

LUBS

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The Monetary Circuit in the Age of Financialisation

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We explore how the theory of monetary circuit (**TMC**) can be developed to reflect some important features of the evolution of the financial system in the past three decades, which have been associated with 'financialisation' ([Epstein 2005](#)).

We embed the benchmark single-period TMC scheme proposed by [Graziani \(1989, 2003\)](#) in a richer set of institutional arrangements. We focus primarily on the functions of financial institutions and markets in early-industrialised countries.

The SFC modelling technique pioneered by Wynne Godley and Marc Lavoie ([Godley 1999](#), [Godley 2004](#), [Godley and Lavoie 2006](#)) is used to support our narrative.

- Organisation:**
1. Initial finance vs. final finance
 2. Clearing banks vs. financial intermediaries
 3. The benchmark circuit model
 4. A SFC circuit model
 5. Preliminary results



1. Initial finance vs. financial finance

Most macroeconomic models rely on confusion between the initial finance and the final finance. The two concepts should be kept clearly separate.

Initial finance: liquidity firms demand in order to set up and carry on production. It covers the total cost of the planned production and is 'an essential element, the lack of which makes any production plan impossible' (Graziani 2003, p. 69).

Final finance: liquidity collected by firms either selling commodities or issuing securities. Its function is to enable firms to repay back their bank debt.

The former refers to the relation between the banking sector and the corporate sector, whereas the latter refers to the relation of firms with consumers (on the commodity market) and financial intermediaries (on the financial market).

The former gives rise to **money creation**, whereas the latter concerns the **ex post matching** of corporate investment and household saving.



2. Clearing banks vs. financial intermediaries

Another distinction: strictly-defined banks, call them **clearing banks or commercial banks** (CBs), vs. **other financial intermediaries** (OFIs). The contrast is two-fold: first, banks are not simply financial intermediaries; and, second, some banks in the legal sense are not banks in the sense used in macroeconomic theory.

CBs: financial institutions whose liabilities (i.e. bank deposits) are generally accepted as means of payment and are readily transferable between economic agents. They provide the initial finance to the corporate sector.

OFIs include:

- Saving and investment banks (SIBs): financial intermediaries that accept deposits and make loans to households and firms, but their liabilities are not readily transferable between economic agents. They 'only' expedite the final finance. They are supervised by banking regulatory agencies though.
- Non-bank financial institutions (NBFIs): money market funds, private equity firms, hedge funds, pension funds, insurance companies, and other institutions that do not have a full banking license, or are not supervised by a banking regulatory body.



2. Clearing banks vs. financial intermediaries (cont'd)

The legal definition of banks is broader than the macroeconomic one, and varies over time and space.

By contrast, the circuitist definition is a **logical characterisation**. Like the distinction between initial finance and final finance, 'it has little to do with the stage of development' of the economy (Graziani 2003).

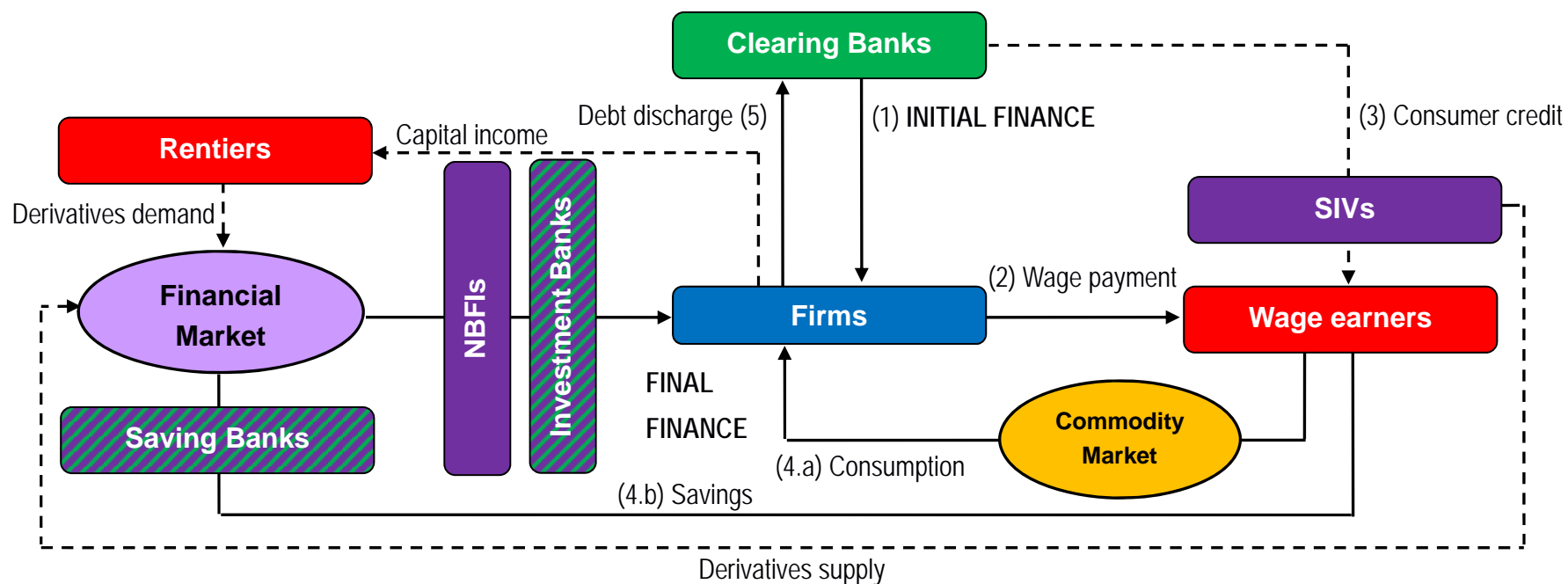
Consequently, though they overlap in the real world, the two definitions of bank must be kept separate in a theoretical model.

In the context of the monetary circuit, it is the CBs which are at the start of the process of production and trade. They provide loans which generate bank deposits, thus creating the **initial finance** that firms demand.

By contrast, OFIs can 'only' facilitate the recovery of the liquidity that the corporate sector needs to repay back bank debt (**final finance**).



2. Clearing banks vs. financial intermediaries (cont'd)



3. The benchmark circuit model



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Graziani's TMC can be defined as a rediscovery of the most far-reaching aspects of the radical monetary thought of the Nineteenth century and the works of dissenting economists of the early twentieth century (e.g. Wicksell, Keynes, and Kalecki).

The keystone of Graziani's approach is the association of Keynes's concept of **initial finance** with Marx's notion of **money capital**. Capitalism is a circular (surplus oriented) sequence of social relationships in form of monetary payments.

Banks (CBs) create the flow of money firms need to start the production (i.e. to purchase labour power from workers), whereas financial markets (OFIs) enable firms to repay back their debt, thereby destroying a correspondent amount of money.

