Price competition, inter-firms relationships, bank discrimination and wage inequalities: a post keynesian perspective

Concurrence par les prix, relations inter-firmes, discrimination bancaire et inégalités salariales : une perspective postkeynésienne

Competencia por medio de los precios, relaciones interfirmas, discriminación bancaria y desigualdades salariales, una perspectiva postkeynesiana

Jordan Melmiès and Thomas Dallery
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In appendix, one can find: i) our program file, ready-to-use, in an E-Views format (.prg), ii) the spreadsheet including the final data generated by the resolution of this model, and iii) our program in a Text format (.txt). Readers can contact us for every need for explanations on our program.

Introduction

In mainstream economics, competition leads to a fall in prices and in profit margins, leading to a stimulation of the economy as a whole and a better situation for consumers. From a heterodox/Post Keynesian perspective, this is however an incomplete story, as the production process is before all the result of conflicts and power struggles among stakeholders. In particular, faced with competitive price pressures (price war, new entrants...), firms may try to transfer this constraint to other agents in order to maintain their profit margins. One of the reasons for firms to try to escape to a reduction in their profit margins is that they need these margins in order to internally finance part of investment plans, in the tradition of Alfred Eichner (1976) and Adrian Wood (1975). One way for managers to meet price competition pressures while defending profit margins is to transfer the constraint upon the back of workers (via wage reductions, productivity improvements...). This case is already documented in the heterodox literature. This paper will analyse another possibility for firms: transferring the constraint of price competition to suppliers and/or subcontractors, i.e. upstream firms. We will thus rely on the idea that upstream firms are under the domination of downstream firms. It may not always be the case in reality. We will nevertheless focus our analysis on what happens when this is the case, while underlying the reasons why this configuration is likely to be effective in the (recent) real world.

This is not the only kind of domination the paper will discuss as a driving force behind the competitive process. Upstream firms may be under the domination of downstream firms, but also under the domination of banks, which are discriminating credit supply to different sectors and applying different interest rates, on the basis of specific/sectoral risks valuation (size, access to financial markets...). As their risk evaluation is based on internal financial positions, credit discrimination will thus be shown to be a very important (although not the sole) piece for price-competition not leading to a reduction in profit margins.

When disaggregating the global economy into different sectors among the production chain, one is obliged to look upon the power struggle between these sectors: every sector does not have the same ability to face stiffened constraints (downward pressures on prices imposed by globalization; upward demands on profitability led by financialization; ...). We do not only analyze capital-labour conflicts over distribution, but we aim at underlining some capital-capital conflicts which can influence afterwards distribution. The question on which the article will focus is: what are the consequences of such inter-firms relationships, transfer of constraints and credit discrimination at the macroeconomic level? Are these processes neutral for the whole economy? To address this issue, we will build a macroeconomic model, based on a disaggregated framework (three productive sectors and banks), and respecting the Stock-Flow Consistency (SFC) methodology inspired by Godley and Lavoie (2001).
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The article will be divided as follows: the first section will be devoted to a discussion of inter-firms relationships: downstream versus upstream firms, and banks versus (upstream/downstream) firms, with some examples taken from French manufacturing industry. In the second section, we will present the structure and assumptions of our macroeconomic model. In the third section we will present the results of the simulations run from the model.

1. Domination in inter-firms relationships

1.1. Upstream firms: suppliers and subcontractors

1.1.1. Upstream versus downstream firms

In this first part, we will briefly present how we conceive the balance of power between upstream and downstream firms. By “balance of power”, we mean relationships between firms which are not based upon any kind of degree of competition (such as concentration) but upon other sources of power which make some firms stronger than others, independently of the degree of competition in any sector. As previously noticed, we will assume that downstream firms, which produce final goods and services (in direct link with final consumers), are in a position of strength vis-à-vis upstream firms, which provide primary goods to downstream firms. We recognize that this may not always and everywhere be the case (for example, Okamuro [1997] pointed a different way of risk sharing in the supplier relationship for the Japanese automotive industry, but noticed that big firms already tended to get less and less involved in economic risk sharing with suppliers). But as we previously said, we only propose an analysis of what happens when this is the case. Our analysis is just a theoretical investigation into a specific macroeconomic regime. We don’t aim at building a general model of the economy, but only at discussing how things may work when the balance of power between firms is favourable to downstream firms. We however have to explain the reasons why this configuration may appear.

The first reason why we propose macroeconomic analysis of firms competing each other by cutting the cost of their inputs is that there have been some recent works underlying this practice. Our analysis is for example very close to the one developed by William Milberg, with the pressure on sub-contractors being the outcome of a “shift towards cost control” in the recent globalized world (Milberg, 2009). Here, we only posit two levels in the supply chain, but we can generalize with multiple levels in which the suppliers can be powerful towards the final goods sector, and can have suppliers in a weaker position: somewhere in the supply chain, there would necessarily be a supplier to be the weakest link of its customers.\(^1\)

Secondly, if we chose to take firms in direct link with final consumers as dominant in the balance of power, it is because we do think that the proximity with final consumers reinforces de facto the bargaining power in inter-firms relations. In the Post Keynesian tradition inspired by Wood’s (1975) analysis, firms seek to maximize the growth of a demand which is as much expected as it is “produced” by themselves through their own policies (selling policies, investment policies). In this sense, firms are able to “work on” their own demand. They can induce it, because they face consumers who are influenced by selling policies (especially advertising, see Galbraith’s “revised sequence” [1958]). It seems to us that this ability to influence the market is more the prerogative of firms in direct link with final consumers. Firms that produce for other firms cannot act as much on the demand of these firms. Their whole production is about to be sold to other firms. If they refuse the conditions of

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\(^1\) As we will see, this power struggle in favour of the downstream can be found in the last link of the value chain: between a firm and its workers.
downstream firms, they expose themselves to the risk of losing their contracts, because they cannot sell directly to final consumers. In other words, upstream firms’ selling policy is always more dependent on the buying policy of downstream (which can hardly be influenced by advertising) firms than the selling policy of these buying firms towards the buying policy of their customers (i.e., final consumers), since the downstream firms are able to work on, at least partly, the buying policy of these customers. The third reason deals with the intrinsically unbalanced relationships between buyers and sellers in inter-firms relationships. A firm always wonders whether it should “make” or “have made”. When it decides to “have a product made”, it is because it thinks it could benefit from it. In the case where to “have made” constrains the firm to be caught in a position in which it does not have any power, it can consider producing the input itself.

