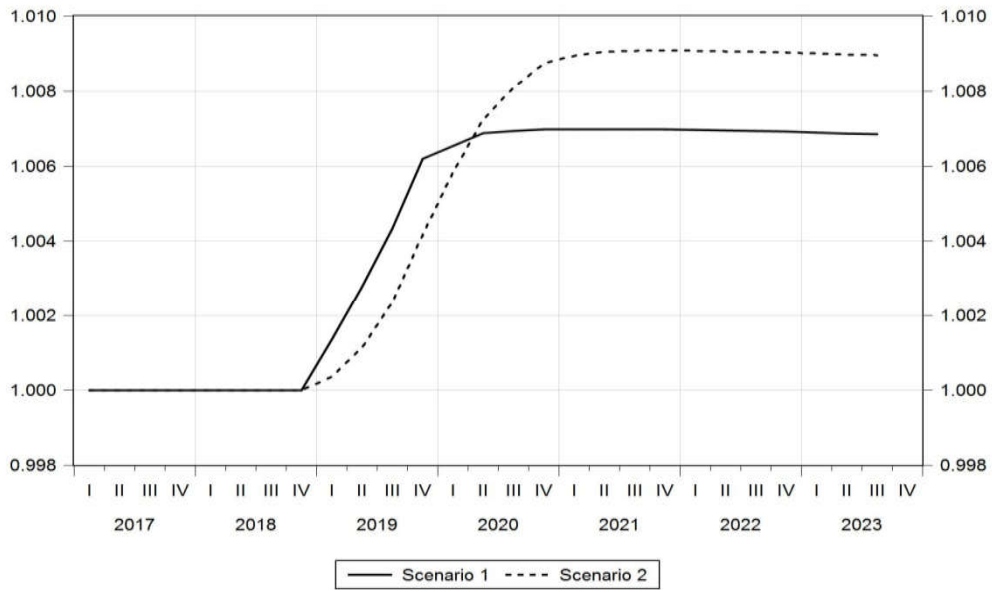
Note: Comparison with baseline scenario. Four period moving averages.

Figure 5. Impact of a rise of the minimum wage on the unemployment rate (2017:1-2023:4)
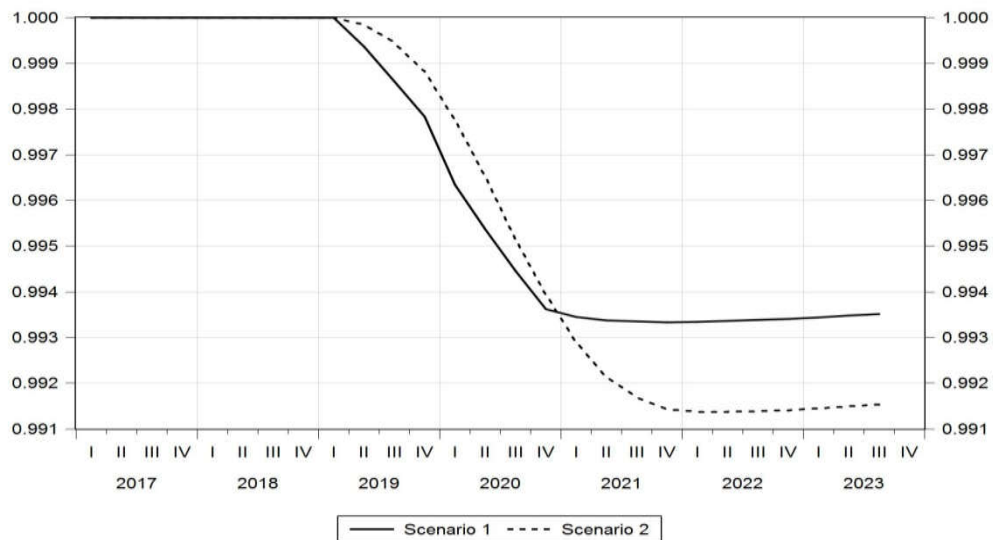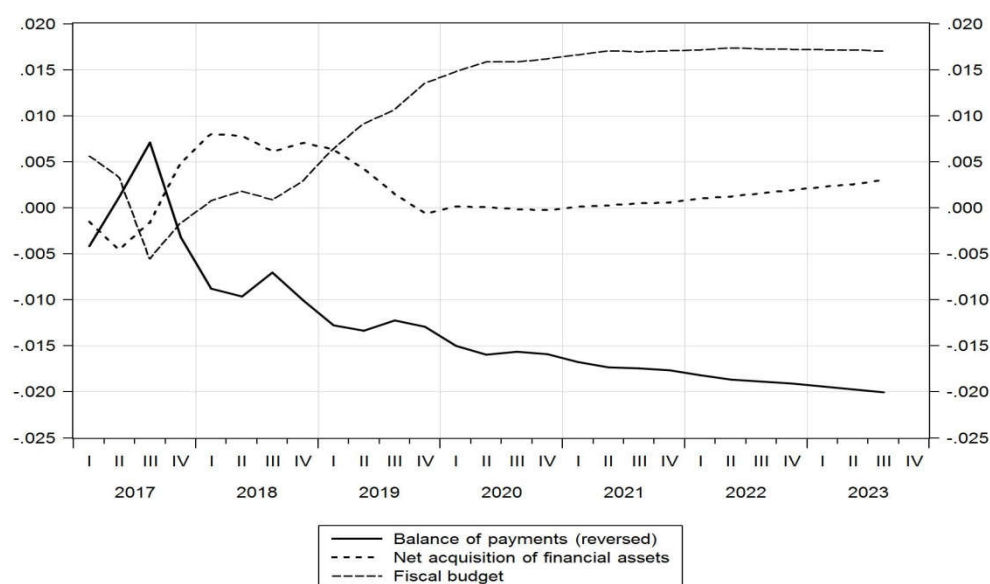