The chief aim the TMC is to account for the process of money creation and destruction (both viewed as endogenous phenomena) under a capitalist regime during **normal times**. Both the precautionary and the speculative motives are usually ruled out of the analysis. For the focus of the TMC is on the **finance motive**.



3. The benchmark circuit model (cont'd)

The emphasis on the creation/destruction of money explains why the analytical tool chosen by Graziani to support his narrative was an accounting analysis of a **single-period model**.
Rationale / strengths:

- No hypotheses on behaviour
- Multiplicity of possible 'equilibria' of the economy
- Irrelevance of 'wealth effects' as spontaneous adjusting mechanisms

However, that turns out to be a **limitation** when a more detailed analysis of financial markets and institutions is undertaken. The TMC benchmark framework should be revised in the light of the **SFC modelling technique** developed in the last two decades by Godley, Lavoie, Zezza, and other heterodox economists.

The coherence of the circuit view with Godley's take has been recognised explicitly by both Graziani and SFC authors (e.g. [Graziani 2003](#); [Godley 2004](#); [Lavoie 2004](#); [Godley and Lavoie 2006](#); [Zezza 2012](#)).



4. A SFC circuit model: main hypotheses

- Closed economy with no government sector.
- Production adjusts instantaneously to aggregate demand.
- The unit price level of output is treated as an exogenous variable, the adjustment occurs via quantity.
- Labour supply is (potentially) unlimited and actual employment adjusts to the corporate demand for labour inputs.
- Single homogeneous output by means of labour and the same output-good used as an additional input.
- Production and investment are financed by bank deposit money created by CBs through the loan process.
- Households are made up by two social groups: workers (or wage-earners) and rentiers (e.g. [Dos Santos and Zezza 2006](#); [Van Treeck 2009](#)).



4. A SFC circuit model: main hypotheses (cont'd)

- Workers sell their labour-power to firms in return for a money-wage. They spend their income on consumption goods and financial assets.
- Rentiers are the owners of both non-financial firms and financial institutions. Therefore, they are the recipients of (almost) all of non-labour incomes. They subdivide their income into consumption and financial investment (deposits and high-yield financial derivatives).
- Unlike other SFC modellers, we allow that both rentiers and workers can borrow in order to undertake spending in excess of their current incomes.
- We split the financial sector into two subsectors, i.e. CBs and OFIs. Unlike loans to firms, loans to households are created by CBs and then 'handed' to special OFIs (SIVs).
- The role of OFIs is not to create money, but to **transform** a portion of household loans into **financial derivatives** (securitisation).
- On the demand side, these financial products are sold to rentiers who seek for high rates of return on their financial investment.



4. A SFC circuit model: nominal balance sheets

	Households		Production firms	Banking sector		Σ
	Workers	Rentiers		Clearing Banks	OFIs	
Deposits	$+M_w$	$+M_r$		$-M$	$+M_o$	0
Loans	$-L_w$	$-L_r$	$-L_f$	$+L_f+L_h (-L_h)$	$(+L_h)$	0
Capital			$+K$			$+K$
Securities of firms	$+B_w$		$-B_s$			0
Derivatives		$+d_r \cdot p_d$			$-d_s \cdot p_d$	0
Balance (net worth)	$+V_w$	$+V_r$	0	0	0	$-V_h$
Σ	0	0	0	0	0	0

Notes: A '+' before a magnitude denotes an asset, whereas '-' denotes a liability.



4. A SFC circuit model: nominal transactions-flow matrix

	Workers	Rentiers	Production firms		Clearing Banks		OFIs		Σ
			Current	Capital	Current	Capital	Current	Capital	
Consumption	$-C_w$	$-C_r$	$+C$						0
Investment (change in capital stock)			$+I = +\Delta K$	$-I = -\Delta K$					0
Wages	$+WB$		$-WB$						0
Depreciation allowances			$-DA$	$+DA$					0
Interest on loans	$-r_{c,-1} \cdot L_{w,-1}$	$-r_{l,-1} \cdot L_{r,-1}$	$-r_{l,-1} \cdot L_{f,-1}$		$+r_{l,-1} \cdot L_{f,-1}$		$+r_{c,-1} \cdot L_{w,-1} + r_{l,-1} \cdot L_{r,-1}$		0
Interest on deposits	$+r_{m,-1} \cdot M_{w,-1}$	$+r_{m,-1} \cdot M_{r,-1}$			$-r_{m,-1} \cdot M_{s,-1}$		$+r_{m,-1} \cdot M_{o,-1}$		0
Return on securities	$+r_{b,-1} \cdot B_{w,-1}$		$-r_{b,-1} \cdot B_{w,-1}$						0
Return on derivatives		$+r_{d,-1} \cdot p_d \cdot d_{r,-1}$					$-r_{d,-1} \cdot p_d \cdot d_{r,-1}$		0
Entrepreneurial profits		$+F_f$	$-F_f$						0
Bank profits		$+F_b$			$-F_b$				0
Financial profits		$+F_o$					$-F_o$		0
Change in loans	$+\Delta L_w$	$+\Delta L_r$		$+\Delta L_f$	$-\Delta L_f - \Delta L_h (+\Delta L_h)$			$(-\Delta L_h)$	0
Change in deposits	$-\Delta M_w$	$-\Delta M_r$				$+\Delta M_s$		$-\Delta M_o$	0
Change in securities	$-\Delta B_w$			$+\Delta B_s$					0
Change in derivatives		$-\Delta d_r \cdot p_d$						$+\Delta d_s \cdot p_d$	0
Σ	0	0	0	0	0	0	0	0	0
<i>Memo: capital gains</i>		$-\Delta p_d \cdot d_{r,-1}$						$+\Delta p_d \cdot d_{s,-1}$	

Notes: A '+' before a magnitude denotes a receipt or a source of funds, whereas '-' denotes a payment or a use of funds.



4. A SFC circuit model: equations

THE PRODUCTION DECISIONS OF FIRMS

1. Production of cons. goods: $c_s = c_d$
2. Production of invest. goods: $i_s = i_d$
3. Real output: $y = c_s + i_s$
4. Nominal output: $Y = p_y \cdot y$
5. Amortisation funds: $AF = \delta \cdot k_{-1} \cdot p_{y,-1}$
- 6. Demand for loans of firms:** $L_f = L_{f,-1} + p_y \cdot i_d - AF - (B_s - B_{s,-1})$
- 7. Entrepren. profit (residual):** $F_f = Y - WB_s - r_{l,-1} \cdot L_{f,-1} - r_{b,-1} \cdot B_{w,-1} - AF$

THE INVESTMENT BEHAVIOUR OF FIRMS

8. Real accumulation of capital: $k = k_{-1} + i_d - da$
9. Real depreciation allowances: $da = \delta \cdot k_{-1}$
- 10. Capital stock target:** $k^t = (k_0 - k_1 \cdot r_d) \cdot y_{-1}$
- 11. Demand for invest. goods:** $i_d = \gamma \cdot (k^t - k_{-1}) + da$