Another reason lies in the terms of payment that hold in inter-firms relationships. Whereas firms producing consumption goods are quite always paid immediately, they ordinarily pay their inputs bills, two or three months later. This is unfavourable to upstream firms, as they need to remain more careful about their liquidity than downstream firms. They may thus be more willing to accept unfavourable conditions (for example price cuts in return for reduced terms of payment).

The last argument that makes us think that firms directly in link with final consumers are more powerful than others is an empirical one (whereas others arguments were based on the structure of the productive process). The development of mass distribution in recent years brings superstores and hypermarkets in a position of strength towards their suppliers. In France, the number of hypermarkets raised from 862 to 1 459 between 1991 and 2008 (for a total surface rising from 4 704 000 square meters to 8 020 000 square meters). This development of mass distribution, as well as the one of central purchasing offices, represents an extension of power for firms directly in link with final consumers.

1.1.2. Sub-contracting as a deepened domination

The elements we underlined in the previous section show that firms in direct link with final consumers can have the upper hand on their suppliers. A way to deepen this relation with suppliers is to resort to sub-contracting. The sub-contractor is always further from final consumers than downstream firms. In the case of sub-contracting, order givers get stronger bargaining power than in the case of simple upstream-downstream (or buyer/supplier) relationships.

We deliberately focus on the French example to highlight our point regarding power struggle between downstream and upstream firms. There are several reasons for this. First, the French case seems to be the most (if not the sole) documented case, as underlined by OECD (2005, p. 208). Basic indicators about subcontracting are almost always non available, even if desirable. The existence of French data is thus some kind of an exception, explaining why we focused on this case. Second, even though sub-contracting is a world-wide practice for firms, the French case is interesting for its particularly conflictive nature which allows for the domination to be plainly seen. For example, in Le Nouvel Économiste (10th November 2011),

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2 The question “who a firm produces for?” has an impact on its ability to impose its own conditions: a firm directly in link with final consumers can influence consumers’ behaviours, playing with emotions, envy or desires but this is something much more difficult to do when you sell your product to another firm. While firms that produce final consumption goods sell these goods to physical persons, suppliers face a legal entity, an organisation, which embodies an accounting entity trying to rationalize its policy. Of course suppliers can decide to internalise the buying of their finished products, but in that case they become final consumption goods producers and not suppliers (and this would thus be a different macroeconomic regime than the one we want to stress in our paper). Our macroeconomic model is here based on an economy which is not vertically integrated at the macroeconomic level.
the French mediator of inter-industrial relationship, has identified 37 different types of bad practices ranging from delayed payments, or unilateral modification of existing contracts, violations of intellectual property rights for innovations made in upstream firms. Volot states that the German case is more cooperative, with far more less predatory behaviours from big, downstream firms. The mediator of inter-industry relationship, recently brought forward another example of predatory behaviours stemming from orders givers towards their subcontracting firms. Whereas the French government has established a new measure dedicated to lower labour costs and improve industrial competitiveness (the “Crédit d’Impôt Compétitivité Emploi [CICE]”), big firms take for granted that the drop in their suppliers’ labour costs has to be fully transferred in their prices, so that the final beneficiaries of the suppliers’ improving labour costs are the big firms since they achieve a drop in the prices of their inputs! The mediator takes an inventory of hundreds of small, suppliers and subcontracting firms concerned with these constrained price drops.

There is indeed subordination in the sub-contracting relation. Thèvenot and Valentin (2004) show that sub-contracting became a widespread phenomenon since the beginning of the 1980s: the resort rate in France went from 60% to 86% between 1984 and 2000. According to the Insee, in 2007 sub-contracting (seen from the side of suppliers) concerned 3 961 firms of more than 20 workers and represented a total of 353 542 jobs for a total amount of sales of 49 billions euros. Tinel et al. (2007) see sub-contracting as a mean for capital to extend real subordination of labour (in opposite to formal subordination), as defined by Marx in the (unpublished) chapter 6 of Capital. In this way, sub-contracting is a mean for big firms to leave out some legal constraints they have vis-à-vis their workers. For the authors, it explains salaries differences for workers (31 709 € per year in subcontractors and 35 063 € for order givers). Moreover, profitability is also twice superior for order-givers than for sub-contractors. The suppliers are more prone to resort to temporary work: this conclusion is shared by Thèvenot and Valentin (2003) and emphasizes that labour is the weakest link in the value chain. Besides, there is a significant “size” effect: firms of more than 500 workers have a resort rate which is quite always superior to 90% for the period 1984-2000 in France, while this rate is far inferior for small firms (Thèvenot and Valentin 2004). To confirm these statistical intuitions, we synthesize some available data on sub-contracting, but also on two sectors of the French economy for which sub-contracting plays an important part: car industry and textile industry.

Table 1 shows that sub-contractors have lower economic performances compared to the branch of intermediary goods or manufacturing industry (except energy). One can also notice that there is a difference between pure (activity exclusively for the sake of someone else) and partial subcontracting.

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3 This particular vulnerability of French little corporations has recently been widely noticed in the literature, especially as far as Germany is brought into the comparison. Governments are thus trying to establish a Small Business Act to end the French obstacles that prevent SMEs to grow (shorten delay of payments, contract enforcement, etc.).

