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Article

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PSL Quarterly Review

Provided in Cooperation with:

Associazione Economia civile, Rome

Suggested Citation: Hein, Eckhard; Prante, Franz; Bramucci, Alessandro (2023) : Demand and growth regimes in finance-dominated capitalism and a progressive equality-, sustainability- and domestic demand-led alternative: A post-Keynesian simulation approach, PSL Quarterly Review, ISSN 2037-3643, Associazione Economia civile, Rome, Vol. 76, Iss. 305, pp. 181-202, <https://doi.org/10.13133/2037-3643/18211>

This Version is available at:

<https://hdl.handle.net/10419/324086>

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Demand and growth regimes in finance-dominated capitalism and a progressive equality-, sustainability- and domestic demand-led alternative: A post-Keynesian simulation approach

ECKHARD HEIN, FRANZ PRANTE and ALESSANDRO BRAMUCCI*

Abstract:

Making use of a post-Keynesian/Kaleckian two-country stock-flow consistent (SFC) simulation model, we shed light on different regimes in modern finance-dominated capitalism, their interaction at the global scale, and then on the changes in regimes after the 2007-09 crises. Most importantly, we present the main features of a progressive and more stable equality-, sustainability- and domestic demand-led regime. We show that the main features of such a regime will have to focus on a 'reformed capitalism' with regulated finance, a more equal distribution of income and active government fiscal policies, as guide posts for progressive social democracy.

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How to cite this article:

Hein E., Prante F., Bramucci A. (2023), "Demand and growth regimes in finance-dominated capitalism and a progressive equality-, sustainability- and domestic demand-led alternative: A post-Keynesian simulation approach", *PSL Quarterly Review*, 76 (305):181-202.

DOI: <https://doi.org/10.13133/2037-3643/18211>

JEL codes:

B59, E02, E11, E12, E25, E65, F41, O41

Keywords:

post-Keynesian macroeconomics,
financialisation, growth regimes, inequality,
debt, social capitalism, stock-flow
consistent model

Journal homepage:

<http://www.pslquarterlyreview.info>

The era of *Capitalism Unleashed* (Glyn, 2006), with the liberalisation and deregulation of international financial, goods and labour markets, the abandonment of government aggregate demand management policies, and the weakening of organised labour, has been associated with the rise of finance-dominated capitalism, or financialisation (Hein, 2012; Palley, 2013). Since the late 1970s/early 1980s, this tendency towards financialisation, beginning in the US and the UK, has spread over the developed and emerging capitalist world, of course to different degrees and extents, and has led to the Global Financial Crisis (GFC) and the Great Recession (GR) of 2007-2009. In macroeconomic policy terms, since the 1990s, this period has been

* We are most grateful for comments by Amit Bhaduri, Carlo D'Ippoliti and an anonymous referee. Remaining errors are ours only, of course. This paper is part of the project 'WIPOSIM: The Economic Policy Online Simulator,' funded by the Hans Boeckler Foundation, Duesseldorf. See <https://www.wiposim.de/>

dominated by ‘new consensus macroeconomics’ (NCM) (Clarida et al., 1999; Goodfriend and King, 1997; Carlin and Soskice, 2014). This includes a policy focus on labour and product market deregulation to reduce the NAIRU (non-accelerating inflation rate of unemployment), inflation targeting by independent central banks, and balanced budget rules for government fiscal policies. As pointed out by Storm (2021), ‘modern’ social democracy has played a major role in implementing those structural reforms contributing to the dominance of finance, on the one hand, and in pushing for NCM policies, on the other.

In this paper we provide the grounds for an alternative macroeconomic policy orientation for a progressive turn of social democracy, based on post-Keynesian macroeconomics as an alternative to NCM (Arestis, 2013; Hein, 2023a, chapter 6; Hein and Stockhammer, 2010). In this approach, based on Kalecki’s (1935) and Keynes’s (1936) principle of effective demand, fiscal policy has a major role to play in stabilising the economy in the short and in the long run at non-inflationary full employment levels, without any deficit or debt targets or rules. We hold that this is particularly true under the current requirements of a socio-ecological transformation. Monetary policy should target low long-term interest rates and use other tools to provide financial stability, while wage and incomes policy would be in charge of stable inflation rates, on the one hand, and stable income shares, on the other.

In order to illustrate the benefits of an alternative demand and growth as well as macroeconomic policy regime as a guideline for a progressive turn of social democracy, in this paper we first shed light on different demand and growth regimes in modern capitalism and their interaction at the global scale, and then on the changes in regimes after the 2007-09 crises. Then, we outline a progressive equality-, sustainability- and domestic demand-led regime as an alternative. As will be seen, such an alternative requires a ‘reformed capitalism’ with regulated finance, a more equal distribution of income, and active government fiscal policies.

We have chosen a stock-flow consistent (SFC) simulation model for our analysis, as previously developed by Prante et al. (2022). Our SFC model is based on the research on the macroeconomics of finance-dominated capitalism (Hein, 2012; Stockhammer, 2015), which has analysed the effects of financialisation on the macroeconomy through four channels: distribution, consumption, investment, and current and capital accounts. Making use of a national income and financial accounting decomposition approach focusing on the growth contributions of the main demand components (investment, private consumption, public consumption, net exports) and the financial balances of the main macroeconomic sectors (corporate, private household, public, rest of the world), and thus on the composition of aggregate demand and the way it is financed,¹ four regimes have been distinguished: a debt-led private demand boom (DLPD) regime, a domestic demand-led (DDL) regime, a weakly export-led (WEL) regime, and an export-led mercantilist (ELM) regime. With the GFC and the GR of 2007-09, we have seen remarkable shifts in the DLPD countries, towards DDL regimes stabilised by government deficits, on the one hand, and, on the other hand, towards the ELM regime (Dünhaupt and Hein, 2019; Hein, 2019; Hein and Martschin, 2020; Hein et al., 2021). With these shifts, global current account imbalances, a feature of the pre-crises period, have persisted, also with emerging market economies with DDL or even DLPD regimes contributing to the current account deficits as global counterparts for the ELM and WEL regimes with current account surpluses (Akçay et al., 2022). The type of regime shift of the previously DLPD countries has depended on the requirement of private-sector deleveraging after the financial

¹ For a review of post-Keynesian approaches towards theoretical and empirical demand and growth regime analysis, including the analysis of growth drivers and macroeconomic policy regimes, see Hein (2023b).

crisis, as well as on the ability and willingness to run deficit-financed and stabilising fiscal policies. This has also been found by Kohler and Stockhammer (2021) in a cross-country analysis of the underlying growth drivers before and after the 2007-09 crises in 30 OECD countries, abandoning the national income and financial accounting decomposition approach for the regime distinction in the post-crises period and focussing on growth drivers instead. Hein and Martschin (2021) have kept the typology for macroeconomic demand and growth regimes mentioned above for the post-crises period and have examined the role of the macroeconomic policy regime, as a growth driver, for regime changes in the four main Eurozone countries, France, Germany, Italy and Spain. The macroeconomic policy regime describes the set of monetary, fiscal and wage or income policies, as well as their coordination and interaction, against the institutional background of a specific economy, including the degree of openness or the exchange rate regime. According to post-Keynesian macroeconomic theory, the macroeconomic policy regime also has a long-run effect on aggregate demand, distribution and growth, and thus on the particular demand and growth regime (Hein, 2023a).