Note: Comparison with baseline scenario. Four period moving averages.

As is evidenced in Figures 6 and 7, which present the evolution of the sectoral financial balances in terms of GDP, the fiscal budget increases considerably, the external sector is in deficit, while the financial balance of the private sector is reduced when the increase of the minimum wage is imposed. It is worth mentioning that the balance of payments is positive

due to the financial inflows from the European Structural Funds, which account to 2% of GDP on average. Once the shock is absorbed, the financial balance of the private sector recovers. Due to the excessive spending of the private sector, the financial balance in Scenario 2 becomes negative for a short period, generating temporary destabilising tendencies. Thereby, Scenario 1 is likely a more preferable choice. Needless to mention that in the case of full restoration of the minimum wage at the pre-crisis level, i.e. an increase by 25%, growth in output and employment would have been more robust, but the financial balance of the private sector would have turned even more negative.

Figure 6. Sectoral financial balances in Scenario 1 (%GDP, 2017:1-2023:4)

Note: Comparison with baseline scenario. Four period moving averages.

However, two remarks ought to be made. Firstly, the results should be viewed with scepticism since it is unclear whether the additional income created by the increase of the minimum wage would be spent, or if the households would prefer to repay their debt payment commitments and their arrears towards the government, which are both exceptionally high (Koratzanis and Pierros 2017). Secondly, the LMSFC projects that in 2017 and in 2018 the public sector would not meet the fiscal targets, indicating the need of additional austerity measures, which are not explicitly modelled. Thereby, the results should be viewed as indicative of an overall tendency.

