

The conflict over income in a capitalist society: a stock-flow consistent approach

Some preliminary results

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1. Introduction

In this project we study how distributional conflict between shareholders, managers and workers evolves with changes in production and how these changes in production in turn feedbacks on distributional conflict. Here we focus on two kinds of struggles: 1) The conflict between corporate managers and shareholders on the one hand, and the one between managers and workers on the other hand. Within this paper we present some of the (preliminary) results we received so far.

While the conflicting claims between these three groups have been studied through static models in the Post Keynesian literature (Dallery and Van Treeck, 2009), the dynamics of these interrelated conflicts with feedback loops running in both directions is not fully explored. Our aim here is to study this problem with a particular focus on financialization, using a stock-flow consistent model developed to capture these features of the modern capitalist economies. The model consists of three main sectors: a household, a business and a financial sector, which includes commercial banks. The household sector is split into three groups: workers, corporate managers and shareholders, who differ in their respective income, wealth and consumption propensities. Worker households receive wage income, while shareholder households own the vast majority of business and financial sector shares and therefore receive the majority of dividends. Managers receive a wage income that is multiple times higher than those of workers and own a small part of business sectors' shares. Using this simple set up, we show how changes in investment and consumption lead to endogenous fluctuations in income shares, which in turn feedback on to the conflict between the three groups. Our aim in this paper is to study how the three-way distributional conflict impacts the business cycle and in turn how it changes over the cycle.

The conflict between shareholders, managers and workers has been one of the central themes in the Post Keynesian literature, both at the level of a firm and at the level of the macroeconomy. Earlier work like Crotty (1990) has shown that the conflation of ownership and control is one of the shortcomings in the theories of Keynes, Tobin and Minsky. He argues for conceptualizing semi-autonomous agents that he believes create a realistic theoretical vision for the study of real and

financial sector interaction and one that is moving through historic time in an everchanging, institutionally contingent relationship, where there is neither one of perfect coordination nor one of complete independence. From the point of view of the theory of the firm, the Post Keynesian theory of the firm evolved from a 'Galbraithian', where the role of shareholders is more passive, to its current form where the conflicting claims are more actively pursued. For instance, Dallery (2009) picks up the argument from the seminal works of Berle and Means (1933) and Stockhammer (2004) to articulate firms as places of conflict between managers and shareholders, particularly in the context of financialization. At the macroeconomic level, Dallery and Van Treeck (2009) use the Post Keynesian theory of the firm as the micro-foundation to study the aggregate distributional impact of the shareholder-manager-worker conflict. Drawing from the Post Keynesian literature, Hein (2012) identifies that shareholder power over managers is one of the channels through which financialization impacts on growth and distribution (Hein 2012, p.476): "On the one hand, rising shareholder power subordinates management's and workers' preference for (long-run) growth of the firm to shareholders' preference for (short-term) profitability. On the other hand, increasing dividend payments, share buybacks and so forth restrict the availability of finance for firms' real investment projects. Distribution of income is affected by changes in power relations between shareholders, managers, and workers, which then feedback on investment and consumption."

However, we believe that there exists a gap in the literature with regard to studying the dynamic interrelation between conflict at the micro-level and the macro-economic growth and distribution, i.e. the endogenous interaction between conflict and growth and distribution. In this project, our aim is to extend the recent work that articulated the role conflict between shareholders and managers on the long run rate of capacity utilization in a model of growth and distribution (Raghavendra and Piironen, 2019) in two ways – first, by including the three-way conflict between shareholders, managers and workers; second, by endogenizing the conflict with a view to study distributional shares over the cycle; third, the endogenous dynamics of the model with its nonlinear feedback mechanism would allow us to explore the long-term behaviour of the system.

The paper is structured as follows: Section 2 provides an outline of the model that we are going to use and in section 3 we show some preliminary results. Section 4 provides an outlook of how we plan to proceed and section 4 offers some concluding remarks.