Our paper is organised as follows. Based on our work in Prante et al. (2022), we present the basic framework of our two-country SFC macroeconomic simulation model in section 1 and the modelling of the transition of regimes during and after the 2007-09 crises in section 2. These are related to the financial instabilities which have been built up before the crises, the required deleveraging and credit restrictions through rising prudence in the financial sector, the macroeconomic policy regime, in particular the stances of fiscal policy and incomes policy, income distribution, and the changes in international price and non-price competitiveness. We also briefly discuss the instabilities incorporated in the post-crises regimes. Based on these findings, in section 3, as the main contribution of the current paper, we derive the main features of a progressive and more stable equality-, sustainability- and domestic demand-led regime, which builds on the post-Keynesian notion of coordinated macroeconomic policies and also takes into account some ecological constraints and features of social-ecological transformation of modern capitalism. Section 4 summarises and concludes.

1. The basics of the Prante et al. (2022) two-country SFC model

We make use of a two-country dynamic equilibrium SFC macroeconomic simulation growth model with Keynesian and (neo-)Kaleckian features.² The SFC structure of the model developed in the tradition of Godley and Lavoie (2012) allows us to properly capture the interdependencies and complementarities among regimes. Our work reconstructs, albeit in a stylized and simplified fashion, the build-up of the demand and growth regimes before the 2007-09 crises and the following regime change. The model seeks therefore to present the specific macroeconomic features of finance-dominated capitalism observed in developed capitalist economies in the period leading up to the 2007-09 crises, e.g., rising inequality, weak investment in the capital stock, an increase in credit-financed consumption in some countries and rising net exports in others (Hein, 2012). In addition, the model attempts to include the key drivers of the regime change in the course of and after the crises that led to the emergence of the new regimes

² Dynamic equilibrium means that, in each single period, the model reaches a goods market equilibrium. This is because there are no lags in the behavioural equations related to the goods market (e.g., no lagged income in the consumption function) except for stock variables that enter the behavioural functions with a one-period lag (as is usually the case in SFC models).

constellation (Hein, 2019; Hein and Martschin, 2020; Hein et al., 2021; Kohler and Stockhammer, 2021). These include the need for deleveraging in the private sector and the (in-)ability to make use of stabilising fiscal policies in this adjustment process. We model and simulate demand and growth regimes making use of different types of autonomous demand as drivers of aggregate demand and growth. The transition of regimes is then modelled by means of changing the autonomous demand growth drivers.

In this section we briefly present the structure of our model economy and present the core behavioural equations of the basic Prante et al. (2022) model. The complete set of equations can be found in the appendix (A1). Table 1 presents the balance-sheet matrix of our six-sector model. The six sectors are: the household sector, which we divide into high-income households (Top 10 per cent) and low-income households (Bottom 90 per cent) as a simple device to include distributional issues;³ the corporate sector; the government sector; the banking sector; and the foreign sector, the second economy in our two-country model (here called *RoW*). Dividing households into two income groups allows us to model personal income inequality and more specifically to model emulation-type behaviours (of the less affluent strata vis-à-vis more affluent households). This, together with easy access to credit, contributed to the rise in household indebtedness in the DLPD regime, as observed for the case of the US before the GFC and the GR (Barba and Pivetti, 2009; Cynamon and Fazzari, 2008; van Treeck, 2014, 2015).⁴

Table 1 – *Balance-sheet matrix of the domestic economy*

	<i>Households</i>		<i>Firms</i>	<i>Government</i>	<i>Banks</i>	<i>RoW</i>	<i>Sum</i>
	<i>Top 10% income</i>	<i>Bottom 90% income</i>					
<i>Deposits</i>	$+D_{h1}$	$+D_{h2}$	$+D_f$	$+D_g$	$-D$		0
<i>Loans</i>	$-L_{h1}$	$-L_{h2}$	$-L_f$	$-L_g$	$+L$	$+NIIP_{RoW}$	0
<i>Fixed capital</i>			$+K$				$+K$
<i>Net worth</i>	$-V_{h1}$	$-V_{h2}$	$-V_f$	$-V_g$	$-V_b$	$-NIIP_{RoW}$	$-K$

Source: Prante et al. (2022).

The household sector, the corporate sector and the government sector (domestic non-bank sectors, for short) hold deposits within the domestic banking sector. The domestic non-bank sector may also hold financial liabilities in the form of bank loans. The banking sector is responsible for clearing the supply and demand for credit. In addition, when the domestic economy has a current account deficit, it will accumulate liabilities with the foreign sector. When the domestic economy has a current account surplus with the foreign sector, it will

³ Of course, a more nuanced treatment of distribution could have been used, as in Belabed et al. (2018), who include the ten income deciles in their model. However, for the focus of the model on regime complementarities and regime changes, our simple distinction between the Top 10 per cent and the Bottom 90 per cent is sufficient.

⁴ Our division of the household sector between Top 10 per cent income (managers and traditional capitalists with high labour and capital income) and Bottom 90 per cent income (production workers with low labour income and minimal capital income, if any) follows the definition introduced into Kaleckian models by Dutt (2016). The inclusion of emulation type behaviour in consumption patterns follows Detzer (2018), Belabed et al. (2018), and Kapeller and Schütz (2015).

accumulate foreign assets. The net international investment position ($NIIP_{Row}$) represents the stock of financial assets or liabilities with the foreign sector.

The accounting structure of the foreign economy is a mirror image of the domestic economy. Table 2 shows the accounting structure of the model from the global perspective (that is, for the two countries together). The global balance-sheet matrix shows the interdependencies between the two model economies for the stock variables.

Table 2 – Global balance-sheet matrix with consolidated non-bank sectors

	Domestic economy			External economy			Sum
	Non-banks	Banks	NIIP	NIIP	Banks	Non-banks	
Deposits	+D	−D			−D _x	+D _x	0
Loans	−L _{nb}	+L	+NIIP	+NIIP _x	+L _x	−L _{nbx}	0
Fixed capital	+K					+K _x	K + K _x
Net worth	−V	0	−NIIP	−NIIP _x	0	−V _x	−(K + K _x)

Note: $L = L_{nb} + NIIP$ and $V = V_{h1} + V_{h2} + V_g + V_b + V_{ffin} + K + NIIP$, where V_{ffin} is firms' financial net worth.

Source: Prante et al. (2022).