Scenario 3 is dedicated to the restoration of the nationwide collective bargaining agreements, reflected in the present case in a reduction of the share of part-timers in total employment from 20.1% in the last quarter of 2016 to 14%. The reduction is again imposed on the first quarter of 2019. The overall effect is stronger for both output and employment growth.
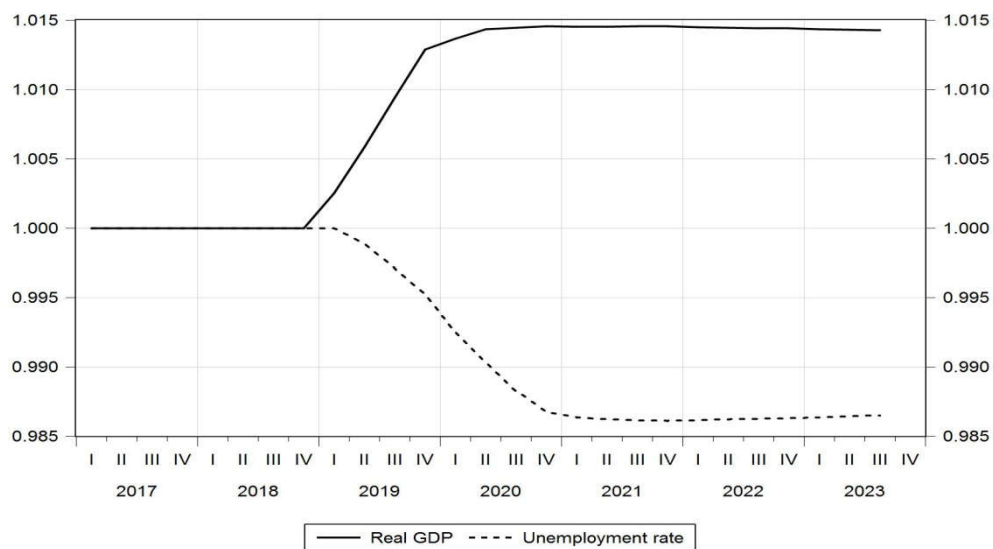
Specifically, real GDP is projected to be 1.5% higher than in the baseline scenario, while the unemployment rate is projected to fall by an additional 1.4%.

Figure 7. Sectoral financial balances in Scenario 2 (%GDP, 2017:1-2023:4)
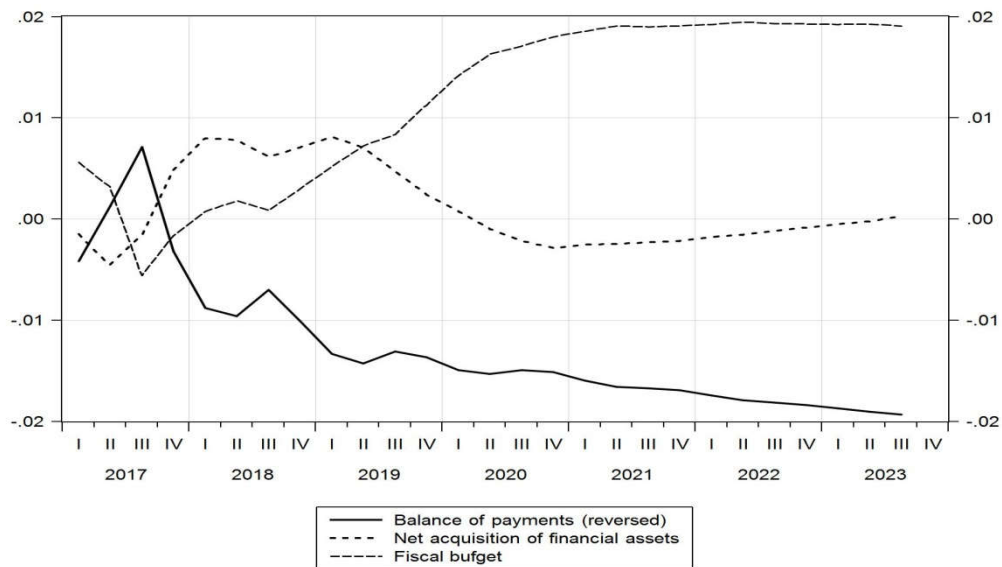
Note: Comparison with baseline scenario. Four period moving averages.

Figure 8. Real GDP and unemployment rate in Scenario 3 (2017:1-2023:4)

Note: Comparison with baseline scenario. Four period moving averages.

It appears that the enhanced flexibility of the labour market and the promotion of firm-level agreements and part-time employment had a stronger negative effect on the average wage as

compared to the reduction of the minimum wage. This is also observed in Figure 9 which presents the evolution of the wage shares in Scenarios 1 and 3. The increase in the latter case is exceptionally higher as compared to the former.