4 Share of non financial corporations (except energy and agriculture) which employ more than 20 workers and which have sub-contracting spending.
Table 1. Comparative data: subcontracting / other industries

<table>
<thead>
<tr>
<th></th>
<th>Gross mark-ups(^5) (%)</th>
<th>Profitability rate(^6) (%)</th>
<th>Self-financing rate(^7) (%)</th>
<th>Profit rate(^8) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure subcontracting</td>
<td>14.9</td>
<td>0.9</td>
<td>77.6</td>
<td>10.1</td>
</tr>
<tr>
<td>Partial subcontracting</td>
<td>15.9</td>
<td>2.2</td>
<td>144.9</td>
<td>10.6</td>
</tr>
<tr>
<td>Total subcontracting</td>
<td>15.2</td>
<td>1.2</td>
<td>88.2</td>
<td>10.2</td>
</tr>
<tr>
<td>Intermediary goods</td>
<td>24.2</td>
<td>2.5</td>
<td>127.2</td>
<td>18.4</td>
</tr>
<tr>
<td>Manufacturing industry (except energy)</td>
<td>25.5</td>
<td>2.8</td>
<td>162.8</td>
<td>19.7</td>
</tr>
</tbody>
</table>

Source: Insee (2009)

Table 2 presents remuneration and mark-ups differences between French car manufacturers and their equipment manufacturers. Again, one can see that subcontractors exhibit lower average pays and lower economic performance.

Table 2. Car and equipment manufacturers in 2005

<table>
<thead>
<tr>
<th></th>
<th>Pay per worker (K€)</th>
<th>Mark-ups (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car manufacturers (2005)</td>
<td>52.4</td>
<td>31.9</td>
</tr>
<tr>
<td>Equipment manufacturers (2005)</td>
<td>43.9</td>
<td>20.4</td>
</tr>
</tbody>
</table>


Table 3 gathers data on the clothing industry while grouping explicitly on the one side clothes’ builders and on the other side order-givers. Again, concerning economic performances, figures are categorical.

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\(^5\) Gross operating surplus / Value added (excluding VAT).
\(^6\) Net profit / Turnover (excluding VAT).
\(^7\) Operational cash flow / Gross fixed investment.
\(^8\) Operational cash flow / Value added (excluding VAT).
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Table 3. Clothes’ builders and their order-givers

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2003</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order-givers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt ratio (%)</td>
<td>2.0</td>
<td>2.6</td>
<td>2.0</td>
</tr>
<tr>
<td>Mark-up (%)</td>
<td>29.0</td>
<td>37.2</td>
<td>46.1</td>
</tr>
<tr>
<td>Self-financing rate (%)</td>
<td>203.41</td>
<td>537.0</td>
<td>458.1</td>
</tr>
<tr>
<td>Profitability rate (%)</td>
<td>11.0</td>
<td>16.4</td>
<td>21.5</td>
</tr>
<tr>
<td><strong>Clothes’ builders</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt ratio (%)</td>
<td>0.9</td>
<td>0.8</td>
<td>0.7</td>
</tr>
<tr>
<td>Mark-up (%)</td>
<td>-0.4</td>
<td>-0.3</td>
<td>-3.3</td>
</tr>
<tr>
<td>Self-financing rate (%)</td>
<td>-182.0</td>
<td>-121.0</td>
<td>-301.9</td>
</tr>
<tr>
<td>Profitability rate (%)</td>
<td>-3.4</td>
<td>-5.3</td>
<td>-4.4</td>
</tr>
</tbody>
</table>


To our view, it is the subcontracting relationship that allows order-givers to reach higher profit rates while imposing particular conditions (especially in terms of prices) to subcontractors. Indeed, order-givers are able to make subcontractors bear the burden of some constraints which are not their own a priori.

In the remainder of the paper, we will focus on an analysis where firms in the final consumption goods sector have an important bargaining power in the determination of the price of their inputs. We insist on the facts that it is a bargaining power, and no a simple monopsonistic power. In the case of monopsonistic power, the buyer can bring the price paid below the competitive price while reducing demand. In the case of bargaining power, the buyer has leeway to make suppliers’ prices fall thanks to the threat of buying less. This difference leads the OECD to consider that only monopsonistic power is harmful to the economy and the downstream consumer (OECD, 2008).

1.2. Bank discrimination as a second kind of domination

Suppliers and/or subcontractors are in position of relative weakness towards their order-givers/downstream firms. In a sense, they are “dominated” by these firms. But this is not the sole type of domination undergone by suppliers. To some extent, they are also dominated by banks. It is not because banks are in a position of strength only towards these suppliers. Banks are always in a position of strength towards firms because they keep the last word on the decision to afford credits or not. Banks may impose credit rationing or apply different risk premiums depending on different firm-specific variables, (for example the debt ratio).

Several reasons to bank discrimination applying harder to small suppliers can be underlined. First, firms directly in link with final consumers are often big firms that have more “room to manoeuvre” than their suppliers because they have financial facilities (paid on time…). Banks are thus induced to apply higher risk premiums on the credits granted to small firms, and they impose them harsher credit rationing. Another point linked to a size effect is that big firms have easier access to other financing sources (share or bonds issuing), unlike small suppliers and/or subcontractors which are more dependent on the banking system, since bank credits are often their only source of external funds. A third argument based on this size effect is that banks see big firms as less risky because they have less chance to go bankrupt.

9 Financial costs / Turnover (excluding VAT).
10 Saying that banks may impose credit rationing does not jeopardize the endogeneity of money creation (Le Héron and Mouakil, 2008). Credit supply remains determined by the credit demand stemming from the productive sector. In other words, banks cannot impose money to agents, but can refuse it to them.
The “too big to fail” rule may induce governments to intervene and rescue these firms from bankruptcy (see General Motors in the US or car industry in France during the 2008 crisis). At the opposite, the bankruptcy of a small subcontracting units does not represent a major risk for the economy in terms of job losses, and banks may fear that nobody would urge to rescue those small firms when they are under threat (see the difficulties met by subcontractors of French car industry in 2009-2010). Finally, inter-firms relationships can also influence the risk as it is perceived by banks. Banks know that small subcontracting firms depend directly on contracts with big firms. Their sales turnover (and thus a priori their profit margins) partly depends on other firms whose interest is precisely to reduce inputs’ prices, and consequently harming subcontractors’ sales turnover.