The income and expenditure flows of our model economy are represented in the transaction-flow matrix (table 3). Top 10 per cent households (managers and capitalists) receive distributed profits from corporations, as owners of the firms, as well as labour income in terms of managers' salaries. Bottom 90 per cent households receive only wages. Furthermore, both groups may receive net interest income on their financial wealth held as deposits with banks. The aggregate wage share is exogenously given, as is the distribution of wages between the two groups, with the wage share of Top 10 per cent households being exogenously set by the parameter ω_{h1} . Both household groups pay taxes and consume. Equations (1) and (2) show the consumption function of Top 10 per cent and Bottom 90 per cent households, respectively. Aggregate consumption (C) is simply the sum of the consumption of both household groups:

$$C_{h1} = c_{a_{h1}} + c_{Y_{d_{h1}}} Y_{d_{h1}} + c_{V_{h1}} D_{h1-1} \quad (1)$$

$$C_{h2} = c_{a_{h2}} + c_{Y_{d_{h2}}} Y_{d_{h2}} + c_{V_{h2}} D_{h2-1} + \alpha C_{h1} \quad (2)$$

with c_{a_h} representing autonomous consumption, $c_{Y_{d_h}}$ the propensity to consume out of current disposable income (Y_{d_h}), c_{V_h} the propensity to consume out of wealth, in our model previously accumulated deposits (D_{h-1}). Subscript 1 represents Top 10 per cent households, subscript 2 Bottom 90 per cent households. The consumption of Bottom 90 per cent households (C_{h2}) may be partially driven by the consumption of Top 10 per cent households (C_{h1}) through an emulation effect (determined by the parameter α). Emulation can be seen as a complex phenomenon affected by socio-cultural preferences, institutions, and the (non-)provision of public goods (especially housing, education and healthcare). It may thus be viewed as an indicator for the necessity to keep up in an increasingly unequal and competitive society, in which access to credit is easily provided. In this case, when consumption is higher than

disposable income, banking sector loans are required. The emulation effect is thus only possible if the banking sector is willing to provide access to credit.

Concerning the firm sector, whenever investments are larger than retained earnings, which are the part of (net) profits not distributed to the Top 10 per cent households, additional loans are provided to firms by the banking sector. Firms' gross investment I is composed of an autonomous part and an income-induced part, with v as the capital-output ratio:

$$I = a_a K_{-1} + a_Y v Y \quad (3)$$

Government consumption demand G also contains an autonomous part and an induced part, with σ as the government consumption-tax ratio.

$$G = G_A + \sigma T \quad (4)$$

Government consumption expenditures (as well as government interest payments on outstanding debt) may thus be partly financed by taxes and partly by credit.

Table 3 – *Transaction-flow matrix of the domestic economy*

	<i>Households</i>		<i>Firms</i>		<i>Government</i>	<i>Banks</i>	<i>RoW</i>	<i>Sum</i>
	<i>Top 10% income</i>	<i>Bottom 90% income</i>	<i>Current</i>	<i>Capital</i>				
<i>Consumption</i>	$-C_{h1}$	$-C_{h2}$	$+C$					0
<i>Investment</i>			$+I$	$-I$				0
<i>Gvt. expenditure</i>			$+G$		$-G$			0
<i>Exports</i>			$+X$				$-X$	0
<i>Imports</i>			$-M$				$+M$	0
<i>Wages</i>	$+W_{h1gross}$	$+W_{h2gross}$	$-W$					0
<i>Taxes</i>	$-T_{wh1}$	$-T_{wh2}$	$-T_p$		$+T$			0
<i>Profits</i>	$+P_d$		$-P_{net}$	$+P_f$				0
<i>Int. payments on loans</i>	$-r_{-1}L_{h1-1}$	$-r_{-1}L_{h2-1}$	$-r_{-1}L_{f-1}$		$-r_{-1}L_{g-1}$	$+r_{-1}L_{-1}$	$+r_{-1}NIIP_{RoW-1}$	0
<i>Int. payments on deposits</i>	$+r_{-1}D_{h1-1}$	$+r_{-1}D_{h2-1}$	$+r_{-1}D_{f-1}$		$+r_{-1}D_{g-1}$	$-r_{-1}D_{-1}$		0
<i>Change in loans</i>	$+\Delta L_{h1}$	$+\Delta L_{h2}$		$+\Delta L_f$	$+\Delta L_g$	$-\Delta L$	$-\Delta NIIP_{RoW-1}$	0
<i>Change in deposits</i>	$-\Delta D_{h1}$	$-\Delta D_{h2}$		$-\Delta D_f$	$-\Delta D_g$	$+\Delta D$		0

Source: Prante et al. (2022).

Since our focus is on the complementarity of macroeconomic demand and growth regimes and on the respective regime shifts in the course of the 2007-09 crises and after, we model the banking sector as simply as possible. In our model it acts as a passive sector, providing credit

on demand, under certain conditions, and receiving deposits. There is only one interest rate (r), set by an implicit central bank, which is assumed to be the same for deposits and loans, and for both countries. Banks do not apply any mark-up on the interest rate and make no profits. However, banks are important in our model in their capacity to generate finance for consumption demand beyond current income. We will see below that the use or the restriction of this capacity has important effects on the emerging demand and growth regime.

The domestic economy and the foreign economy are connected through their trade relationships and through cross-border interest payments. Exports and imports in the two-country model are determined by demand and price competitiveness (assuming the Marshall-Lerner condition holds). Imports (M), exports (X) and net exports (NX) of the domestic economy are given by:

$$M = (\phi u - \psi e_r) K_{-1} \quad (5)$$

$$X = \left(\phi_x u_x - \psi_x \frac{1}{e_r} \right) K_{x,-1} \quad (6)$$

$$NX = X - M \quad (7)$$

An increase in domestic capacity utilisation (u) raises imports of the domestic economy, whereas an increase in foreign capacity utilisation (u_x) raises exports. Furthermore, net exports are affected by international price competitiveness. A loss of international price competitiveness of the domestic economy is represented by an increase in the real exchange rate e_r .

In our model,⁵ the inclusion of an income-induced component along with an income-independent element in each component of aggregate demand (consumption, investment, public demand and net exports, in the latter case through the endogenous effect of the partner economy) ensures that, in the long run, no component of aggregate demand is marginalized. At the same time, every autonomous component of aggregate demand (autonomous consumption, wealth-based consumption, credit-financed consumption, autonomous investment, autonomous government expenditures, competitiveness driven exports) can theoretically work as a long-run driver of economic growth, along the lines of autonomous demand driven growth models.⁶

2. The emergence of the pre-crises regimes and the shift of regimes after the 2007-09 crises

In our previous work (Prante et al., 2022), we have shown by means of stylized simulations how the features of finance-dominated capitalism – i.e., the falling wage share, growing inequality at the personal income level together with deregulation in the credit market (easy access to credit) in some countries – can lead to the simultaneous emergence of two

⁵ The baseline parameters of the model can be found in table A2.1 in the appendix. For a convergence of domestic and foreign economies towards their steady growth paths, which is the same for both countries, see figure 1 in Prante et al. (2022).