4. A SFC circuit model: equations (cont'd)

THE TRADITIONAL BANKING (CBs)

12. Demanded stock of loans: $L_d = L_f + L_w + L_r$
13. Total loans: $L_s = L_{s,-1} + (L_d - L_{d,-1})$
14. Total deposits held: $M_d = M_w + M_r + M_o$
15. Total supply of deposits: $M_s = M_{s,-1} + (L_s - L_{s,-1})$
16. Profit of the CBs: $F_b = r_{l,-1} \cdot L_{f,-1} - r_{m,-1} \cdot M_{d,-1}$

THE SHADOW BANKING (OFIs)

17. Supply of derivatives: $D_s = d_r \cdot p_d$
- 18. Unit price of derivatives:** $p_d = p_d^t + \tau \cdot \xi_1$
19. Share of securitised loans: $\varphi = p_d \cdot d_s / (L_{w,-1} + L_{r,-1})$
20. Bank deposits held by OFIs: $M_o = D_s$
- 21. Profit of the OFIs:** $F_o = r_{l,-1} \cdot L_{r,-1} + r_{c,-1} \cdot L_{w,-1} + r_{m,-1} \cdot M_{o,-1} - r_{d,-1} \cdot D_{s,-1}$



4. A SFC circuit model: equations (cont'd)

THE WAGE SETTING

22. Labour demand: $N_d = y/pr$
23. Labour employed: $N_s = N_d$
24. Wage rate: $w = w^t$
25. Wage bill: $WB_s = w \cdot N_s$
26. Labour productivity: $pr = pr^t$

HOUSEHOLD BEHAVIOUR

27. Disp. income of workers: $YD_w = WB_s + r_{m,-1} \cdot M_{w,-1} + r_{b,-1} \cdot B_{w,-1} - r_{c,-1} \cdot L_{w,-1}$
28. Disp. income of rentiers: $YD_r = r_{m,-1} \cdot M_{r,-1} + F_f + F_b + F_o + r_{d,-1} \cdot p_{d,-1} \cdot d_{r,-1} - r_{l,-1} \cdot L_{r,-1}$
29. Household disposable income: $YD = YD_w + YD_r$
30. Number of rentiers: $N_r = h_1 \cdot N_d + h_2 \cdot \xi_2$
31. Real consumption by workers: $c_w = \alpha_0 + \alpha_1 \cdot yd_w^e + (L_w - L_{w,-1})/p_y$
32. Real consumption by rentiers: $c_r = \beta_0 + \beta_1 \cdot yd_r^e + (L_r - L_{r,-1})/p_y$



4. A SFC circuit model: equations (cont'd)

HOUSEHOLD BEHAVIOUR (cont'd)

33. Exp. real income of workers: $yd_w^e = YD_{w,-1}/p_{y,-1}$

34. Exp. real income of rentiers: $yd_r^e = YD_{r,-1}/p_{y,-1}$

35. Real demand for consumption: $c_d = c_w + c_r$

36. Wealth of workers: $V_w = V_{w,-1} + YD_w - c_w \cdot p_y$

37. Wealth of rentiers: $V_r = V_{r,-1} + YD_r - c_r \cdot p_y + CG$

38. Capital gains on derivatives: $CG = (p_d - p_{d,-1}) \cdot d_r$

39. Demand for loans by workers: $L_w = L_{w,-1} + \alpha_2 \cdot V_{w,-1} - rep_1 \cdot L_{w,-1} + \alpha_3 \cdot (c_r/N_r - c_w/N_d) - \alpha_4 \cdot (w - w_{-1} \cdot p/p_{-1})$

40. Loans/wealth ratio of workers: $\alpha_2 = \eta_1 \cdot \{1 - [L_{w,-1} \cdot (rep_1 + r_c)]/V_w\} + \eta_2 \cdot \varphi$

41. Risk premium: $\pi = \pi_0 + \pi_1 \cdot (L_{w,-1} \cdot rep_1)/V_{w,-1}$

42. Demand for loans by rentiers: $L_r = L_{r,-1} + \beta_2 \cdot V_{r,-1} - rep_2 \cdot L_{r,-1}$

43. Loans/wealth ratio of rentiers: $\beta_2 = \theta_1 \cdot \{1 - [L_{r,-1} \cdot (rep_2 + r_l)]/V_r\}$



4. A SFC circuit model: equations (cont'd)

PORTFOLIO CHOICE OF HOUSEHOLDS

44. Demand for sec.s of workers: $B_w = \lambda_0 \cdot V_w + \lambda_1 \cdot r_b \cdot V_w - \lambda_2 \cdot YD_w$

45. Bank deposits held by workers: $M_w = V_w - B_w + L_w$

46. Supply of securities of firms: $B_s = B_w$

47. Demand for derivatives of r.s: $d_r \cdot p_d = \lambda_3 \cdot V_r + \lambda_4 \cdot r_d \cdot V_r - \lambda_5 \cdot YD_r$

48. Bank deposits held by rentiers: $M_r = V_r - p_d \cdot d_r + L_r$

INTEREST AND RETURN RATES

49. Interest rate on loans: $r_l = r_l^t$

50. Interest rate on loans to w.s: $r_c = r_l + \pi$

51. Rate of interest on deposits: $r_m = r_l - add_0$

52. Rate of return on securities: $r_b = r_m + add_1$

53. Rate of return on derivatives: $r_d = r_b + add_2 + add_3 \cdot \pi$



4. A SFC circuit model: equations (cont'd)

PRICE SETTING

54. Strategic unit price of output: $p_y = p_y^t$ (Sawyer 1995)

55A. Unit price of output: $p_y = (1 + \rho) \cdot pr/w$

55B. Costing margin: $\rho = Y/WB_s - 1$

HIDDEN OR RESIDUAL EQUATION

-. Supply of deposits: $M_s = M_d$



4. A SFC circuit model: shocks

We test the impacts of **three shocks** on a number of endogenous macroeconomic variables of the model. The shocks tested are:

- A cut in (nominal) wages perceived by workers
- An increase in demand for derivatives by rentiers
- A negative reaction of investment in capital goods to an increase in financial profitability

The **endogenous variables** considered are:

- Output (GDP level) and aggregate consumption
- Disposable income of workers vs. rentiers (income distribution)
- Leverage ratios of workers vs. rentiers
- Return rate on derivatives (financial profitability)
- Banks' and OFI's profits to total income
- The nominal amount of derivatives and their ratio to nominal output

4. A SFC circuit model: simulations



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Figure 1A: Evolution in output and total consumption following a wage cut