From this discussion, two important elements regarding our thesis in this article arise. The first deals with the link between market structure and profit margins. Small firms act in a very competitive environment and high profit margins can be more necessary than in the case of monopolistic firms. Banks are prone to impose credit rationing, and hence small firms crucially need profit margins so as to self-finance investment and ensure their survival in the future. Monopolistic firms are bigger and safer for banks. They also have access to financial markets with share and bonds issuance. To put it in a nutshell, they do not need high profit margins for investment financing purpose as crucially as small firms. We thus do think that the existence of profit margins is not linked to a specific market structure, or at least not in the sense described by traditional theory.

The second element is that banks are willing to consider the ability of small firms to defend their profit margins as a positive signal for their financial safety when considering affording new loans or not. But if these small firms undergo a drop in their profit margins (due to a constrained reduction in their prices, as imposed by downstream firms), banks could restrain their credit policy and add a second domination constraint on small upstream firms (suppliers).

In the end, it is easily understandable that suppliers and/or subcontractors will certainly also have to transfer the constraint on their own suppliers, subcontractors or workers, because it is the only solution for them to get out of it. In other words, requirements of order-givers can rearm the conflict between suppliers or sub-contractors and their own workers.

2. A micro-macro modelling of constraints’ transfer

In this section, we will build a macroeconomic disaggregated model in order to simulate a transfer of price competitive constraints. The macroeconomic model will be based on a keynesian/kaleckian framework, and will follow the Stock Flow Consistent methodology as inspired by Godley and Lavoie (2001). One point remains to be questioned at this stage: is the SFC methodology necessary for the problem at hand, namely price competition and constraints’ transfer, whereas most of SFC models are dedicated to analyzing financial and/or monetary phenomena? We think that even for the purpose of examining inter-firms relationships at the macro level, the respect of stocks and flows consistency is of major importance, because this consistency brings into the analysis some feedback loops linked to budgetary and financial constraints of the agents that wouldn’t appear if we got rid of this methodology. The real world is stock flow consistent; so we think that macroeconomic models have to be too, whatever the problem at hand. That’s why SFC methodology appears to us as fundamental at this stage, even if the core of the paper is not to build a SFC model.
2.1. A three-sector model with inter-firms relationships

2.1.1. Structure of the model

The SFC methodology is based on two stages. It is first necessary to establish the two matrixes of the model: the flows (transactions) matrix and the stocks matrix. The flows matrix describes the monetary flows between agents. The stocks matrix describes the stocks of assets that agents hold at a point of time. From the flows matrix, one can derive a set of accounting identities that will form the first equations of the model.

There will be three productive sectors in our model: the consumption goods sector (sector “C”), the investment goods sector (sector “I”), and the intermediate goods sector (sector “M”). This sector produces an input of whatever kind. It sells it to sector C. However, all three sectors buy investment goods (sector I produces its own investment goods). The central point is that the relation between sector M and sector C can be deeper and more complex than a simple buying/selling relationship. It can be a subcontracting relationship, or a preferential supplier relationship. This means that we will assume there is some power and hierarchy in this relationship: firms of sector C can try to impose price cuts to firms of sector M. These suppliers are thus in a dominated position: they are under the thumb of firms in sector C. Our model will furthermore be based on the following assumptions:

- There is no State sector;
- There is no foreign sector, or the model is a world economy model;
- There is only direct labour cost;
- We assume away capital depreciation, or more precisely we only consider net flows;
- The intermediate good is just a cost for sector C: firms of this sector just buy it, possibly transform it and resell it. Figure 1 presents the structure of our artificial economy.

Figure 1. Structure of the artificial economy
Annexes 1 and 3 present flows and stocks matrices. From the first matrix the accounting identities listed in annex 2 can be derived: for each row and for each non trivial line (i.e. each line composed of more than two distinct variables) of the flows matrix, an accounting identity can be described. These 16 accounting identities (10 rows and 6 non trivial lines) will give 15 equations in the model: it is necessary to keep one of these identities away to form the “hidden equation” that will allow to check for the consistency of the model. Identity (p) will here play this role.

Accounting identities are listed from (a) to (p) in annex 2. We will hereafter describe the behavioural equations of the model, and will numerate these equations. When an equation is derived from an accounting identity (i.e. it is just an accounting identity rewritten in another form), its number will precise from which identity it is derived11.

2.1.2. Behaviour of agents

We now have to define the behaviour of agents, using as many equations as necessary, and defining, if needed, new variables so as to get as many equations as variables at the end.

Households: workers and rentiers

We assume households to be divided into two classes: workers and rentiers. Both have a traditional Keynesian consumption function. Consumption of workers, $C^w$, depends of their wages $W_c, W_m, W_i$, and of their money stock $m_d^w$. The consumption of rentiers, $C^R$, depends on distributed profits (by firms and by banks) $\Pi^D_c + \Pi^D_m + \Pi^D_i + \Pi^D_b$, and on their money stock $m_d^R$:

$$C^w = p_c q_c^w = \alpha_1 \cdot (W_c + W_m + W_i) + \alpha^w \cdot m_d^w \quad (1)$$

$$C^R = p_r q_r^R = \alpha_3 \cdot (\Pi^D_c + \Pi^D_m + \Pi^D_i + \Pi^D_b) + \alpha^R \cdot m_d^R \quad (2)$$