⁶ See Serrano (1995) for the original Sraffian supermultiplier growth model, Freitas and Serrano (2015, 2017) for comparative presentations of the model, and Allain (2015), Lavoie (2016) and Hein and Woodgate (2021) for the inclusion of autonomous demand-led growth into Kaleckian distribution and growth models. In contrast to the Sraffian supermultiplier model, in our SFC model we do not treat investment as fully induced; and, in contrast to the Kaleckian autonomous demand-led growth models, we do not assume that our autonomous demand-driven SFC simulation model returns to an exogenous normal rate of capacity utilisation, which is similar to the procedure in the closed-economy analytical model of Hein (2018a).

complementary demand and growth regimes, the DLPD and the ELM. While in one country (or group of countries), consumption (and thus imports) growth has been driven by credit-financed consumption compensating for the fall in income-financed consumption (and also in investment) (DLPD), in the other country (or groups of countries), economic growth has been driven by net exports (ELM) to the DLPD countries.

In Prante et al. (2022),⁷ we have exposed the baseline to a sequence of shocks, which we briefly outline here. First, for the domestic economy, we have reduced the economy-wide wage share and increased the wage share of the Top 10 per cent, which captures the simultaneous deterioration in functional and personal income distribution (at the expense of the poorest). At the same time, the Bottom 90 per cent try to keep up with their consumption style (but also cover essential needs such as better education and adequate healthcare coverage) despite their relative fall in income. This behaviour is captured with an increase in the emulation parameter α in equation (2). A deregulated credit market and unconstrained lending by banks satisfy the rising demand for credit, i.e., the debt-disposable income ratio ($L_{h2}/Y_{d_{h2}}$) of the Bottom 90 per cent households does not reach the maximum leverage ratio (l) set by the banking sector. For the domestic economy, this has generated a DLPD regime. Simultaneously, the foreign economy experiences an increase in its net export demand that is further supported by a real depreciation due to a stronger fall in its wage share, which we have imposed on it. As a consequence, the current account of the foreign economy turns to surplus and the economy accumulates foreign assets (i.e., issued by the domestic economy). The foreign economy thus turns into an (at this point complementary) ELM regime relying on demand growth coming from the DLPD economy.⁸ The financialisation of the domestic economy, i.e., unrestricted access to credit by the Bottom 90 per cent households necessary to finance consumption beyond income is what drives growth, ultimately in both countries/regimes.

Second, we have then further increased inequality in the domestic economy by slightly decreasing the overall wage share and slightly increasing the wage share of the Top 10 per cent. This raises the household debt-disposable income ratio of the Bottom 90 per cent households above the maximum leverage ratio tolerated by the banking sector, and the economy enters an over-indebtedness crisis.

Third, this over-indebtedness crisis then leads banks to tighten credit access requirements. In the stylized presentation in the model, the banks' tolerance threshold (l) goes to zero and, at the same time, the emulation behaviour of Bottom 90 per cent households terminates and α in equation (2) also falls to zero. Both model economies now stabilize at lower steady-state growth rates compared to the situation before the crisis, with lower rates of capacity utilisation.⁹

Fourth, we have then simulated different types of policy responses, as were observed during and after the 2007-09 crises, in particular in the DLPD countries. The effects of these policy responses are shown in the simulations in figures 1 and 2. Empirical studies have demonstrated that some DLPD regimes turned into DDL regimes, where fiscal policy was able to play an active role in sustaining aggregate demand, like in the US and the UK, whereas other countries, in particular the crisis countries in the Eurozone periphery, turned towards ELM regimes in the course of the Eurozone crisis and the austerity policies applied in this crisis (Hein, 2019; Hein

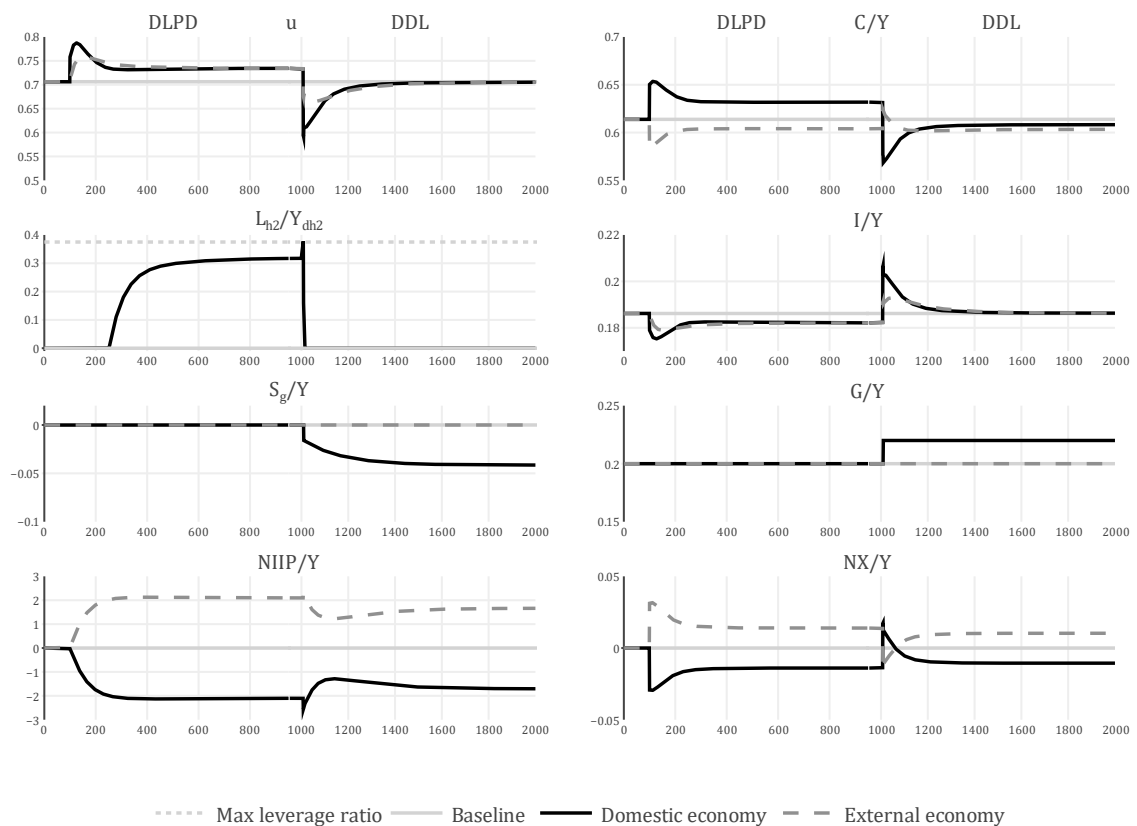
⁷ The numerical values for the shock sequences in order to generate the pre- and post-crises regimes can be found in table A2.2 in the appendix.

⁸ This case is comparable to the experience in Germany in the pre-crisis period.

⁹ In Prante et al. (2022), the emergence of DLPD and ELM regimes during the period of financialisation of the economy is shown in figure 2. The crises and the resulting stagnation are shown in figure 3.

and Martschin, 2020, 2021; Hein et al., 2021). The first transition is shown in figure 1. While the banks' tolerance threshold and the emulation parameter remain at zero, a persistent positive fiscal policy shock is applied by increasing the parameter σ , the government expenditures-tax revenue ratio, above one in the government consumption demand equation (4). Since this happens only in the domestic economy, the foreign economy remains in an ELM regime, benefiting now from deficit-financed public spending in the domestic economy.