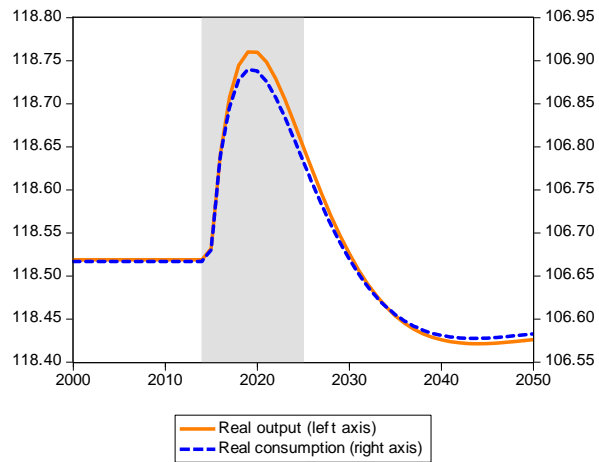


Figure 1B: Evolution in income distribution following a wage cut

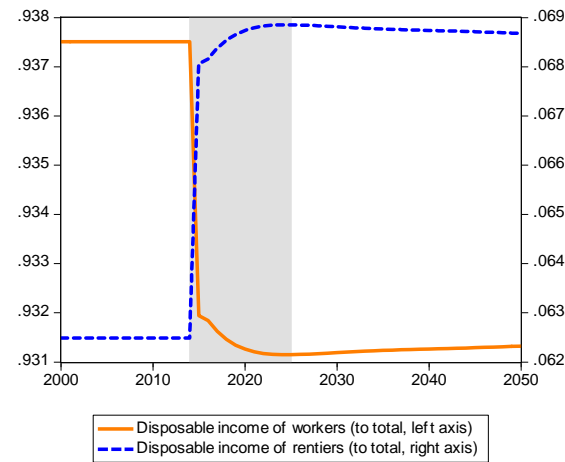


Figure 1E: Evolution of financial profitability following a wage cut

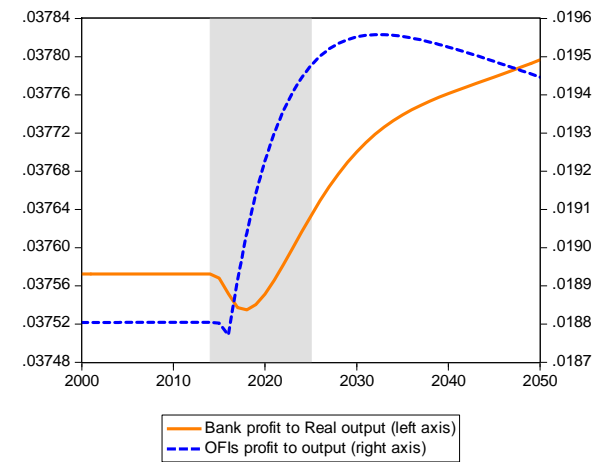


Figure 1C: Evolution in leverage ratios of households following a wage cut

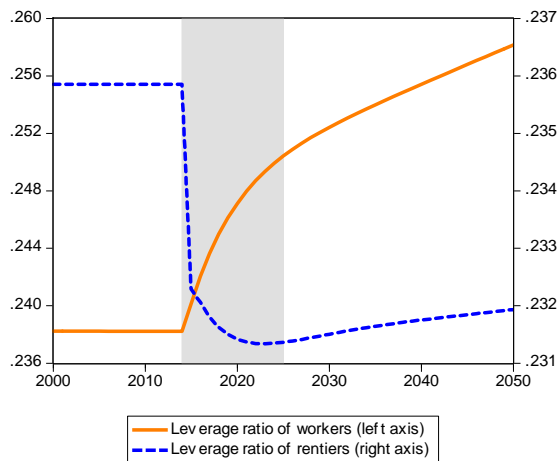


Figure 1D: Evolution of interest rates on financial assets following a wage cut

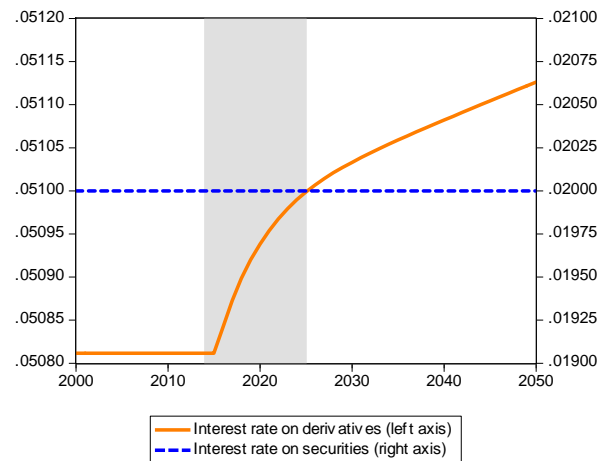
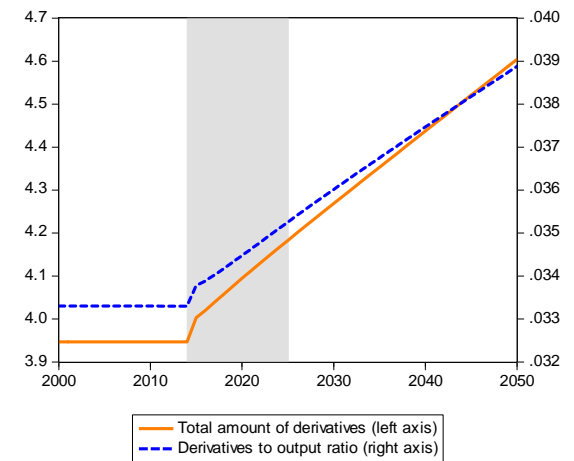


Figure 1F: Evolution of derivatives following a wage cut



4. A SFC circuit model: simulations (cont'd)



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Figure 2A: Evolution in output and total consumption following an increase in demand for derivatives

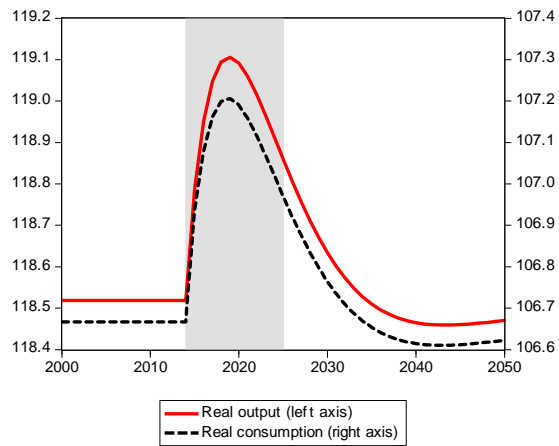


Figure 2B: Evolution in income distribution following an increase in demand for derivatives

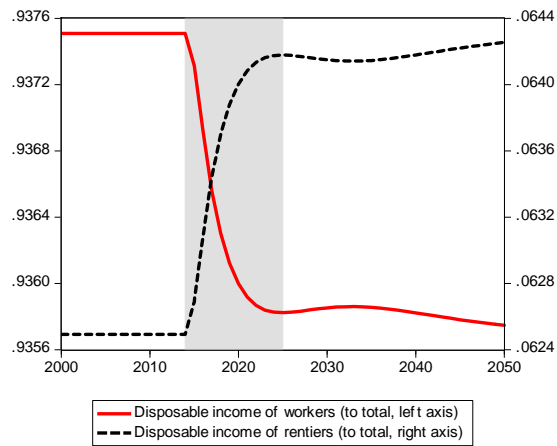


Figure 2E: Evolution of financial profitability following an increase in demand for derivatives