Parameters $\alpha_j$ represent the corresponding propensities to consume. At this stage, it is important to underline the fact that we will assume the inequality: $\alpha_1 > \alpha_3 > \alpha_2$, which means that the propensity to consume out of wages is far superior to the propensity to consume out of distributed profits, which is also far superior to the propensity to consume out of the money stock. Workers spend part of their total revenue (wages), and hold the other (small) part under the form of money deposits $\Delta m_d^w$:

$$\Delta m_d^w = W_c + W_m + W_i - C^w \quad (a-3)$$

On the other hand, rentiers buy shares ($\Delta e_j$) at a unit price $p e_j$ and have thus two means of saving (shares12 and money):

$$\Delta m_d^R = (\Pi^D_c + \Pi^D_m + \Pi^D_i + \Pi^D_b) - C^R - (\Delta e_j \cdot p e_c + \Delta e_m \cdot p e_m + \Delta e_i \cdot p e_i) \quad (b-4)$$

For the rest of the analysis, shares are just assumed to play the role of a supplementary source of funds for firms; we will assume their unit price to be equal to 1 for the purpose of simplicity.

11 For example: (b-4) for an equation derived from identity (b) in annex 2, and (12) for an equation that does not come from any accounting identity.

12 In our model, banks don’t issue shares as they don’t invest.
Firms: sectors C, M and I

Concerning firms, the first thing to do is to describe their investment behaviour. Firms have a desired amount of investment \( I^d_j \) that corresponds to a desired rate of accumulation \( g^d_j \) for each period:

\[
I^d_j = g^d_j \cdot K_{j-1} \quad \forall j = c, m, i. \tag{5}
\]

With \( K_j \) the capital stock of each sector. This desired rate of accumulation is described by a kalleckian investment function: it depends on a constant term \( \gamma_{0j} \), on the rate of undistributed profit of the previous period \( r_{j(l-1)}^{cf} \), on the rate of capacity utilization \( u_{j(l-1)} \) and on a borrower’s risk index that can be assimilated with what Le Héron and Mouakil (2008) call a “financial condition index”:

\[
g^d_j = \gamma_{0j} + \gamma_{1j} \cdot r_{j(l-1)}^{cf} + \gamma_{2j} \cdot u_{j(l-1)} - \gamma_{3j} \cdot BR_{j(l-1)} \tag{6}
\]

This borrower’s risk \( BR_j \) depends on the rate of interest \( i_j \) and on the rate of indebtedness of each sector, \( \text{lev}_j \):

\[
BR_j = i_j \cdot \text{lev}_j \tag{7}
\]

The rate of undistributed profit \( r_{j}^{cf} \) in each sector corresponds to sectoral undistributed profits \( \Pi_j^U \) divided by the value of the capital stock \( p_i \cdot K_j \), estimated at its renewal cost:

\[
r_{j}^{cf} = \frac{\Pi_j^U}{p_i \cdot K_j} \tag{8}
\]

The rate of indebtedness is for its part the total stock of loans \( L_j \) divided by the value of the capital stock:

\[
\text{lev}_j = \frac{L_j}{p_i \cdot K_j} \tag{9}
\]

The amount of desired investment, the amount of undistributed profits \( \Pi_j^U \) and the amount of newly issued shares \( \Delta e_j \cdot pe_j \) give an amount of desired external (banking) financing \( \varphi_j^d \):

\[
\varphi_j^d = p_i \cdot I^d_j - \Pi_j^U - \Delta e_j \cdot pe_j \tag{10}
\]

Firms are supposed to issue shares as a fixed part \( x_j \) of distributed profits \( \Pi_j^D \) at each period: we thus arbitrarily assume that rentiers reinvest a fixed part of their dividends at each period. It is a different formulation from Godley and Lavoie (2001) who assume, following Kaldor (1966) that firms issue shares as a fixed part of their investment, but this is a necessary simplification in order not to complexify too much the model.

\[
\Delta e_j \cdot pe_j = x_j \cdot \Pi_j^D \tag{11}
\]

\[
e_j = e_{j(l-1)} + \Delta e_j \tag{12}
\]

Undistributed profits \( \Pi_j^U \) are the difference between total profits \( \Pi_j \) and distributed profits \( \Pi_j^D \):

\[
\Pi_j^U = \Pi_j - \Pi_j^D \tag{l, m, n-13}
\]

This amount of distributed profits is assumed to be a constant share \( (1- s_f) \) of total profits as is usually assumed in SFC models:
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keynesian perspective

\[ \Pi_j^p = (1 - sf) \cdot \Pi_j \]  \hspace{1cm} (14)

The total amount of profits is for its part equal, for each sector, to turnover sales \( p_jq_j \) less total production costs of the period, that is to say wages \( w_j \cdot N_j \), intermediate consumptions \( p_m \cdot q_m \) for the sector \( C \), and interest payments \( i_c \cdot L_c \):

\[ \Pi_c = p_c \cdot q_c - w_c \cdot N_c - p_m \cdot q_m - i_c \cdot L_c \]  \hspace{1cm} (c-15)

\[ \Pi_m = p_m \cdot q_m - w_m \cdot N_m - i_m \cdot L_m \]  \hspace{1cm} (d-16)

\[ \Pi_i = p_i \cdot q_i - w_i \cdot N_i - i_i \cdot L_i \]  \hspace{1cm} (e-17)

This gives the rate of profit \( r_j \) of each sector:

\[ r_j = \frac{\Pi_j}{p_i \cdot K_j} \]  \hspace{1cm} (18)

The rate of capacity utilization \( u_j \) is the ratio of actual output \( q_j \) and potential (or full capacity) output \( q_{jFC} \). This latest depends on the capital stock \( K_j \) and on the capital/output coefficient \( \sigma_j \) of each sector:

\[ u_j = q_j/q_{jFC} \]  \hspace{1cm} (19)

\[ q_{jFC} = K_j/\sigma_j \]  \hspace{1cm} (20)