Figure 1 – From DLPD to DDL: relying on fiscal deficits



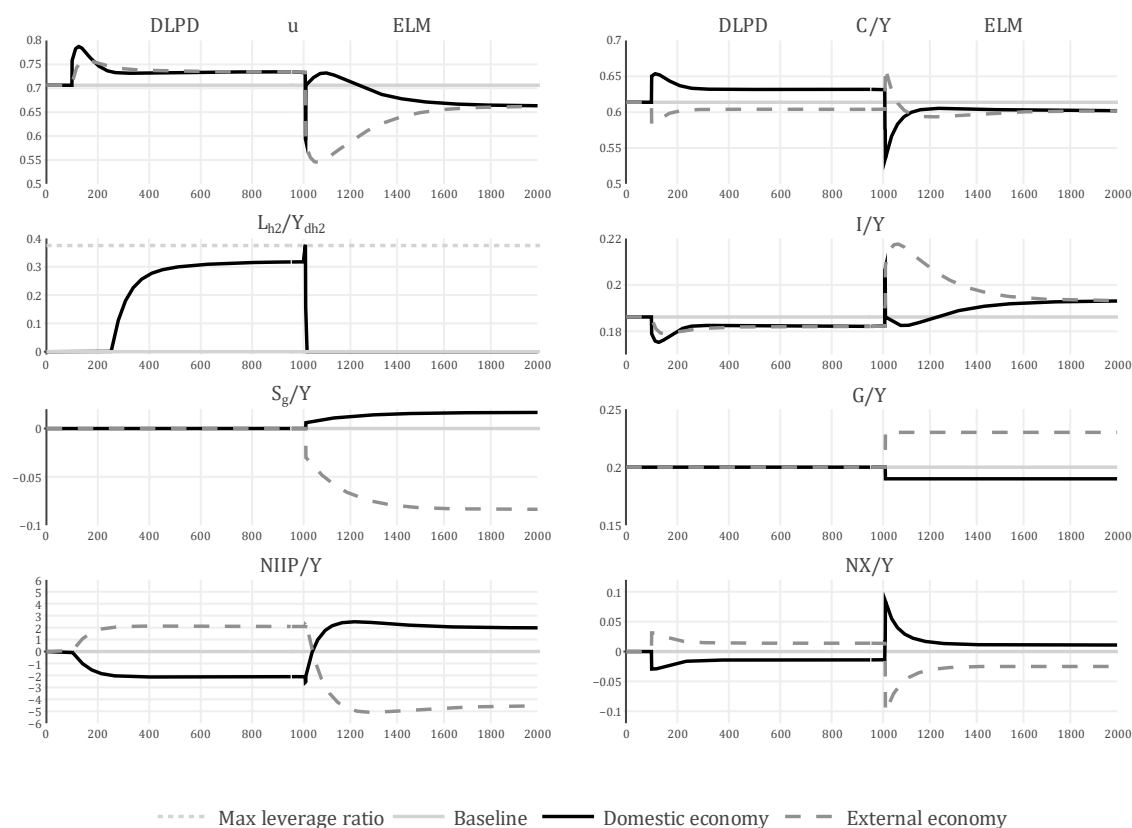
Notes: u , rate of capacity utilisation; L_{h2}/Y_{dh2} , debt-disposable income ratio of Bottom 90 per cent households; S_g/Y , deficit-income ratio of the government; $NIIP/Y$, net international investment position-total income ratio; C/Y , consumption share in total income; I/Y , investment share in total income; G/Y , public consumption share in total income; NX/Y , net exports share in total income.

Source: Own elaboration based on Prante et al. (2022).

The transition from a DLPD pre-crisis regime towards an ELM regime is shown in figure 2. This has been the case in some Eurozone countries (e.g., Spain) where significant fiscal policy intervention was not possible because of the fiscal rules in place in the currency area. On top of this, after an initial expansionary phase, Eurozone countries reacted to the crisis with an even more restrictive fiscal policy. Austerity measures are introduced into the model by decreasing the government expenditures-tax revenue ratio (σ) in the government

expenditures equation (4) and by further lowering the aggregate wage share and changing personal income distribution to the disadvantage of the Bottom 90 per cent. Worsening income distribution is followed by an improvement in international price competitiveness. To generate a transition of the domestic economy from a DLPD to an ELM regime, we further need the foreign economy to assume a DDL regime stabilized by government deficit spending.

Figure 2 – From DLPD to ELM: relying on external demand



Notes: u , rate of capacity utilisation; L_{h2}/Y_{dh2} , debt-disposable income ratio of Bottom 90 per cent households; S_g/Y , deficit-income ratio of the government; $NIIP/Y$, net international investment position-total income ratio; C/Y , consumption share in total income; I/Y , investment share in total income; G/Y , public consumption share in total income; NX/Y , net exports share in total income.

Source: Own elaboration based on Prante et al. 2022.

Our simple two-country SFC model and the resulting simulations have shown, in a stylized way, how the interconnectedness of some main features of finance-dominated capitalism (income re-distribution, credit market deregulation, both nationally and internationally) may generate national and international imbalances and the resulting financial fragilities that ultimately led to the 2007-09 crises. In addition, the model demonstrates how the regimes have changed after the crises, depending on developments in income distribution, the need for deleveraging of households, and the ability (where possible) of fiscal policy to intervene to support aggregate demand. Although our model shows a convergence towards steady growth

for both post-crises regimes, these growth rates are lower than the baseline solution for our model and lower than in the pre-crises DLPD regime. Furthermore, they exhibit lower investment and higher inequalities at the national levels and persistent current account imbalances at the international level. On the one hand, this constellation is associated with high international economic fragility. On the other hand, it has contributed to the stagnative trend after the 2007-09 crises, highlighted both in orthodox economics (Summers, 2014, 2015; Teulings and Baldwin, 2014a, 2014b; von Weizsäcker and Krämer, 2021) and in heterodox economics (Blecker, 2016; Cynamon and Fazzari, 2015, 2016; Hein, 2016, 2018b, 2019; Onaran, 2016a; Palley, 2012; van Treeck, 2015). In the following section, we will thus make use of our two-country SFC model in order to outline and simulate an alternative regime based on a progressive post-Keynesian inspired policy mix of regulated finance, lower inequality, and an active public investment strategy targeted towards the social-ecological transition.