2. A model to analyse fluctuations in income distribution

Corporations' employment decisions depend on the level of aggregate demand (Y) in the previous period and labour productivity (b). The number of workers employed (NW) is therefore given by

$$NW_t = \frac{Y_{t-1}}{b}.$$

Multiplying it with their respective nominal wage rate (wW) yields the aggregate wage income of workers (WW):

$$WW_t = wW_t \cdot NW_t.$$

The number of corporate managers (NM) is assumed fixed, i.e. independent of fluctuations in the level of production. They are also assumed to earn a certain wage (wM), leaving them with the following aggregate wage income (WM):

$$WM_t = wM \cdot NM.$$

Corporations set prices (pc) by charging a mark-up (m) on their unit variable costs, which in this case depends on the wage rate of workers and labour productivity:

$$pc_t = (1 + m_t) \frac{wW_t}{b}.$$

The aggregate income of workers (YW) consists of their wage income as well as their interest income on savings deposits (SDW) minus the interest they pay on eventual loans (LW), where id denotes the interest rate on these deposits and il the interest rate on loans. Managers' income is made up of their wage income, the interest they receive on their savings deposits (SDM) as well as the dividends that they receive (DFM). Finally, the income of shareholders consists of the interest on their savings deposits (SDS) as well as their share of corporate dividends (DFS) and the dividends paid by banks (DB). If shareholders or managers go into debt, they too have to pay interest on these loans. In order to keep the financial sector as simple as possible we ignore that the banking system might also employ managers and assume that banks are solely owned by the group of shareholders.¹ This gives that

$$YW_t = WW_t + id \cdot SDW_{t-1} - il \cdot LW_{t-1},$$

$$YM_t = WM_t + id \cdot SDM_{t-1} + DFM_t - il \cdot LM_{t-1},$$

$$YS_t = id \cdot SDS_{t-1} + DFS_t + DB_t - il \cdot LS_{t-1}.$$

The consumption demand of these three groups is determined by a certain autonomous part ($cw0$, $cm0$, $cs0$) and their marginal propensities to consume ($cw1$, $cm1$, $cs1$), where due to their income situation we assume that the consumption propensity of workers exceeds the one of managers and the shareholders have the lowest consumption propensity of these three. Thus,

$$CW_t = cw0 + cw1 \cdot \frac{YW_{t-1}}{pc_t},$$

$$CM_t = cm0 + cm1 \cdot \frac{YM_{t-1}}{pc_t},$$

$$CS_t = cs0 + cs1 \cdot \frac{YS_{t-1}}{pc_t}.$$

This provides us with aggregate consumption demand (C):

$$C_t = CW_t + CM_t + CS_t.$$

We assume that aggregate investment depends on corporations' previous rate of return (r), their capacity utilization (z) as well as an autonomous part (Y_0):

¹ We assume that due to their wealthier status, neither managers nor shareholders have to go into debt to finance their consumption demand.

$$I_t = Y_0 + Y_1 \cdot r_{t-1} + Y_2 \cdot z_{t-1}.$$

Thereby the rate of return measures corporate profits ΠF relative to the value of the capital stock (K) inherited from the previous period:

$$r_t = \frac{\Pi F_t}{pc_t \cdot K_{t-1}}.$$

The rate of capacity utilization measures the actual level of production relative to the level of potential output (YP), where the latter is determined by the capital stock inherited from the previous period and the capital-potential output ratio ς :

$$z_t = \frac{Y_t}{YP_t},$$

$$YP_t = \frac{K_{t-1}}{\varsigma}.$$

Corporate profits is what remains from total sales proceeds and interest income on corporate deposits once the corporation has paid wages and interest on loans:

$$\Pi F_t = pc_t \cdot Y_t - WW_t - WM_t + id \cdot SDF_{t-1} - il \cdot LF_{t-1}.$$

The level of production (Y) is equal to the sum of aggregate demand, meaning firms produce the amount of goods that subjects want to buy:

$$Y_t = C_t + I_t.$$

Here it is important to note that the level of production cannot exceed the level of potential output:

$$Y_t \leq YP_t.$$

Whenever a situation arises in which the above condition is not fulfilled, i.e. demand would exceed production possibilities, firms would satisfy existing consumption and investment demands only partially, such that production exactly corresponds to its potential. This means dividing all individual demands by the factor Y/YP as soon as the above condition would be violated.

Corporations retain a certain share of profits within the firm (μ) and distribute the rest as dividends (DF):

$$DF_t = (1 - \mu)\Pi F_t.$$

These dividends are allocated to managers (DFM) and shareholders (DFS) according to their respective holdings EFM and EFS of total equity (EF):

$$DFM_t = \frac{EFM_t}{EF_t} \cdot DF_t,$$

$$DFS_t = \frac{EFS_t}{EF_t} \cdot DF_t.$$

Firms can use actual and past retained earnings to finance investment. In case that these are not sufficient, firms take up additional loans. Each period the firm has to repay a principal (PLF) of these loans. The surplus of funds in a certain period is given by