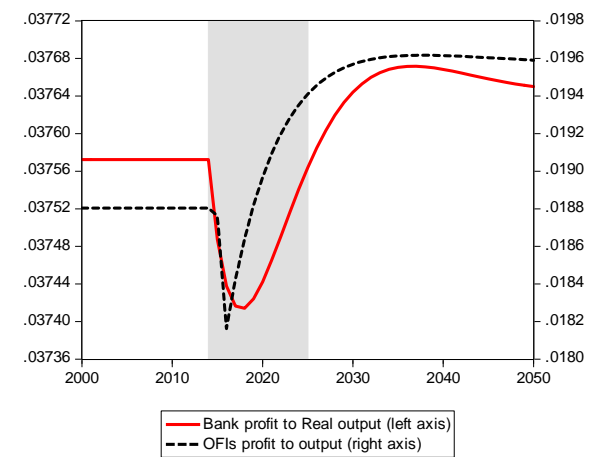


Figure 2C: Evolution in leverage ratios of households following an increase in demand for derivatives

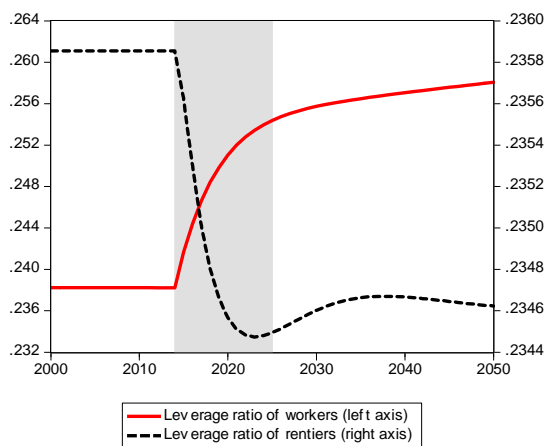


Figure 2D: Evolution of interest rates on financial assets following an increase in their demand

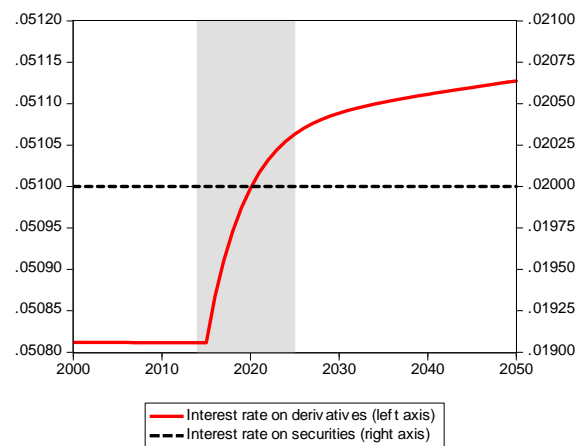
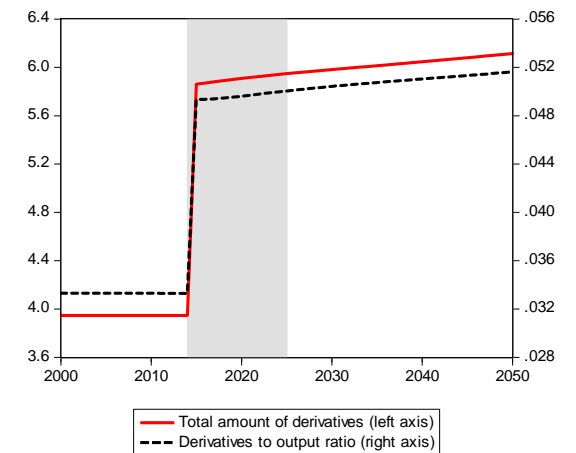


Figure 2F: Evolution of derivatives following an increase in demand for derivatives





4. A SFC circuit model: simulations (cont'd)

Figure 3A: Evolution in output and total consumption when financial profitability affects negatively real investment

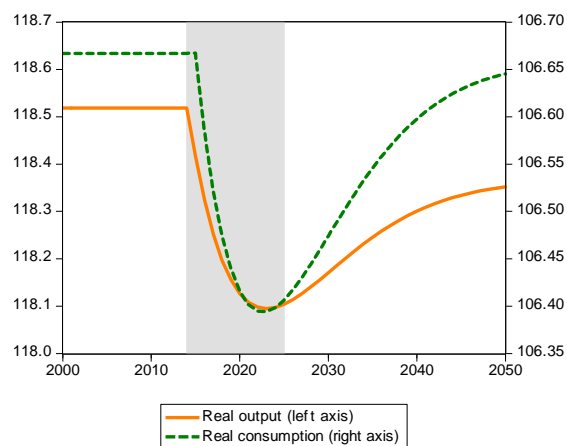


Figure 3B: Evolution in income distribution when financial profitability affects negatively real investment

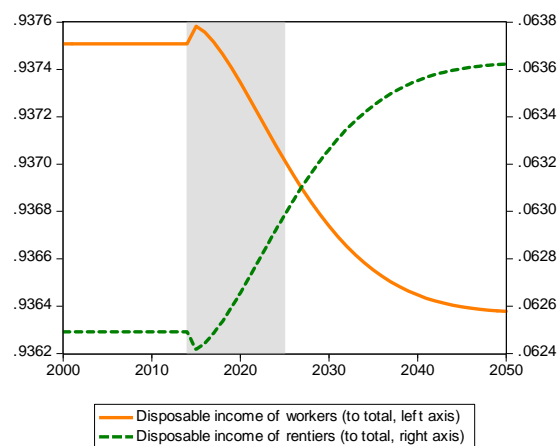


Figure 3E: Evolution of financial profitability when financial profitability affects negatively real investment

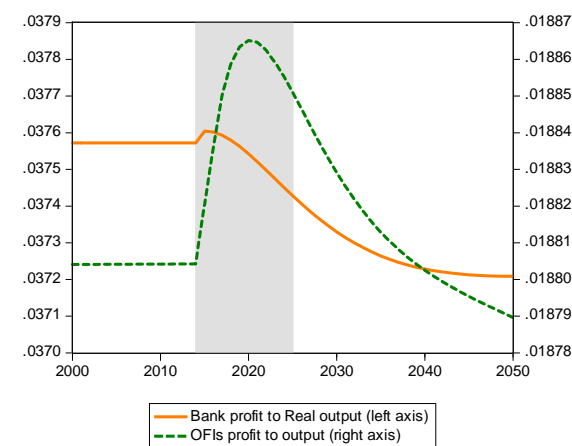


Figure 3C: Evolution in leverage ratios of households when financial profitability affects negatively real investment