3. A progressive equality-, sustainability- and domestic demand-led regime

Since the pre-crises DLPD and ELM regimes contained some severe fragilities which led to the 2007-09 crises, and the post-crises DDL and ELM regimes also exhibit several problems, as indicated above, post-Keynesians have proposed wage-led or income-led recovery strategies after the 2007-09 crises as alternative paths to take. These suggestions are usually built on a post-Keynesian macroeconomic policy mix (Arestis, 2013; Hein, 2023a, chapter 6; Hein and Stockhammer, 2010; Storm, 2021). Monetary policies should target low long-term interest rates and take care of financial stability by applying regulatory instruments. Wage and incomes policies should target stable inflation and stable income shares, and fiscal policies are in charge of stabilising aggregate demand at non-inflationary full employment levels, both in the short run and in the long run. For this purpose, in particular, government expenditure variations should be used, accepting the emerging government deficit- and debt-GDP ratios as endogenous variables. The tax and social benefit system should be applied to reduce disposable income inequality. Some of the suggestions of a wage- or income-led recovery strategy after the 2007-09 crises based on post-Keynesian macroeconomics have been linked with financial market re-regulation, gender equality concerns, and/or targeting government investment to the required socio-ecological transformation in the face of climate change and other ecological constraints.¹⁰ We follow this route and will now present an alternative and socially progressive post-crises regime based on: more pre-cautionary credit generation in the financial market through tighter regulation; a more equal distribution of income through a higher aggregate wage share as well as a reduction of the wage share of the Top 10 per cent households and an increase of the wage share of the Bottom 90 per cent households; and expansionary fiscal policies with government investment targeted towards the ecological transition and fostering green investment, in particular.¹¹

We illustrate the post-crises transition to a progressive equality-, sustainability- and domestic demand-led regime (PES-DDL) containing these elements, and we assume that it is

¹⁰ See, for example, Arestis (2010), Cynamon and Fazzari (2010), Hein (2012, chapters 7-8, 2016, 2018b), Hein and Martschin (2020), Hein and Truger (2012), Obst et al. (2020), Onaran (2016a, 2016b), Onaran et al. (2017), Palley (2012, Part II, 2013, chapters 11-12), and Pollin (2010), among several others.

¹¹ For a recent discussion of alternative strategies dealing with ecological challenges and CO₂ emissions, in particular, see Hein (2023a, chapter 9) and Priewe (2022). For the macroeconomics of green investment strategies, see, for example, Pollin (2018, 2020, 2021).

simultaneously pursued in both economies of our two-country SFC model and is internationally coordinated to some degree. In this setting, we assume that a progressive macroeconomic policy mix is aimed at improving the relative income position of the Bottom 90 per cent households, as well as at a comprehensive provision of public goods (education, health care, housing, infrastructure) by the government to foster a broad and deep improvement in living conditions and societal well-being, while also reducing the importance of status-driven competitive consumption patterns, as indicated by the relative income hypothesis, explained above. Not least, the progressive policy mix is also aimed at the transition towards a decarbonized and broadly more environmentally sustainable mode of production and consumption. We also assume that the policy mix encompasses an approach to financial and banking regulation that, on the one hand, prevents speculative excesses and unsustainable credit-provision through stricter financial and credit market regulation and, on the other hand, facilitates the flow of funds into real-economy investment projects that are primarily aimed at the green transition (energy and general production) and the digital and robotics transformation. The shift towards long-term investment-oriented policies by the government can also serve to increase the investment orientation of the private sector through the reduction of demand uncertainty and a higher viability of long-term investments in the field of green technologies and digitalisation.

We can illustrate this kind of broad-based progressive turn by the following changes regarding the parameters of our model in the post-crisis period:¹²

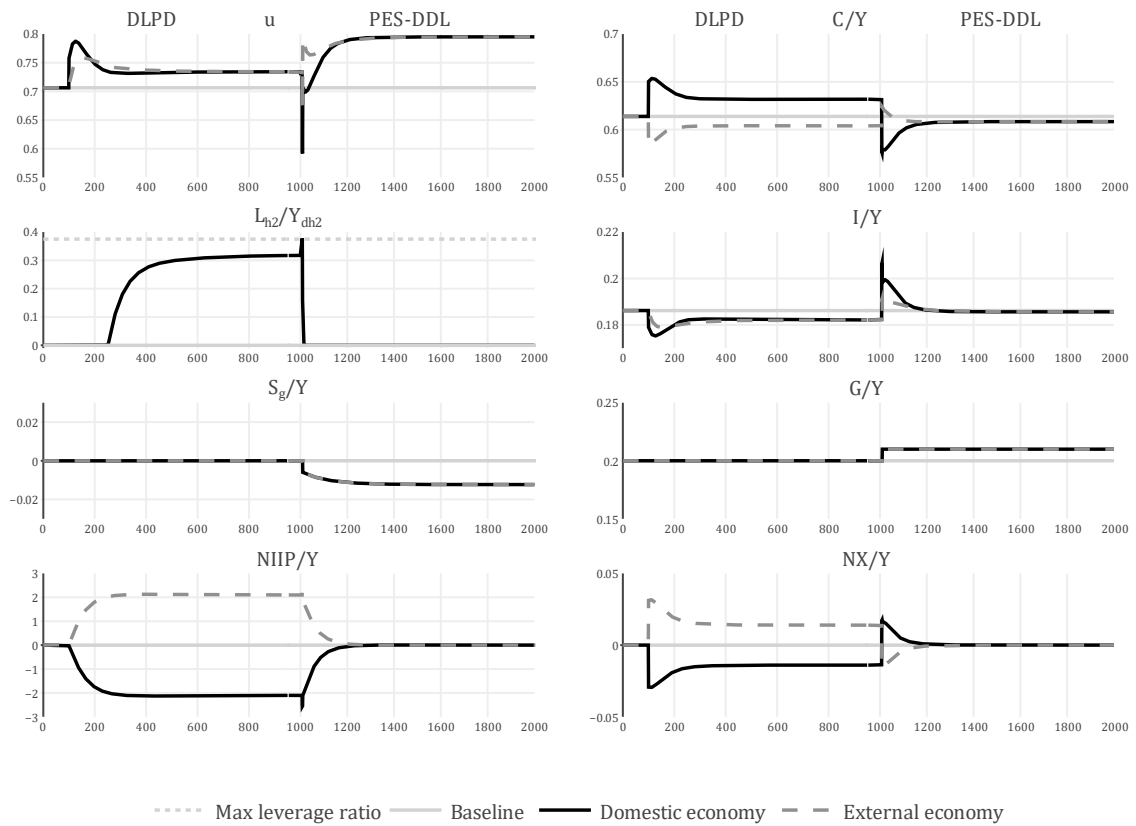
- We assume that the new policy mix leads to less wage inequality and higher aggregate wage shares, which both work to reduce overall income inequality. For both economies, we assume that income policies do not only reverse the changes from the financialisation shock in both distributional dimensions but also lead to a scenario that is actually more favourable to the Bottom 90 per cent households than in the initial state of the baseline. The aggregate wage share (ω) increases above and the wage share of the Top 10 per cent households (ω_{h1}) falls below the baseline constellation in both economies.
- Similar to the DLPD-to-DDL transition, fiscal policy assumes a more expansionary role, not only as a stability-oriented response to the crisis but also aimed at a broad provision of public goods and infrastructure for a green transition. We assume that, in both economies, the government expenditures-tax revenue ratio increases substantially and σ in equation (4) thus rises above the baseline constellation.
- We assume that both the acceptable debt-income ratio of banks and the emulation parameter of households stay low. Not only are banks and households more prudent after the crisis but also credit market regulation improves. Furthermore, households' consumption norms change due to lower inequality and better public provision of positional goods. This reduces the perceived need for status-driven consumption emulation. In the simulations, both l and α in equation (2) stay at zero after the crisis in both economies.
- We also assume that the governments' push towards decarbonisation and infrastructure provision improves the overall conditions of investment in both economies. On the one hand, publicly owned companies are pursuing a generally higher investment orientation. On the other hand, regulations and higher long-term government demand also provide incentives for higher investment of privately owned companies. At the same time, disruptive technological advancements related to green energy, green production, digitalisation and robotics, together with improved financing conditions and tax incentives for real-economy investments, trigger a prolonged process of creative

¹² The numerical values for the shocked variables are listed in table A2.3 in the appendix.

destruction à la Schumpeter that also improves general investment conditions. We assume that this leads to a broad change in the investment behaviour of private and public corporations that is represented by both a higher autonomous investment rate and a higher propensity to invest. This means that a_a and a_Y in equation (3) rise above the baseline constellation in both economies.