$$SURPF_t = \mu \cdot PF_t - pc_t \cdot I_t - PLF_t.$$

This means that for $SURPF \geq 0$ firms savings deposits increase by that surplus ($\Delta SDF = SURPF$) and outstanding loans will decrease ($\Delta LF = -PLF$). Whenever $SURPF < 0$ firms reduce their savings deposits ($\Delta SDF < 0$) or, if that is not enough, take up additional loans ($\Delta LF > 0$). The same logic applies to workers, whose financial surplus is given by

$$SURPW_t = YW_t - pc_t \cdot CW_t - PLW_t.$$

Positive surpluses (savings) will go to workers' savings deposits ($\Delta SDW = SURPW$) and outstanding loans will decrease ($\Delta LH = -PLH$). Negative surpluses will lead to a reduction of savings deposits ($\Delta SDW < 0$) or, if that is not sufficient, an increase of loans ($\Delta LW > 0$).

Assuming that managers and shareholders are always able to produce financial surpluses (savings), the evolution of their savings deposits is given by

$$\Delta SDM_t = YM_t - pc_t \cdot CM_t,$$

$$SDM_t = SDM_{t-1} + \Delta SDM_t,$$

$$\Delta SDS_t = YS_t - pc_t \cdot CS_t,$$

$$SDS_t = SDS_{t-1} + \Delta SDS_t.$$

Bank profits consist of the residual between the aggregate interest paid on loans and the aggregate interest paid on savings deposits:

$$\Pi B_t = il_t \cdot L_{t-1} - id \cdot SD_{t-1}.$$

For reasons of simplicity we assume that banks distribute all of their profits as dividends:

$$DB_t = \Pi B_t.$$

Finally, the corporate capital stock evolves according to

$$K_t = (1 - \delta)K_{t-1} + I_t,$$

where δ denotes the rate of depreciation.

Table 1 takes account of all the stocks of the model, whereas table 2 looks at all flows.

Table 1: Stocks

	Workers	Managers	Share-holders	Firms	Banks	Sum
Deposit	SDW	SDM	SDS	SDF	-SD	0
Loans	-LW	-LM	-LS	-LF	L	0
Tangible Capital				K		K
Shares Firms & Banks		$p_a \cdot E_{FM}$	$p_a \cdot E_{FS}$ $p_a \cdot E_{FS}$	$- p_a \cdot E_F$	$- p_a \cdot E_B$	Δ Market valuation
SUM	-NVW	-NVM	-NVS	-NVF	-NVB	$K + \Delta$ Market valuation

3. First model simulations

In what follows we present some of our first simulations exercises. Note that we assume that one simulation period corresponds to one quarter. Information on the model parameters and starting values used can be found in the appendix.

3.1. Baseline scenario

In the baseline scenario we assume nominal wages, the mark-up and the ratio of retained profits as given. Assuming that shareholders, managers and worker households all save part of their income, stability in terms of GDP can only be achieved if others go into debt. Without a government that is willing to incur budget deficits, this role has to be taken over by the corporate sector. The shares of firm profits, bank profits, workers' wages and managers' wages in total income are also stable (figure 2).

<Insert Figure 1 here>

<Insert Figure 2 here>

3.2. Conflict between workers and managers and shareholders and managers

The actual nominal wage rate of workers is the result of a wage bargaining process between workers and firms. In that negotiation process, firms and workers have different views on what the justifiable nominal wage is, those notions are respectively denoted by wWF and wWW . The final outcome is determined by the relative bargaining strength denoted by d . The target wage is revised each year, where it is adjusted for inflation and reduced whenever the current rate of return is below the target rate of return. Workers on the other hand revise their targeted nominal wage for inflation. Managers wages are automatically adjusted for inflation each year, so that

$$\begin{aligned}wW_t &= d \cdot wWF_t + (1 - d) \cdot wWW_t, \\wWF_t &= wWF_{t-1} \cdot \left(1 + \frac{\Delta pc_{t-1}}{pc_{t-1}}\right) - \alpha \cdot (rT - r_{t-1}), \\wWW_t &= wWW_{t-1} \cdot \left(1 + \frac{\Delta pc_{t-1}}{pc_{t-1}}\right), \\wM_t &= wM_{t-1} \cdot \left(1 + \frac{\Delta pc_{t-1}}{pc_{t-1}}\right).\end{aligned}$$