Figure 9. Wage share in Scenarios 1 and 3 (2017:1-2023:4)
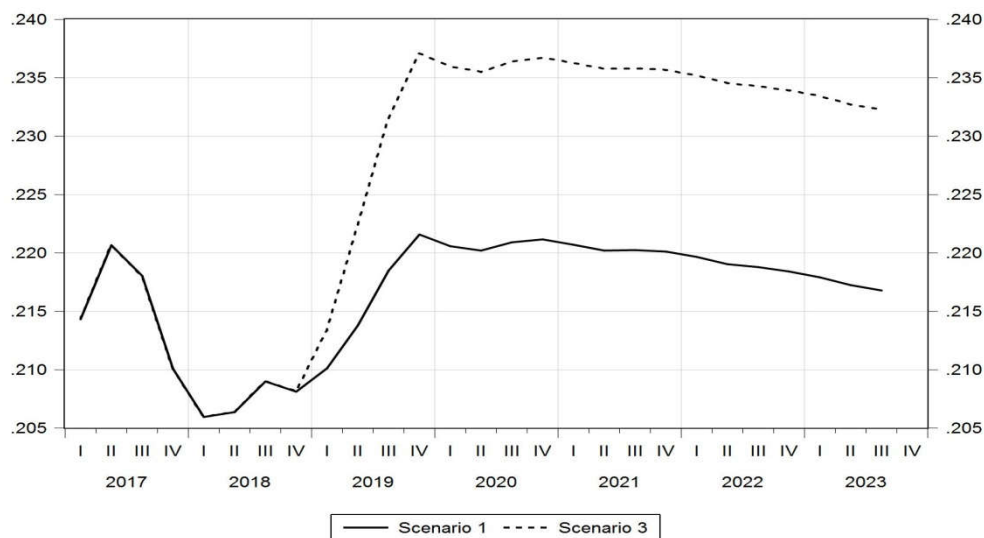
Note: Comparison with baseline scenario. Four period moving averages.

Figure 10. Sectoral financial balances in Scenario 3 (%GDP, 2017:1-2023:4)
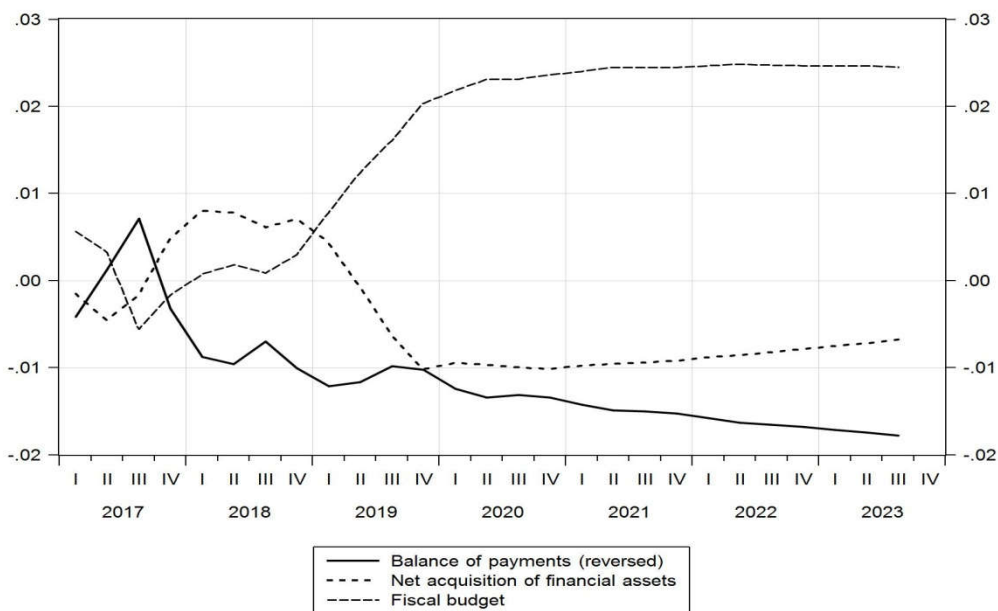
Note: Comparison with baseline scenario. Four period moving averages.