Figure 3 presents the simulation results for this scenario. Compared to the previous scenarios and the baseline, capacity utilisation and the long-run rate of growth increase strongly due to the general increase in aggregate demand in both economies. Compared to the DLPD-to-DDL scenario from above in which government deficit expenditures became the main growth driver, in the new regime the government does not need to run deficits as high, since demand increases across all components, except for net exports. As we assume that the shocked variables attain the same parameter values in both countries, international trade returns to a balanced constellation.

Figure 3 – *A progressive equality-, sustainability- and domestic demand-led (PES-DDL) regime*



Notes: u , rate of capacity utilisation; L_{h2}/Y_{dh2} , debt-disposable income ratio of Bottom 90 per cent households; S_g/Y , deficit-income ratio of the government; $NIIP/Y$, net international investment position-total income ratio; C/Y , consumption share in total income; I/Y , investment share in total income; G/Y , public consumption share in total income; NX/Y , net exports share in total income.

Source: Own elaboration.

For comparison, table 4 provides the steady-state growth rates of the baseline and the different regime simulations. The general increase in aggregate demand growth in our PES-DDL regime makes the steady-state growth rate surpass the rates from the baseline and the other regimes.

Table 4 – *Steady-state growth rate of output for the domestic economy in the baseline and the different regimes*

	\hat{Y}	Direction of change of \hat{Y} compared to baseline
Baseline	1.63%	
DLPD	1.67%	+
Crisis	1.52%	-
From DLPD to DDL	1.63%	
From DLPD to ELM	1.56%	-
From DLPD and ELM to PES-DDL	1.95%	++

Source: Own elaboration.

4. Conclusions

Our approach in this paper, based on post-Keynesian/Kaleckian foundations and making use of a two-country SFC simulation model, presents an alternative to the liberal finance-dominated capitalism which has dominated, to different degrees in different countries, since the late 1970s/early 1980s, and has led to the 2007-09 crises, and which has been accompanied by a turn towards NCM macroeconomic policies, also in ‘modern’ social democracy. Focusing on demand and growth regimes, as analysed in the national income and financial accounting decomposition approach, and including the effects of the macroeconomic policy regimes as growth drivers, we have shed light on different but regionally and globally complementary regimes in modern capitalism. These are the debt-led private demand boom (DLPD) and the export-led mercantilist (ELM) regimes before the crisis, and their interaction at the global scale, and then on the changes in regimes after the 2007-09 crises, towards domestic demand-led (DDL) and export-led mercantilist (ELM) regimes. Finally, we have derived the main features of a progressive equality-, sustainability- and domestic demand-led (PES-DDL) regime, which builds on the post-Keynesian notion of coordinated macroeconomic policies and also takes into account some ecological constraints and features of a social-ecological transformation of modern capitalism. The main elements of such a ‘reformed capitalism’, as a guideline for a progressive turn of social democracy, are financial regulation, income re-distribution towards the wage share and the low-income households, and active fiscal policies making use of government expenditures to address the required socio-ecological transformation.

Appendix

A1. List of model equations

Output domestic economy

$$Y = C + I + G + X - M$$

Aggregate real output

Income domestic economy

$$W = \omega Y$$

$$P = Y - W$$

$$T = \tau Y$$

$$T_{Wh1} = \tau W \omega_{h1}$$

$$T_{Wh2} = \tau W - T_{Wh1}$$

$$W_{h1gross} = \omega_{h1} W$$

$$W_{h2gross} = W - W_{h1gross}$$

$$W_{h1} = (1 - \tau) W \omega_{h1}$$

$$W_{h2} = (1 - \tau) W - W_{h1}$$

$$T_P = \tau P$$

$$P_{net} = (1 - \tau) P - r_{-1} L_{f-1} + r_{-1} D_{f-1}$$

$$P_d = \begin{cases} P_{net} > 0: (1 - s_f) P_{net} \\ \text{otherwise: } 0 \end{cases}$$

$$Y_{dh1} = W_{h1} + P_d + r_{-1} V_{h1-1}$$

$$Y_{dh2} = W_{h2} + r_{-1} V_{h2-1}$$

$$P_f = P_{net} - P_d$$

Aggregate gross wages

Aggregate gross profits

Aggregate tax income of the government

Taxes on wages of Top 10 per cent households

Taxes on wages of Bottom 90 per cent households

Gross wages of Top 10 per cent households

Gross wages of Bottom 90 per cent households

Net wages of Top 10 per cent households

Net wages of Bottom 90 per cent households

Taxes on gross profits of firms

Net profits of firms

Distributed (net) profits of firms

Disposable income of Top 10 per cent households

Disposable income of Bottom 90 per cent households

Retained earnings of firms

Households domestic economy

$$C = C_{h1} + C_{h2}$$

$$c_{ah1} = c_{ah1-1} (1 + \widehat{c_{ah1}})$$

$$C_{h1} = c_{ah1} + c_{Y_{dh1}} Y_{dh1} + c_{D_{h1}} D_{h1-1}$$

$$z = \begin{cases} \frac{L_{h2}}{Y_{dh2}} < l: 1 \\ \text{otherwise: } 0 \end{cases}$$

$$c_{ah2} = c_{ah2-1} (1 + \widehat{c_{ah2}})$$

$$C_{h2} = c_{ah2} + c_{Y_{dh2}} Y_{dh2} + c_{D_{h2}} D_{h2-1} + z \alpha C_{h1}$$

$$S_{h1} = Y_{dh1} - C_{h1}$$

$$S_{h2} = Y_{dh2} - C_{h2}$$

Aggregate consumption

Autonomous consumption of Top 10 per cent households

Consumption of Top 10 per cent households

Trigger parameter in the consumption function of Bottom 90 per cent households

Autonomous consumption of Bottom 90 per cent households

Consumption of Bottom 90 per cent households

Saving of Top 10 per cent households

Saving of Bottom 90 per cent households

$V_{h1} = V_{h1-1} + S_{h1}$	<i>Stock of wealth of Top 10 per cent households</i>
$D_{h1} = \begin{cases} V_{h1} > 0: V_{h1} \\ \text{otherwise: } 0 \end{cases}$	<i>Deposits of Top 10 per cent households</i>
$L_{h1} = \begin{cases} V_{h1} < 0: -V_{h1} \\ \text{otherwise: } 0 \end{cases}$	<i>Loans of Top 10 per cent households</i>
$V_{h2} = V_{h2-1} + S_{h2}$	<i>Stock of wealth of Bottom 90 per cent households</i>
$D_{h2} = \begin{cases} V_{h2} > 0: V_{h2} \\ \text{otherwise: } 0 \end{cases}$	<i>Deposits of Bottom 90 per cent households</i>
$L_{h2} = \begin{cases} V_{h2} < 0: -V_{h2} \\ \text{otherwise: } 0 \end{cases}$	<i>Loans of Bottom 90 per cent income households</i>