The target rate of return depends on the power struggle between shareholders and managers, where shareholders' return expectations (rST) will usually be above those of the management (rMT) (see Lavoie 2014, Raghavendra and Piironen 2019). In this case ρ denotes the relative power of shareholders, where $0 \leq \rho \leq 1$ and so

$$rT_t = \rho \cdot rST + (1 - \rho) \cdot rMT.$$

Finally, we assume in this scenario that firms have considerable market power. This means that they pass on cost increases to consumers, while not reducing prices in case of cost reductions (Peltzmann, 2000; Beker, 2017) giving

$$pc_t = \max\left(pc_{t-1}, (1 + m_t) \frac{wW_t}{b}\right)$$

When we model conflict in this specific way, a rise in the power of shareholder (ρ) will lead to a decline in nominal wages over time (see figure 3). With commodity prices remaining stable, the result is a decline in the purchasing power of workers. Lower consumption demand in turn leads to a steady decline of output over time. Deposits of shareholders, managers and also firms will increase over time, while firm debt (due to a lack of investment due to low rates of capacity utilization) remains low. The accumulation of deposits on one side is financed by worker households on the other side, who take up loans to preserve the autonomous part of their consumption spending. Consequently, the income shares of workers are gradually declining, whereas the share of firm and bank profits is increasing (figure 4).

<Insert Figure 3 here>

<Insert Figure 4 here>

In another scenario we assume that it is managers who suddenly hold a lot more power, i.e. ρ falls (see figure 5). In this case the target rate of return falls, which is followed by rising nominal wages. As wages increase, prices increase too. This means that income shares are shifting back and forth (figure 6), leading to fluctuations of GDP and its components around the initial levels.

<Insert Figure 5 here>

<Insert Figure 6 here>

4. Some propositions for further extending the model

We plan to expand this very simple model along the following lines: First of all, we regard it necessary to treat wage bargaining power (d) as an endogenous variable. One practical possibility will be to relate it to the level of unemployment (u) in the economy:

$$d_t = d_{t-1} + d1 \cdot u_{t-1}.$$

Another parameter that seems to be worth reconsidering is the ratio of retained earnings (μ). This could again be the result of a power struggle between managers and shareholders, where both try to get through their notion of what would be a reasonable rate and h indicates the relative powers:

$$\mu_t = h \cdot (\mu M_t) + (1 - h) \cdot (\mu S_t).$$

In particular, managers may want to keep sufficient profit within the firm to finance investment and may be inclined to distribute the rest. In this case managers ideal retention rate would be

$$\mu M_t = \min\left(1, \frac{I_t}{\Pi_t}\right), \quad \mu M_t \geq 0.$$

Shareholders on the other hand may worry about their rate of return on equity ($rEST$):

$$rEST_t = \frac{DFS_t}{pa \cdot EFS_t}.$$

Assuming that they aspire towards a certain target rate of return on equity ($rEST$), it follows that the rate of retained profits that would satisfy their target rate would be equal to

$$\mu S_t = 1 - \frac{rEST \cdot pa_t \cdot EF}{\Pi_t}.$$

5. Concluding thoughts

In this project we want to study the dynamic interrelation between the conflict over income and the business cycle. So far we looked at the wage bargaining process and price setting behaviour. The first preliminary results indicate that if more shareholder power leads to declining nominal wages and firms possess substantial market power to set prices, the economy is moving into a downward trajectory being accompanied by increasing indebtedness of workers households. Reducing the power of shareholders in such a scenario could be a way to stabilize output, but would create fluctuations in output and income shares. In the work that is going to come we plan to add more complexity to the wage bargaining process as well as having a closer look on the struggle over dividends.

References

Galbraith, J.K. (1967): *The New Industrial State*. Boston, Houghton Mifflin Company.

Lavoie, M. (2014): *Post-Keynesian Economics: New Foundations*. Cheltenham: Edward Elgar.

Raghavendra, S. and Piironen, P. (2019): Conflict as a closure: A Kaleckian model of growth and distribution under financialization. ICAE Working Paper No. 96

Peltzman, S. (2000). "Prices rise faster than they fall". *The Journal of Political Economy*, Vol. 108, No. 3 (Jun., 2000), 466-502.

Beker, A.V. (2017). "Asymmetric price adjustment: A missing link in Keynesian Macroeconomics", *Real-World Economics Review*, 80, pp. 121-147.