The number of employed workers is obtained by dividing actual output \( q_j \) by labour productivity \( \mu_j \):

\[ N_j = q_j/\mu_j \]  \hspace{1cm} (21)

This allows for defining the rate of growth of total employment \( \dot{N} \):

\[ \dot{N} = \sum_{j=1}^{\infty} \frac{N_j - \sum_{j=1}^{\infty} N_{j(-1)}}{\sum_{j=1}^{\infty} N_{j(-1)}} \]  \hspace{1cm} (22)

It is now necessary to make some considerations concerning the productivity of labour. In
SFC models, this productivity is usually taken as constant, which can be a problem. We
choose here to model this labour productivity as variable, depending on the evolution of the
rate of capacity utilization \( u_j \). This means that firms absorb part of changes in demand via
changes in labour productivity: they don’t hire nor fire more workers immediately but “use”
labour more intensively when demand rises and less intensively when it declines. This effect
is only partial: it can soften variations of employment but never cancel them out.

\[ \mu_j = \mu_{j(-1)} + \phi \cdot (u_j - u_{j(-1)}) \]  \hspace{1cm} (23)

With \( \phi \) taken as constant, and identical for all sectors.

Let us now describe the determination of sectoral outputs. The output of sector \( C \) comes
from workers’ consumption \( C^w \) and rentiers’ consumption \( C^R \), all divided by the price of the
consumption good:

\[ C^w = p_c q_c^w \text{ which gives } q_c^w = \left( \frac{C^w}{p_c} \right) \]  \hspace{1cm} (24)

\[ C^R = p_c q_c^R \text{ which gives } q_c^R = \left( \frac{C^R}{p_c} \right) \]  \hspace{1cm} (25)

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That is to say \( q_c = q^w_c + q^R_c \) \((k-26)\)

The output of the intermediate sector \( q_m \) is determined by the technical-input coefficient of the consumption sector \( \alpha_c \), assumed to be fixed:
\[
q_m = \alpha_c \cdot q_c
\]
\((27)\)

Finally, the production of the investment sector \( q_i \) depends on investment expenses \( I_j \) of all sectors of the economy:
\[
p_i q_i = p_i (I_c + I_m + I_i) \quad \text{giving} \quad q_i = (I_c + I_m + I_i)
\]
\((28)\)

Concerning the determination of prices, we assume that the price of the consumption good \( p_c \) is exogenous, so as to simulate the shocks we will want to:
\[
p_c = \bar{p}_c
\]
\((29)\)

The price of the investment good \( p_i \) is for its part the only price to be determined by a traditional mark-up equation, with an exogenous gross profit margin \( \theta_i \):
\[
p_i = (1 + \theta_i) w_i / \mu_i
\]
\((30)\)

For the price of the input \( p_m \), we assume that it is subject to a bargain between managers of firms in sector C and those of firms in sector M: the latest would like to sell their product at a higher price than the first would like to buy it:
\[
p_m = p^C_m (1 - \Psi) + p^M_m \Psi
\]
\((31)\)

with \( \Psi \) the relative bargaining position of the consumption good firms, \( p^C_m \) the target price of sector C, and \( p^M_m \) the target price of sector M.

We also introduce conflict in wage determination, but for the three sectors of the economy:
\[
w_j = \lambda_j \cdot \tilde{w}^f_j + (1 - \lambda_j) \tilde{w}^w_j
\]
\((32)\)

with \( \lambda_j \) the bargaining power of managers, \( \tilde{w}^f_j \) their target wage rate and \( \tilde{w}^w_j \) the target wage rate of workers. Total sectoral wages expenses \( W_j \) are thus:
\[
W_j = w_j \cdot N_j
\]
\((33)\)

Banks

We now have to describe a crucial part of our model: the behaviour of banks. We chose to model banks as active entities: they don’t afford passively all credits asked by firms, but ration credit and apply different premium risks to each sector. We decide to follow most of the formulation of Le Héron and Mouakil (2008) on this point. We have already said that firms have a desired amount of external finance \( \varphi^d_j \), and ask this amount to banks. These banks afford an “authorized” or “afforded” amount of external finance \( \varphi^a_j \) which is a part of the desired amount, but by reducing it of a lender’s risk factor \( LR_j \):
\[
\varphi^a_j = (1 - LR_j) \varphi^d_j
\]
\((34)\)

This risk parameter depends upon three elements:

- a basic lender’s risk \( LR_{0j} \), specific to each sector;
- the indebtedness ratio of each sector \( lev_j \);
- the self-financing rate \( TAF_j \) of each sector.

\[
LR_j = LR_{0j} + \varepsilon_{1j} \cdot lev_{j(-1)} - \varepsilon_{2j} \cdot TAF_{j(-1)}
\]
\((35)\)
The rate of self-financing is equal, for its part, to the ratio between undistributed profits $\Pi^U_j$ and investment expenses $p_i \cdot I_j$ of the period:

$$TAF_j = \frac{\Pi^U_j}{p_i \cdot I_j} \tag{36}$$

Banks thus decide, in fact, of the effective amount of investment of each sector $I_j$, as well as of the sectoral “authorized” rates of accumulation $g^a_j$:

$$I_j = \frac{\left(\Pi^U_j + \Delta e_j \cdot p e_j + \phi^a_j\right)}{p_i} \tag{f, g, h-37}$$

$$g^a_j = \frac{I_j}{K_{j(t-1)}} \tag{38}$$

This allows us to determine the evolution of sectoral capital stocks:

$$K_j = K_{j(t-1)} + I_j \tag{39}$$

Banks also apply different interest rates $i_j$ to productive sectors, on the basis of the lender’s risk $LR_j$:

$$i_j = i_0 \cdot (1 + LR_j) \tag{40}$$

$i_0$ being some kind of an exogenous base rate. Banks’ profits are thus:

$$\Pi_B = i_c \cdot L_c + i_m \cdot L_m + i_i \cdot L_i \tag{i-41}$$

Banks are supposed to distribute their entire profits to rentiers:

$$\Pi_B^D = \Pi_B \tag{o-42}$$

Finally, the variation of money supply $\Delta m^s$ is equal to the sum of newly afforded loans (which are equal, in practice, to “authorized” or “afforded” finance):

$$\Delta m^s = \Delta L_c + \Delta L_m + \Delta L_i = \phi^a_i + \phi^a_m + \phi^a_i \tag{j-43}$$