None the less, the impact on the financial balance of the private sector is even stronger. As depicted in Figure 10, not only the financial balance of the private sector is consistently

negative, but the surplus in the balance of payments is mitigated. Considering that the inflows from the European Structural Funds fluctuate between 1.5% and 2% of GDP, net exports are negative. More importantly, the increase of the fiscal surplus is robust, highlighting the asphyxiating impact of fiscal policy on the solvency of the private sector and the domestic demand. This finding provides a solid foundation for arguing that the private sector's financial fragility has been triggered by fiscal, as well as, income austerity, increasing non-performing loans at unprecedented levels.

6. Conclusions

In this paper a Godley-type SFC empirical model has been constructed aiming to assess the implementation of internal devaluation policy in an actual economy. In particular, the impact of national distribution on private expenditure is taken into account, by estimating wage and profit shares. In turn, the wage share is considered as an outcome of labour market institutions, ie. the collective bargaining agreements and the minimum wage. In this respect, the Labour Market-augmented SFC is able to examine the impact of labour market deregulation on the export performance and domestic demand.

The LMSFC was then applied on the Greek economy. Three policy scenarios were implemented, including a one-off 10% increase of the minimum wage, a gradual increase of the minimum wage by 2.5% in the course of one year and the restoration of national bargaining agreements, reflected in a decline of the share of part-time and temporal employment in total employment.

The results of the aforementioned scenarios in terms of output, employment and sectoral financial balances are somewhat similar though of a varying intensity. In all cases a re-regulation of the labour market is expected to have positive output and employment growth effects. In the case of Scenario 3, i.e. a reduction of the share of part-timers, the effect is significantly stronger, implying that the substitution of full-time jobs with part-timers had a more severe impact on the average wage, as compared to the minimum wage.

In parallel, in all three scenarios the wage share increases, providing evidence that the Greek economy is not profit-led. In fact, the Greek economy appears to be debt-led, since the propensity to consume out of the private sector's disposable income net of profits, exceeds unity. This finding, in conjunction with the poor export capacity of the domestic productive sector and the harsh fiscal austerity specify the limits to private expenditure-based growth. First of all, the debt-led growth regime generates a destabilising tendency in terms of the financial conditions of the private sector. Secondly, fiscal austerity hinders the growth effect of increased domestic demand and additionally undermines the solvency of the private sector. Thirdly, the export capacity of the domestic corporate sector is such that it does not allow the

attainment of a trade surplus which would result in sufficient inflow of funds that could counterbalance the negative effects of fiscal austerity.

Given these particular institutional and behavioural characteristics and the corresponding limitations, another policy mix is required in the case of Greece, which would ensure the viable growth prospects of the economy. Specifically in the short-term, the re-regulation of the labour market is considered as imperative as it would restore the level of domestic demand. In addition, fiscal policy ought to be redesigned so as not to hinder output growth and trigger financial instability. This of course implies the restructuring of the Greek public debt. However the medium and long-term prospects of Greece would be ensured by a public investment-led strategy, i.e. on infrastructure, green economy *etc*. Such a policy would enhance the structure of the productive sector and improve its ability to generate a sustainable trade surplus.

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Appendix I. Method of estimation of the behavioural equations

Due to the size of the sample which contains a structural break in most of the series, i.e. the outburst of the crisis, an *a la* Perron (1997) breakpoint ADF unit root test, accompanied by standard PP and KPSS tests, was applied.[16] The model which provided the minimum SIC value, was preferred. Almost all variables have been found to be non-stationary of the first order. Exports and imports of services, real net profits, R&D spending and the share of large corporations were found to be stationary, while the real GDP of Bulgaria, of the rest of the EA country-members and of the rest of the EU country-members had two unit roots.