Figure 1: Development of GDP and its components (upper left panel); savings deposits (upper right panel) of workers (SDW), managers (SDM), shareholders (SDS) and firms (SDF); loans (lower left panel) of workers (LW), managers (LM), shareholders (LS) and firms (LF); wages and prices (lower right panel);

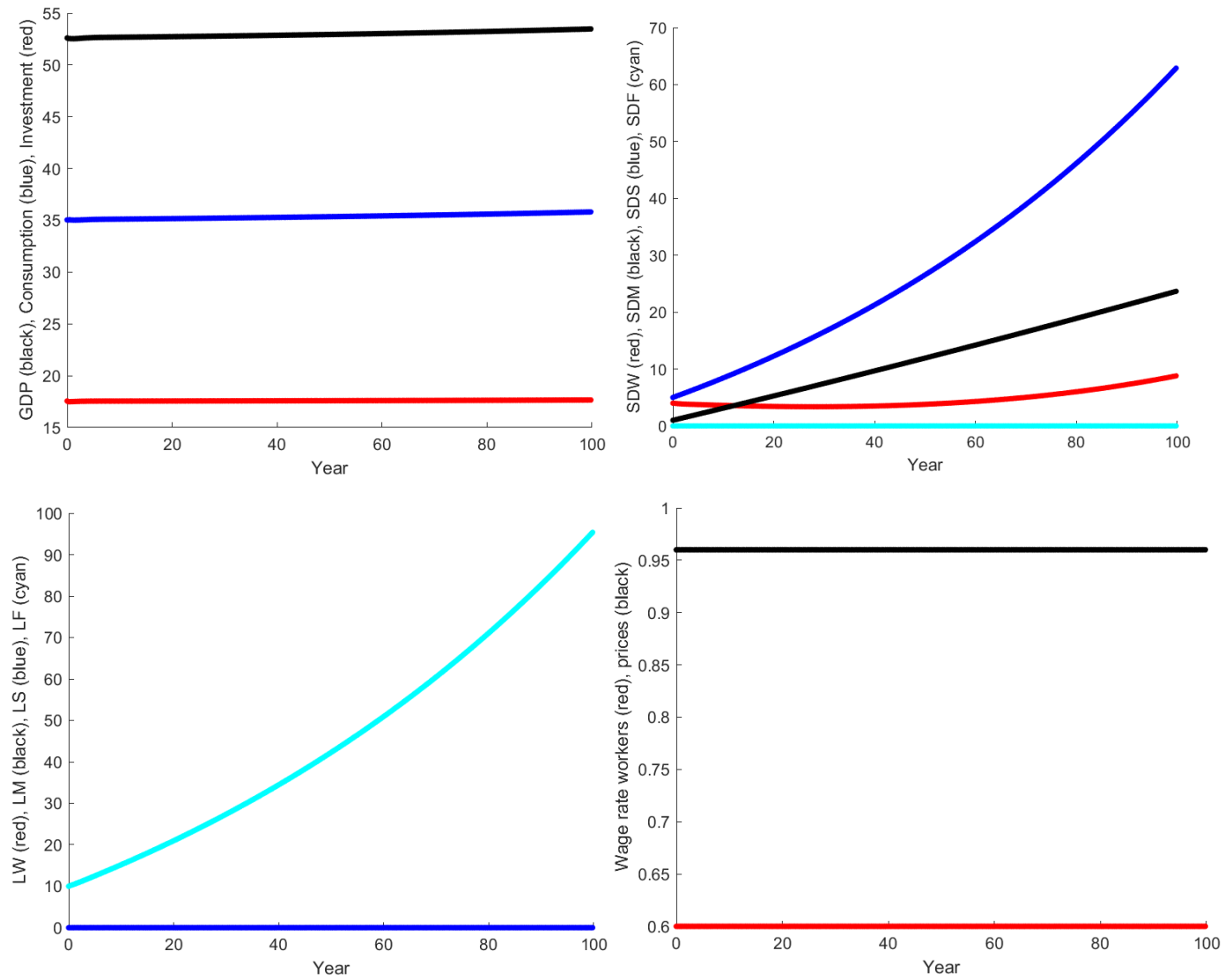


Figure 2: Shares of firm profits (hF), bank profits (hB), workers' wages (hWW) and managers' wages (hWM) in total income