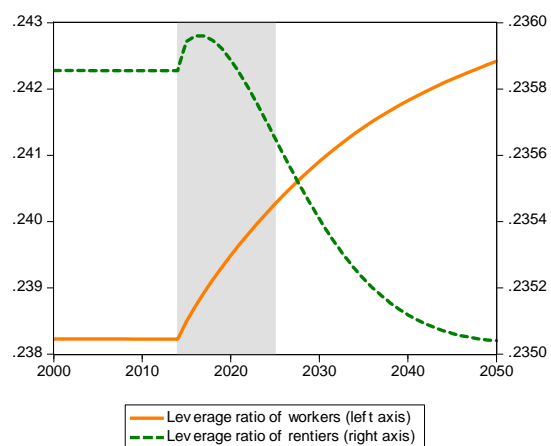


Figure 3D: Evolution of interest rates on financial assets when financial profitability affects negatively real investment

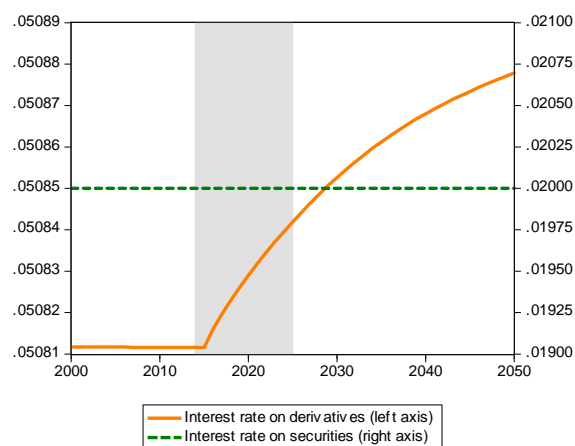
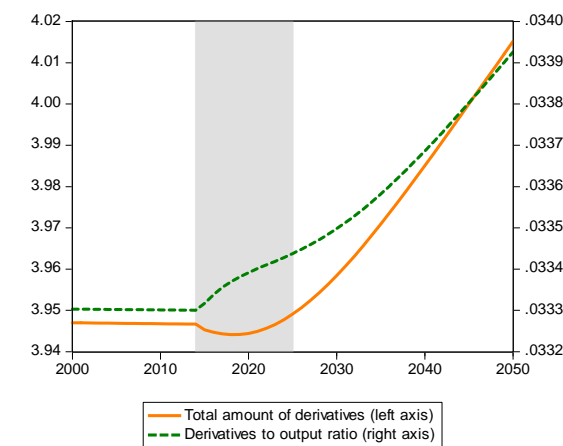


Figure 3F: Evolution of derivatives when financial profitability affects negatively real investment