Banks are thus discriminating banks. This does not mean that money creation becomes exogenous, but that it is not “passively endogenous”. It is instead “actively endogenous”. Money supply always comes from credit demand, but banks can say “no” (Le Héron and Mouakil, 2008). In particular, for the reasons we detailed in the first part of this paper, the behaviour of banks will be translated by higher values of risks parameters for the firms of sector M:

$$LR_{0m} > LR_{0i} > LR_{0c} \quad \epsilon_{1m} > \epsilon_{1i} > \epsilon_{1c} \quad \epsilon_{2m} > \epsilon_{2i} > \epsilon_{2c}$$

The role of banks in our model will be shown to be crucial, as they refer to firms’ ability to maintain internal finance when deciding to afford credit or not. Banks have thus a very important role for our case of competition not leading to a reduction in profit margins. But in the end, it is self-finance that is important twice: in itself but also to get access to external finance.

2.2. Simulations

We present in table 4 hereafter the values of parameters we selected, and stationary values of important endogenous variables. This allows us to be sure that the model does not produce incoherent endogenous variables. However the model does not aim at producing the real...
variables of a particular economy, but only values that could be true. This model is thus before all an analytical tool. We stress the fact that coefficients of investment functions are identical for the three productive sectors, thus showing no difference a priori between these sectors, except coefficient $\gamma_j^j$ which represents the financial cautiousness of each sector (table 4). Simulations will thus be based on a selected set of particular parameters. The model has however been subject to a test of numerous simulations with other values of parameters (however close to selected values), so as to make sure that our results don’t come from a particular configuration of parameters and that evolutions of variables were always in the same direction. The model we selected thus represents a “central” set of parameters.

<table>
<thead>
<tr>
<th>Investment functions</th>
<th>Consumption functions</th>
<th>Saving rate of firms</th>
<th>Production coefficient</th>
<th>Parameters of risks</th>
<th>Parameters of risks</th>
<th>Parameters of risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma_j^j = 0.025$</td>
<td>$\alpha_i = 0.95$</td>
<td>$s_f^c = 0.5$</td>
<td>$\alpha_c = 0.4$</td>
<td>$e_i^1 = 1.5$</td>
<td>$e_c^2 = 0.09$</td>
<td>$LR_{oc} = 0.05$</td>
</tr>
<tr>
<td>$\gamma_j^j = 0.2$</td>
<td>$\alpha_i^e = 0.05$</td>
<td>$s_f^m = 0.8$</td>
<td></td>
<td>$e_m^1 = 2.5$</td>
<td>$e_m^2 = 0.13$</td>
<td>$LR_{om} = 0.15$</td>
</tr>
<tr>
<td>$\gamma_j^2 = 0.02$</td>
<td>$\alpha_i^g = 0.15$</td>
<td>$s_f^i = 0.6$</td>
<td></td>
<td>$e_i^1 = 2$</td>
<td>$e_i^2 = 0.11$</td>
<td>$LR_{oi} = 0.1$</td>
</tr>
<tr>
<td>$\gamma_j^3 = 1$</td>
<td>$\alpha_j = 0.6$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\gamma_j^3 = 2$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\gamma_j^3 = 1.5$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Required/desired rates of self-financing

\[ T\tilde{A}F_m^0.91 T\tilde{A}F_c^0.79 \]

<table>
<thead>
<tr>
<th>Values of the main endogenous variables</th>
<th>Desired rates of accumulation</th>
<th>Utilization rates</th>
<th>Rate of growth of employment</th>
<th>Authorized rates of accumulation</th>
<th>Applied interest rates</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>$g_c^d = 0.04$</td>
<td>$u_c = 0.71$</td>
<td>$\tilde{N} = 0.038$</td>
<td>$g_c^a = 0.038$</td>
<td>$i_c = 0.041$</td>
<td>Share of wages = 0.69</td>
<td></td>
</tr>
<tr>
<td>$g_m^d = 0.04$</td>
<td>$u_m = 0.80$</td>
<td>$g_m^a = 0.038$</td>
<td>$i_m = 0.044$</td>
<td>Share of profits = 0.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$g_i^d = 0.04$</td>
<td>$u_i = 0.89$</td>
<td>$g_i^a = 0.038$</td>
<td>$i_i = 0.044$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.2.1. Unique shock on the price of the consumption good

The first shock we are going to simulate is a decrease in the price of the consumption good. More precisely, we will assume that following a competitive shock (the end of a cartel, or the condemnation of a combine, or a firm starting a price war…) the price of the consumption good is decreased. This price cut is achieved by a decrease in profit margins of firms in sector C (scenario n°1). Figure 2 shows the consequences on the rates of utilization of capacity.

---

13 We have simulated a cut in this price from 15,5 to 15,1.
Rates of utilization of all sectors increase. Firms of sector C are however more concerned, as the price cut directly stimulates demand of households, who keep on spending the same amount in consumption goods, as the consumption function assume they spend a fixed share of their monetary revenue. Our model thus shows, for one period, an important “quantity effect”, since consumers are able to buy an increased quantity of consumption goods, because of the drop in their price combined with a constant income\textsuperscript{14}. Sector C leads to a stimulated demand for intermediate as well as investment goods. This leads also to a rise in desired and “authorized” rates of accumulation (the first being always higher than the latest) (figure 3). Sector M reacts transitorily more intensively in its rates of accumulation, as it is lead by the demand of firms in sector C.