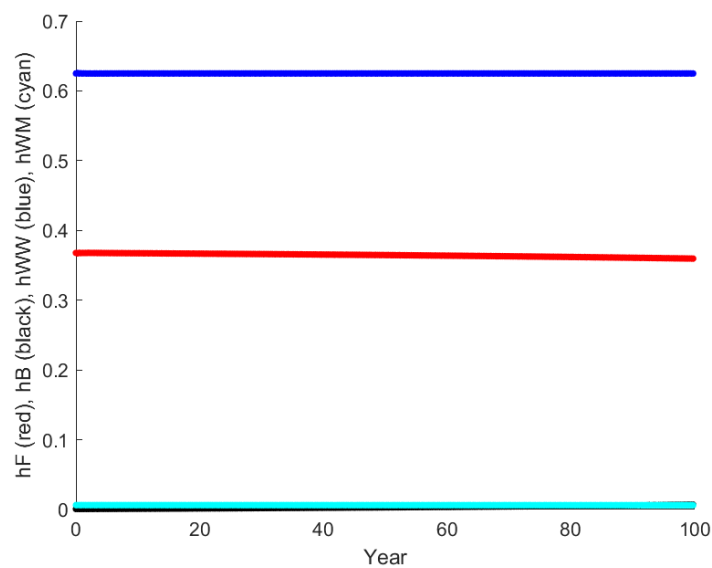


Figure 3: Impact of a rise in shareholder power

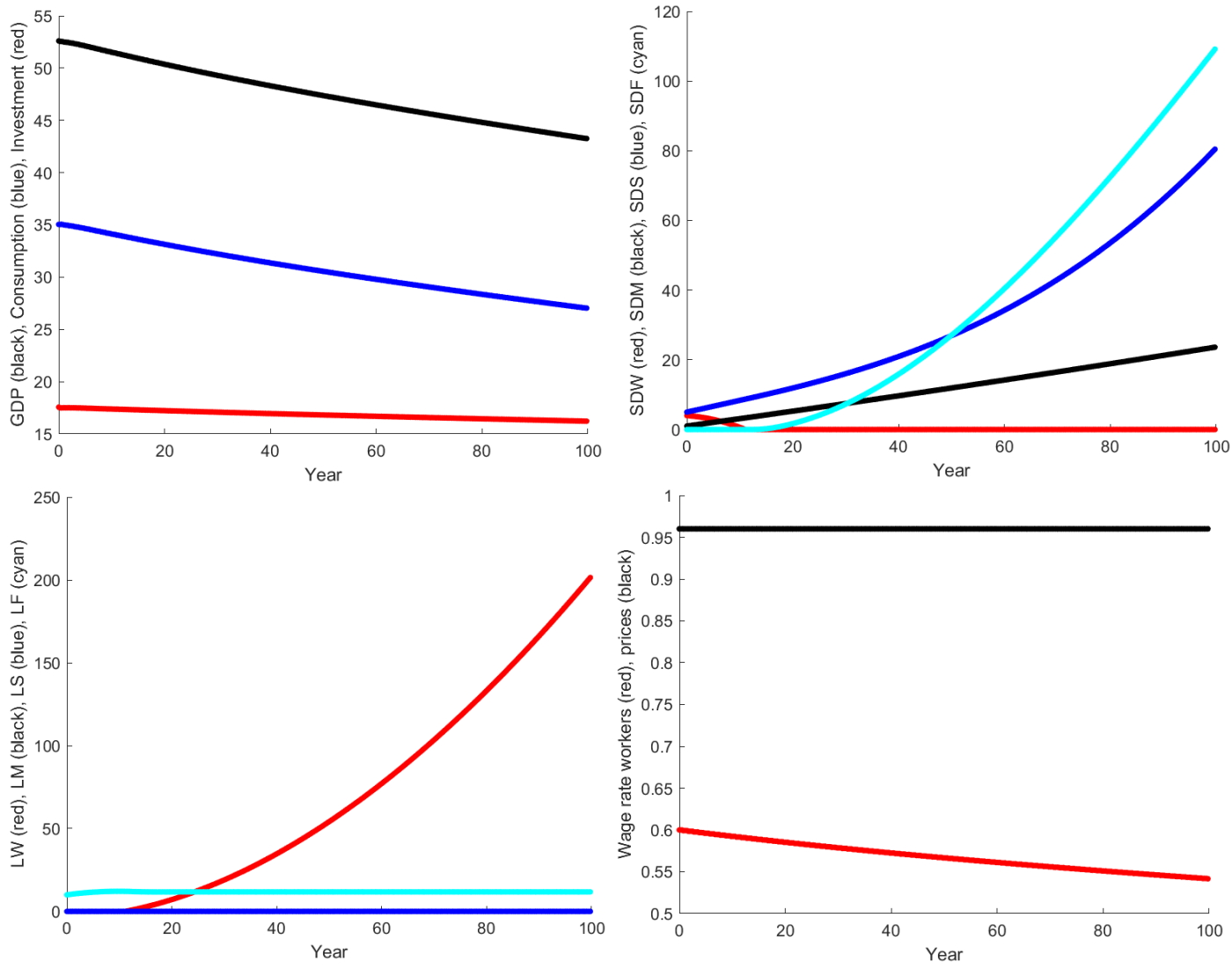


Figure 4: Shares of firm profits (hF), bank profits (hB), workers' wages (hWW) and managers' wages (hWM) in total income