Due to the small size of the sample, containing at least one structural break an Error Correction Model would have provided sub-optimal results (Stock and Watson 1993). Thereby, a DOLS model has been applied in all variables,[17] ban the stationary exports and imports of services in which an ARDL model has been used. In advance, a series of dummy variables has been included in the econometric estimations. The *global1* and *global2* dummies aim to capture a break in the trend or the intercept, respectively, caused by the global financial crisis. The *specific1* and *specific2* dummy variables aim to capture a break in the trend or the intercept due to the Greek economic crisis. It is worthy to mention that the *specific1* dummy variable is equal to one only between 2010:1-2013:4, since after 2013 the output is not falling but is stagnant (INE GSEE 2019). The *lmd* dummy variable, which is equal to 1 after 2011, aims to capture the impact of labour market deregulation implemented in the context of the EAPs after 2011. The dummy variable *CC* is equal to 1 in the third quarter of 2015 denoting the implementation of capital controls. Other dummies have been included, depending on the properties of each particular estimated equation.

Regarding the robustness of the results, the DOLS estimations are ensued by a coefficient variance decomposition test, so as to test for collinearity, and by four cointegration tests including the Hansen instability (Hansen 1992), Park's added variable (Park 1992), the Engle-Granger (1987) and the Phillips-Ouliaris (1990) test. In the case of the ARDL models a series of serial correlation and heteroskedasticity tests is applied, such as the standard autocorrelation function and the Jarque-Berra normality tests, the normality RESET test (Ramsey 1969), the Breusch-Godfrey LM test (Breusch and Pagan 1979) and the ARCH test (Engle 1982). Overall, most of the estimated equations behave properly and are cointegrated, save a serial correlation which is present in the case of the exports and imports of services. Specifically, serial correlation is observed in the start of the sample, which vanishes after 2002 when the euro currency is officially introduced in Greece. Most likely serial correlation

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[16] Taking into account different models, i.e. with trend, break in trend, break in constant and trend etc., overall twelve unit root tests have been applied to each variable.

[17] A Granger-causality test is first applied before the DOLS estimation in order to ensure that the leads cause the dependent variable (Hayakawa and Kurozumi 2006).

is related to measurement issues and the quality of the data. However, it does not affect in any significant manner the estimated output.

Appendix II. Values of the estimated coefficients

The following table the values of the coefficients estimated as described above and which have been used in the simulations. Note that the values for the exports and imports of services, which have been estimated with the ARDL method, corresponds to the long-run coefficients.

Private expenditure		Exports of goods		Imports of goods	
Disposable income	1.39	USA	1.06	Private expenditure	0.37
Net profits	0.41	Germany	0.02	Exports of goods	0.98
Financial wealth	0.03	PM of goods	1725.11	Relative prices	-21787
Loans to firms	0.53	Constant	-19326	Constant	13041
Loans to households	-0.33	Trend	-95.15	Capital controls	-1968.79
Capital controls	-4739.92	Trend^2	0.53	Global2	1239.34
Deflator outlier	-4947.07	Capital controls	924.75	Specific	-724.29
				EMU crisis	-889.61

Exports of services		Imports of services		Labour productivity	
USA	9.66	Relative prices	0.31	Private expenditure	0.01
Italy	2.27	Real GDP	6.66	Exports of goods	0.02
UK	0.04	Capital controls	0.04	Constant	57.11
Capital controls	-2550.93	EMU crisis	-703.73	Trend	0.49
Global	2204.62	Deflator outlier	-501.44	Trend^2	-0.01

Employment		Average wage		Private expenditure deflator	
Private expenditure	0.05	Unemployment rate	-3.93	PM of goods	0.35
Exports of goods	0.04	Minimum wage	1.7	Profit share	0.49
Productivity	0.23	Part-timers	-4.77	Average wage	0.11
Exports of services	0.03	Constant	-3.69	Constant	0.05
Constant	6.31	LMD2	-0.54	Trend	0.01
Specific	0.02	EMU crisis	-0.35		

Exports of goods deflator		Exports of services deflator	
PM of goods	1.03	Average wage	0.06
Constant	0.04	VAT rate	0.87
Trend	-0.01	PM of goods	0.28
Trend^2	0.01	Constant	0.25
Specific 2	-0.05	Trend	0.01
EMU crisis	-0.05		
Deflator outlier	0.04		