4. A SFC circuit model: simulations (cont'd)



Figure 4a: Evolution in output and total consumption following a wage cut

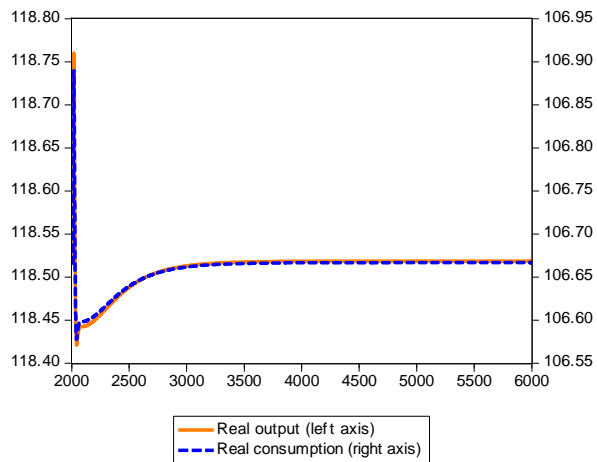


Figure 4b: Evolution in income distribution following a wage cut

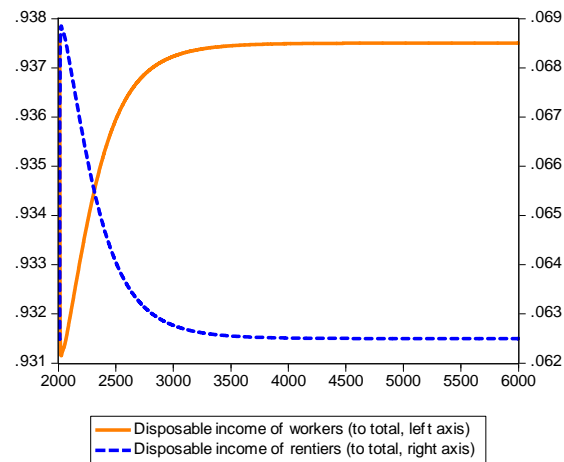


Figure 4e: Evolution of financial profitability following a wage cut

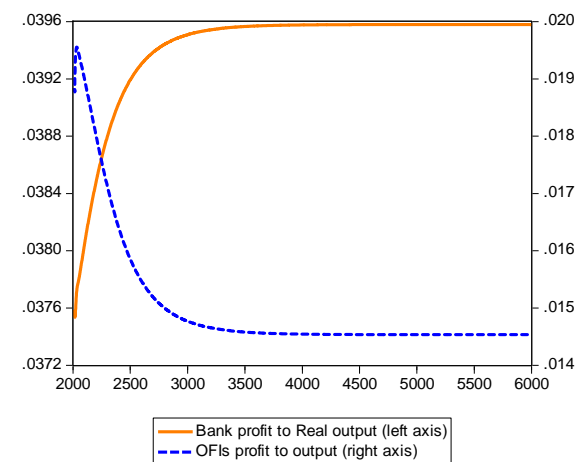


Figure 4c: Evolution in leverage ratios of households following a wage cut

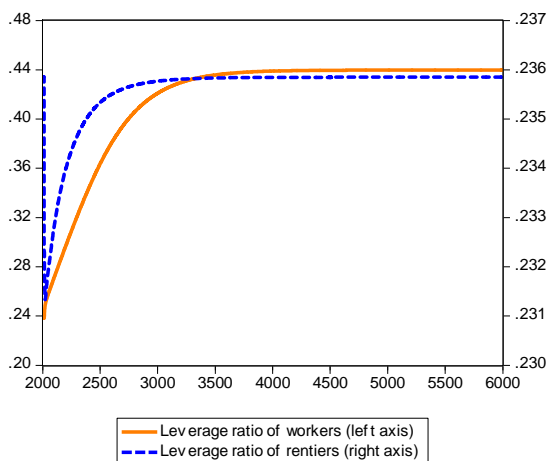


Figure 4d: Evolution of interest rates on financial assets following a wage cut

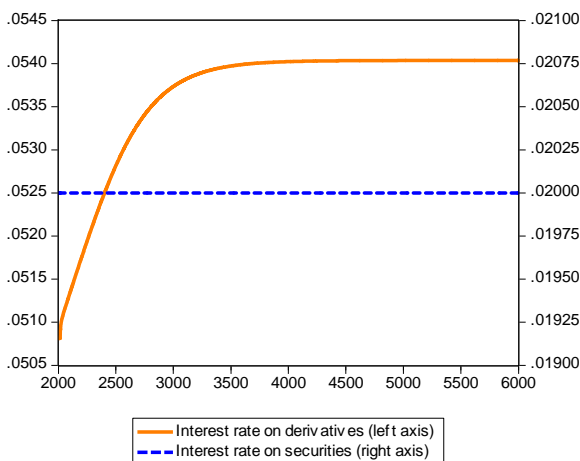
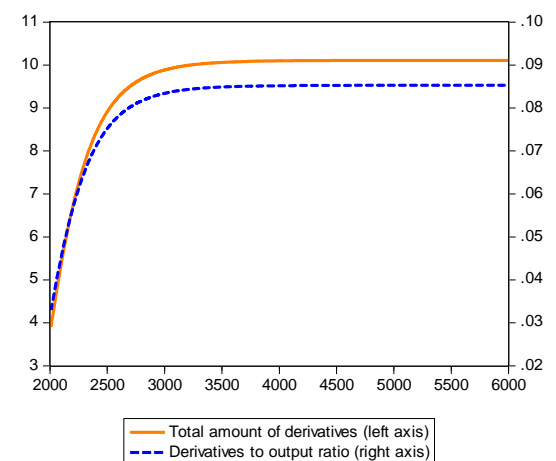


Figure 4f: Evolution of derivatives following a wage cut



4. A SFC circuit model: simulations (cont'd)



Figure 5a: Evolution in output and total consumption following an increase in demand for derivatives

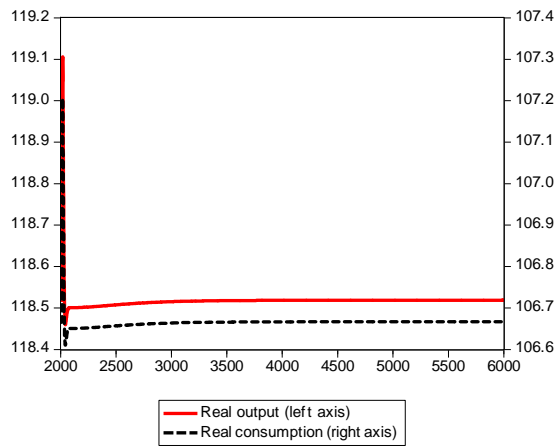


Figure 5b: Evolution in income distribution following an increase in demand for derivatives

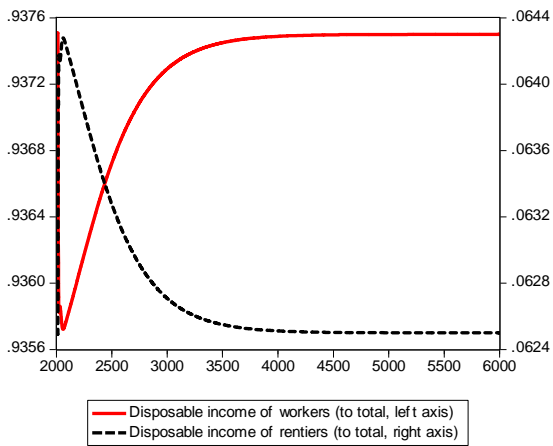


Figure 5c: Evolution of financial profitability following an increase in demand for derivatives

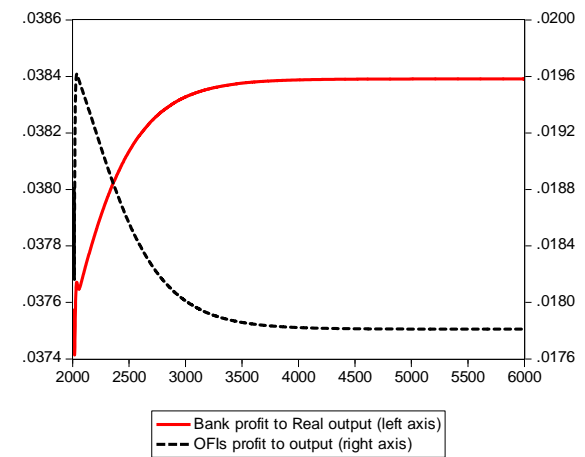


Figure 5d: Evolution in leverage ratios of households following an increase in demand for derivatives

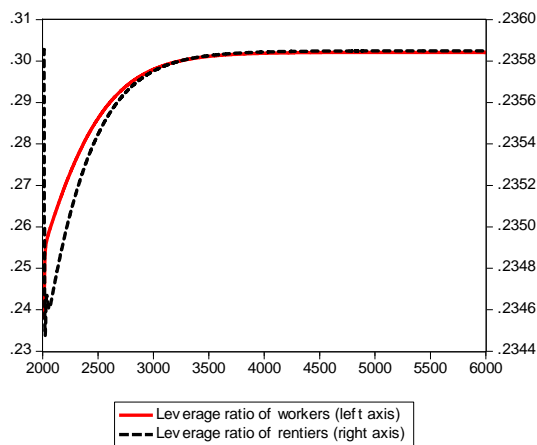


Figure 5e: Evolution of interest rates on financial assets following an increase in their demand

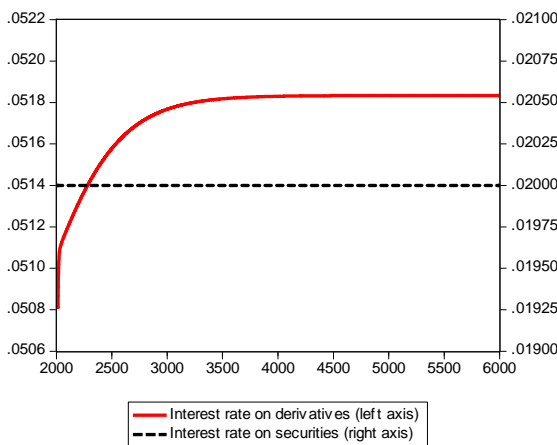
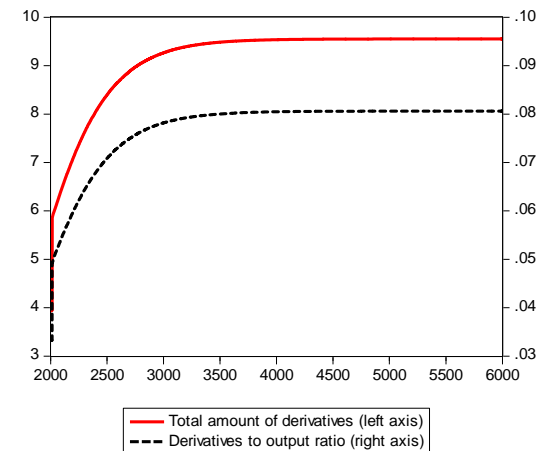