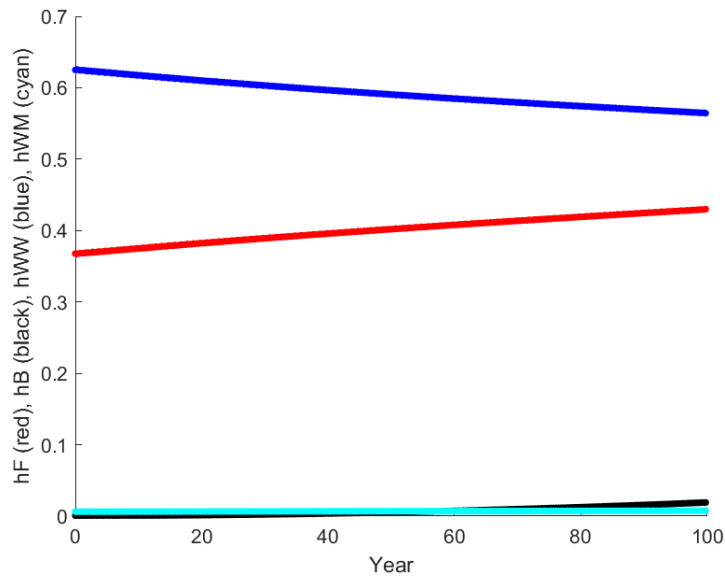


Figure 5: Impact of a rise in manager power

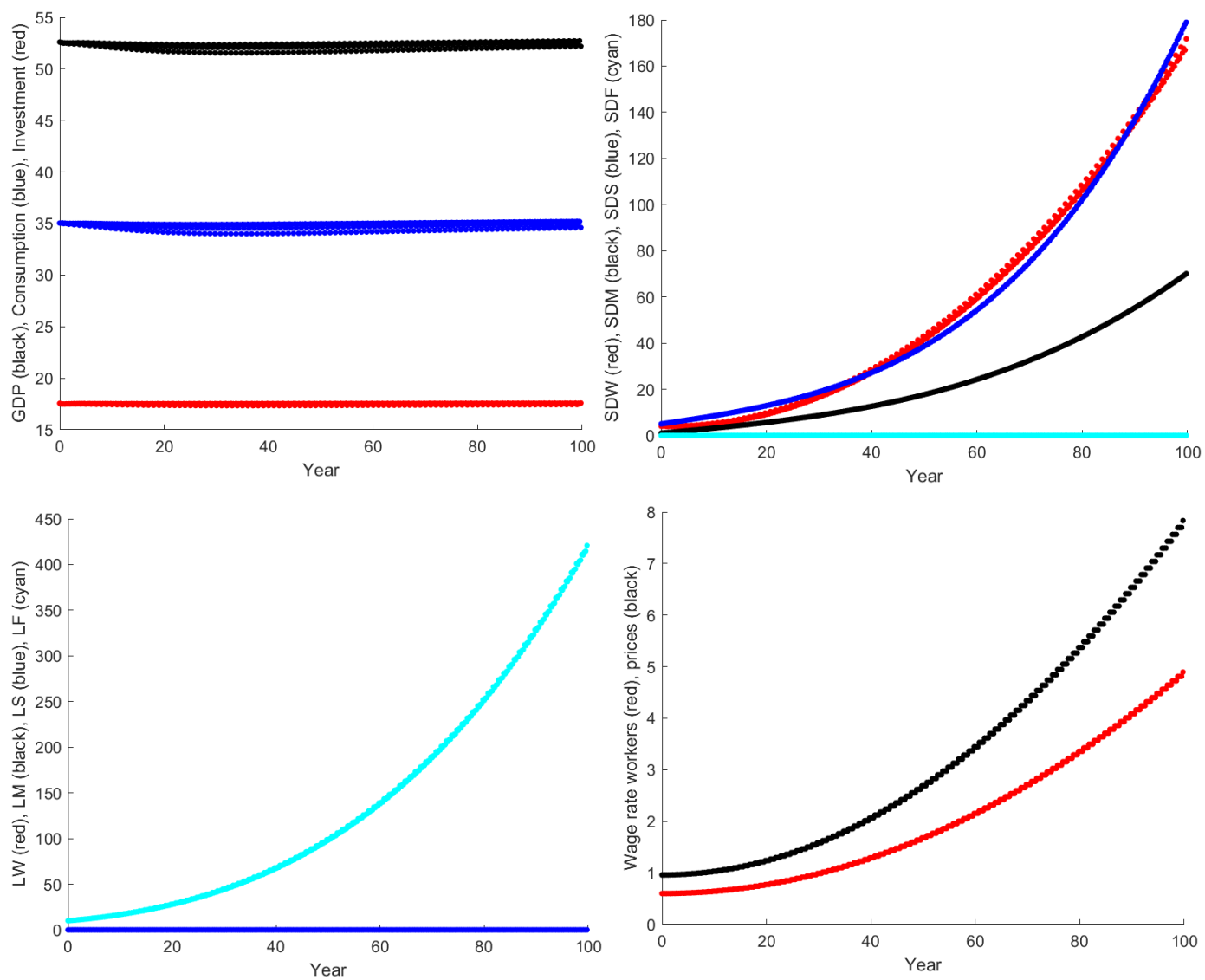
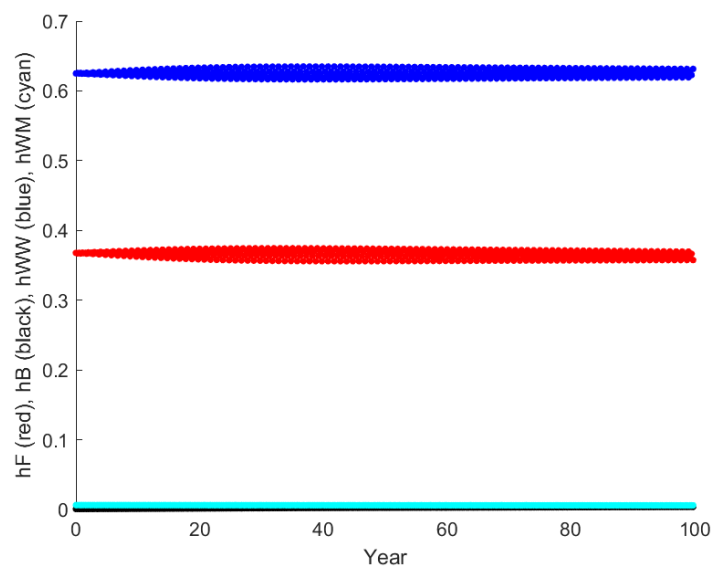