Firms domestic economy

$I = a_a K_{-1} + a_Y vY$	<i>Investment function</i>
$S_f = P_f - I$	<i>Saving of firms</i>
$K = K_{-1} - \delta K_{-1} + I$	<i>Capital stock</i>
$u = Y/Y_{fc}$	<i>Utilisation rate</i>
$Y_{fc} = K_{-1}/v$	<i>Full capacity output</i>
$V_{ffin} = V_{ffin-1} + S_f$	<i>Stock of net financial wealth of firms</i>
$D_f = \begin{cases} V_{ffin} > 0: V_{ffin} \\ \text{otherwise: } 0 \end{cases}$	<i>Deposits of firms</i>
$L_f = \begin{cases} V_{ffin} < 0: -V_{ffin} \\ \text{otherwise: } 0 \end{cases}$	<i>Loans of firms</i>
$V_f = V_{ffin} + K$	<i>Total stock of wealth of firms</i>

Government domestic economy

$G_A = G_{A-1} (1 + \widehat{G_A})$	<i>Autonomous government demand</i>
$G = G_A + \sigma T$	<i>Government consumption demand</i>
$S_g = T - G + r_{-1} V_{g-1}$	<i>Saving of the government</i>
$V_g = V_{g-1} + S_g$	<i>Stock of wealth of the government</i>
$D_g = \begin{cases} V_g > 0: V_g \\ \text{otherwise: } 0 \end{cases}$	<i>Deposits of the government</i>
$L_g = \begin{cases} V_g < 0: -V_g \\ \text{otherwise: } 0 \end{cases}$	<i>Loans of the government</i>

Trade current account and NIIP domestic economy

$$M = (\phi u - \psi e_r) K_{-1}$$

$$X = (\phi^x u^x - \psi^x / e_r) K_{-1}^x$$

$$NX = X - M$$

$$CA = NX + R_{CA}$$

$$R_{CA} = r_{-1} NIIP_{-1}$$

$$NIIP = NIIP_{-1} + CA$$

Imports

Exports

Net exports

Current account

Interests on net international investment position

Net international investment position

Banks domestic economy

$$L = L_{h1} + L_{h2} + L_f + L_g + NIIP$$

$$R_L = r_{-1} L_{-1}$$

$$D = D_{h1} + D_{h2} + D_f + D_g$$

$$R_D = r_{-1} D_{-1}$$

$$R = R_L - R_D$$

$$V_b = L - D$$

Total loans

Interests on loans

Total deposits

Interests on deposits

Interests income of banks

Stock of wealth of banks

A2. Baseline parameter constellation and shock sequences for scenarios

Table A2.1 – *Baseline parameter constellation*

Parameter	Description	Baseline for the domestic and the external economy
a_a	Autonomous rate of investment	0.015
a_Y	Propensity to invest	0.016
$c_{a_{h1}}$ in $t = 0$	Autonomous consumption h_1	0.2
$\widehat{c_{a_{h1}}}$	Growth of $c_{a_{h1}}$	0
$c_{a_{h2}}$ in $t = 0$	Autonomous consumption h_2	0.2
$\widehat{c_{a_{h2}}}$	Growth of $c_{a_{h2}}$	0
$c_{V_{h1}}$	Propensity to consume out of wealth h_1	0.05
$c_{V_{h2}}$	Propensity to consume out of wealth h_2	0.015
$c_{Y_{d_{h1}}}$	Prop. to consume out of disposable income h_1	0.4
$c_{Y_{d_{h2}}}$	Prop. to consume out of disposable income h_2	0.7
G_A in $t = 0$	Autonomous government demand	0.5
$\widehat{G_A}$	Growth of G_A	0.01
K in $t = 0$	Fixed capital stock	40
l	Banks' maximum acceptable leverage ratio for h_2	0
s_f	Firms' retention rate	0.3
V_f in $t = 0$	Firms' net worth	40
v	Capital-potential output ratio	5
α	Consumption emulation parameter	0
δ	Capital scrapping rate	0.01
σ	Government expenditure-tax revenue ratio	1
τ	General net tax rate	0.2
ϕ	Demand effect on imports	0.05
ψ	Price-competitiveness effect on imports	0.01
ω	Aggregate wage share	0.6
ω_{h1}	Wage share of h_1 households	0.2
		Global
e_r	Real exchange rate	1
r	Real interest rate	0.01

Source: Prante et al. (2022).

Table A2.2 – *Shock sequences for pre- and post-crises regimes*

Description of shock and timing	Parameter	Domestic economy	External economy
(1) 'Pre-crisis financialisation' (t = 100)	l	0.375	
	α	0.29	
	ω	0.55	0.5
	ω_{h1}	0.3	
	e_r		0.9
(2) Small additional distributional change (t = 1000)	ω	0.545	
	ω_{h1}	0.305	
(3) Within crisis 'prudence' shocks (t = 1009)	l	0	
	α	0	
(4) DLPD to DDL (t = 1010)	σ	1.08	
(5) DLPD to ELM (t = 1010)	σ	0.97	1.15
	ϕ	0.04	0.06
	ψ	0.015	
	ω	0.5	
	ω_{h1}	0.25	
	e_r		1

Notes: the table reports only the values of the shocked parameters. Other values remain as in the baseline.

Shock timing: t = 0 is the last period of the convergence phase of the baseline.

Combination of shock sequences from table for each scenario in Prante et al. (2022):

- Pre-crisis debt-led and export-led growth: (1)
- Pre-crisis debt-led and export-led growth with crisis: (1) + (2) + (3)
- DLPD to DDL (figure 1): (1) + (2) + (3) + (4)
- DLPD to ELM (figure 2): (1) + (2) + (3) + (5)

Source: Based on Prante et al. (2022).

Table A2.3 – *A progressive equality-, sustainability- and domestic demand-led (PES-DDL) regime*

Description of shock and timing	Parameter	Domestic economy	External economy
(6) DLPD and ELM to PES-DDL (t = 1010)	σ	1.03	1.03
	ω	0.62	0.62
	ω_{h1}	0.18	0.18
	a_a	0.016	0.016
	a_Y	0.017	0.017

Notes: Combination of shock sequences for the new scenario: DLPD and ELM to PES-DDL (figure 3): (1) + (2) + (3) + (6)

Source: Own elaboration.

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