Figure 5f: Evolution of derivatives following an increase in demand for derivatives



4. A SFC circuit model: simulations (cont'd)



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Figure 6a: Evolution in output and total consumption when financial profitability affects negatively real investment

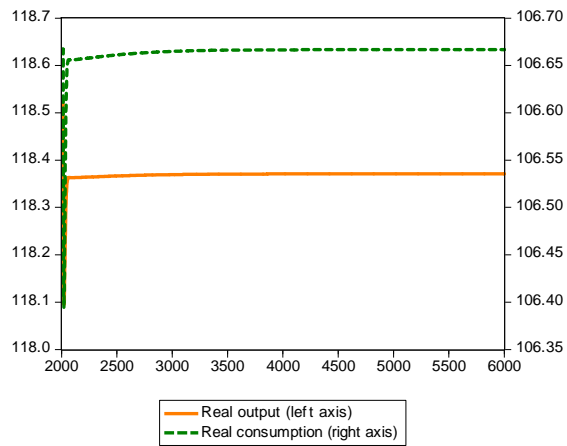


Figure 6b: Evolution in income distribution when financial profitability affects negatively real investment

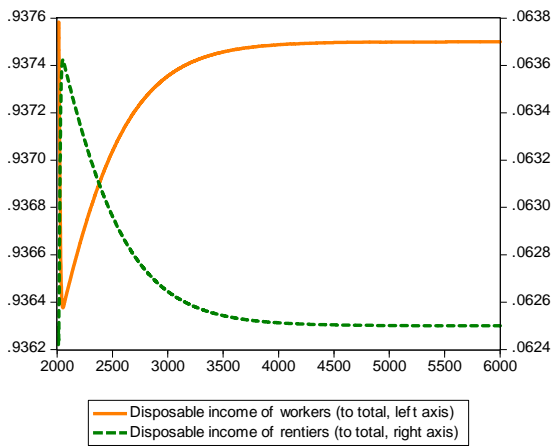


Figure 6e: Evolution of financial profitability when financial profitability affects negatively real investment

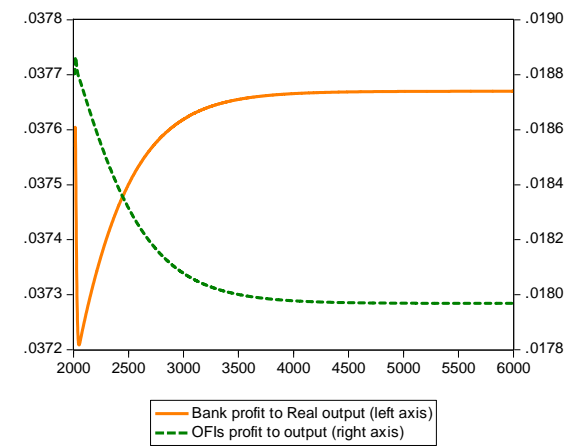


Figure 6c: Evolution in leverage ratios of households when financial profitability affects negatively real investment

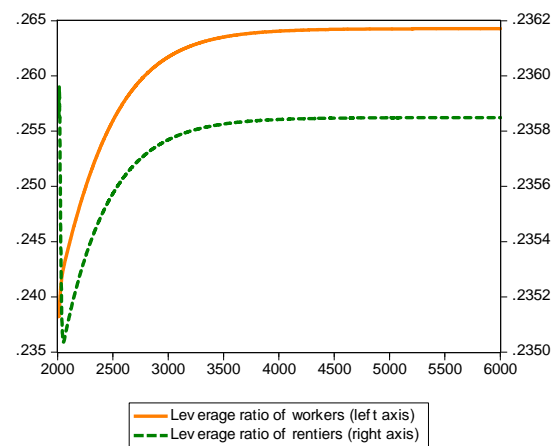


Figure 6d: Evolution of interest rates on financial assets when financial profitability affects negatively real investment

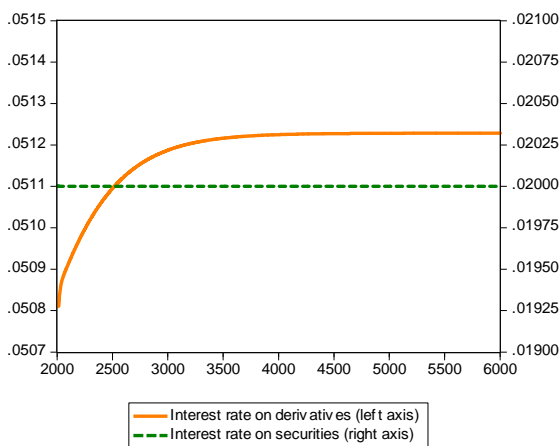
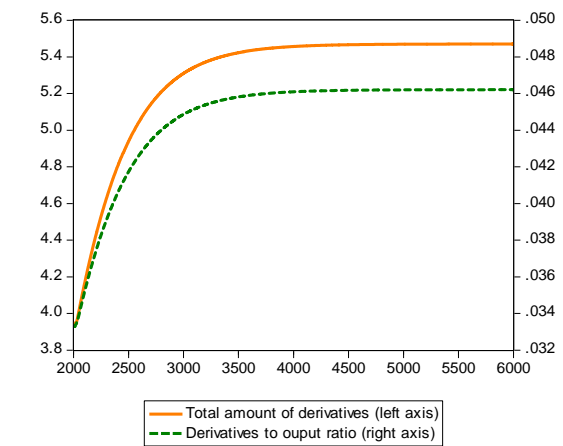


Figure 6f: Evolution of derivatives when financial profitability affects negatively real investment





5. Preliminary results

All of the shocks considered entail an increase in income of rentiers relative to workers, workers' leverage ratio, financial profitability, and amount of financial derivatives, in the long run.

By contrast, the effect on aggregate consumption and total output (and investment) is more variegated:

- a wage cut leads to an increase in both variables in the very short run
- a similar trend is generated by a higher demand for derivatives by rentiers
- an increase in sensitivity of current productive investment to financial profitability negatively affects output.

Some of these effects are not of permanent nature. However, the recovery may be very slow in practice. In fact, 'it may well go by way of hell' ([Minsky 1986](#)).

Finally, the profitability of banks and OFIs does not show a univocal trend.



5. Preliminary results (cont'd)

To sum up, our model 'forecasts' a **rise in income inequality** and an increase in the degree of **indebtedness** of working-class households associated with the process of financialisation, i.e. with institutional changes affecting the 'final finance' phase of the monetary circuit.

The **rise in the amount of financial assets** (both in absolute terms and as a percentage to total output) and the increase in the **financial rate of return** are additional features clearly pointed out by the model.

Limitations and possible amendments:

- A 'proper' cost-plus price setting
- Three household subsectors plus government sector (and middle class)
- Additional financial intermediaries and financial products
- Asset price inflation, bubbles and bankruptcy risk

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Thank You

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