Figure 6: Shares of firm profits (h_F), bank profits (h_B), workers' wages (h_{WW}) and managers' wages (h_{WM}) in total income



Appendix – Model Parameters

A.1. Baseline Scenario

Parameter	Description	Value
Y(1)	Starting value	52.6
C(1)	Starting value	35.04
I(1)	Starting value	$Y(1)-C(1)$
b	Labour productivity	1
wW	Workers' wage rate	0.6
wM	Managers' wage rate	60
NM	Number of managers	0.0001
m	Mark-up	0.6
id	Interest rate on deposits	0.005/4
iL	Interest rate on loans	0.02/4
SDW(1)	Starting value	4
SDF(1)	Starting value	0
LW(1)	Starting value	0
SDM(1)	Starting value	1
LM(1)	Starting value	0
SDS(1)	Starting value	$L(1)-SDW(1)$ $-SDM(1)-SDF(1)$
LS(1)	Starting value	0
L(1)	Starting value	$LW(1)+LM(1)$ $+LS(1)+LF(1)$
cw0	Workers' autonomous consumption	3.3
cw1	Workers' propensity to consume	0.9
cm0	Managers' autonomous consumption	0.05
cm1	Managers' propensity to consume	0.7
cs0	Shareholders' autonomous consumption	0.7
cs1	Shareholders' propensity to consume	0.6
Y0	Autonomous investment	5
Y1	Impact of the rate of return on investment	5
Y2	Impact of the rate of capacity utilization on investment	20
K(1)	Starting value	176
ζ	Capital to potential output ratio	2
μ	Rate of retained profits	0.9
EF	Firm equities	1
EFM	Number of firm equities held by managers	0.01
EFS	Number of firm equities held by shareholders	EF-EFM
δ	Rate of depreciation of the capital stock	0.1

A.2. Conflict Scenario 1: Increase in shareholder power

Parameter	Description	Value
d	Wage negotiation power of firms	0.8
wWF(1)	Starting value	0.6
wwW(1)	Starting value	0.6
α	Impact of rate of return in wage negotiations	0.1
rST	Share holders' target rate of return	0.12
sMT	Managers target rate of return	0.1
ρ	Power of shareholders	1

A.3. Conflict Scenario 2: Increase in manager power

Parameter	Description	Value
ρ	Power of shareholders	1