\textbf{Figure 3. Effect on sectoral accumulation rates}

This price shock also has effects on profit rates in the economy, be it before or after dividend distribution (figure 4). Firms of sector C have a higher rate of profit than before, due to the rise in their utilization rate. Even if these firms have to face a decrease in their price (so a decrease in their unit profit margin), they manage to restore their profit rate at a higher level than before: the “quantity” effect is more important than the “unit profit margin” effect.

\textsuperscript{14} In a somewhat puzzling way for a Keynesian model, it could be argued that we encounter here a positive Pigou effect which is improving firms’ productive positions. But, this Pigou effect cannot persist, since firms are facing a Fisher effect which is deteriorating their financial positions.
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Figure 4. Effect on profit rates

At the macroeconomic level, one can see that the rate of growth of employment is firmly stimulated at the date of the shock, due to the “quantity effect”: from 3.8% to near 8% (figure 5). This effect however lasts only one period, and the rate of growth of employment then comes back near to its initial value: 3.90% against 3.84% initially.

Figure 5. Effect on the rate of growth of employment

Another consequence of the price shock is the rise in the real wage of workers, in all sectors, due to the fall in the price of the consumption good (figure 6).

Figure 6. Evolution of real wages
If it was necessary to draw first conclusions on the effects of this price cut due to competitive pressures, one could say that the effects are beneficial. Firms of all sectors are in a better position than before, even firms of sector C, which have compensated the “margin” effect by a “quantity” effect. However, only the “productive position” of these firms is better. In fact, competition has also had effects in the “financial” positions of firms of sector C. To use a metaphor, one could say that the sales managers are enthusiasts while seeing figures 2 to 4, but financial managers are more pessimistic because the better productive position of firms is offset by a deteriorated financial position (figure 7). In theoretical terms, a Fisher effect is offsetting a Pigou effect. The decrease in unit profit margins (upper left-hand side of figure 7) leads to higher applied interest rates by banks (upper right-hand side of figure 7), higher indebtedness ratios (bottom left-hand side) and especially a lower rate of self-financing (bottom right-hand side). Financial situations are conflictual: firms of sector C are the only ones to be in a worse situation than before, the other ones being better than before. The mechanism is simple: by reducing their price, firms of the consumption sector have reduced the internal funds they can generate for the financing of their activity. They have partially offset this with external financing, which leads to a deterioration of their financial situation.

In our conception of the firm, firms of sector C won’t accept this situation in the long run. Should the competitive pressure keep on forcing firms to cut prices, these firms would find themselves in a non-viable situation. In the tradition of Eichner (1976) and Wood (1975), profit margins are not the result of market power but are just necessary (whatever the structure of the market) to internally finance part of investment expenses. More precisely, it is conceivable that firms (for the moment, firms of sector C) have a “desired”, or “required”, or even “target” rate of self-financing. If we assume (for the purpose of simplicity) that firms of sector C were initially at their desired rate of self-financing, the competitive shock leads them outside this desired rate. They thus have all the reasons to try to come back to their initial rate.
2.2.2. Upstream transfer of the price constraint

How can firms of sector C react in order to restore their situation and come back to their initial self-financing rate? The transfer on upstream firms (suppliers or sub-contractors) is the solution we will analyze here. To restore their financial position, downstream firms (sector C) can try to reduce their production costs, especially the cost of their inputs by imposing a reduction in the price of intermediate consumptions to their suppliers or sub-contractors (thanks to the advantageous balance of power explained in section 1.1.). Firms of sector M are moreover weaker than firms of sector C, for the reasons we underlined before. The threat of loosing contracts if they refuse price cuts is thus credible. Hence, suppliers are obliged to accept price cuts claimed by order-givers.

More precisely, we assume that the target input price of managers in sector C is not an exogenous variable (as it was previously the case in the model), but depends on the financial situation of firms in sector C. The targeted price for the input will change according to the self-financing rate of the previous period $TAF_{c(-1)}$ compared to the targeted self financing-rate $TAF_c$.

$$\Delta \tilde{p}_m^c = \beta_c \cdot (TAF_c - TAF_{c(-1)})$$

$$\tilde{p}_m^c = \tilde{p}_m^{c(-1)} + \beta_c \cdot (TAF_c - TAF_{c(-1)})$$

This equation simply means that whenever the self-financing rate is inferior to its target, managers of downstream firms (sector C) will reduce the buying price of input, i.e. the price of upstream firms’ good. The upstream constraint transfer is that firms of sector C can undergo a drop in the price of their own product without any change in their profit margins if they reduce the price of their intermediate consumption.

While adding this constraint transfer mechanism from sector C to sector M, and proceeding to the same drop in the price of consumption goods as in scenario n°1, we arrive at the scenario n°2. Figure 8 shows the effect on utilization rates. This time, sector M bears the constraint at the end: its utilization rate increases up to nearly 100%. Sector C sees its utilization rate rise under the effect of the shock, before it goes down again to be stabilised to a value slightly superior to the initial one. Sector I is relatively unaffected by the shock.

Figure 8. Effect on utilization rates of a drop in $P_c$ transferred on $P_m$

Desired accumulation rates first increase following the shock, but then remain superior to their initial values for the three sectors (figure 9 on the left). Accepted accumulation rates also increase in the three sectors, while banks’ policy keeps them below desired rates (figure 9 on the right). One can notice that the accumulation rate of sector M undergo an increase driven by the “quantity peak” in sector C, before being hit by a strong drop due to the price reduction.
imposed to this sector (drop in profit margins, so in profit rate, so in accepted accumulation rate), and finally stabilises to a slightly superior value as compared to the initial one. The accumulation rate accepted to the sector M is reduced temporarily before being restored to a slightly superior value. It is the only sector concerned by this move, which is the consequence of financial prudence and bank discrimination.

Figure 9. Effect on accumulation rates

The evolution of profit rates clearly shows the conflictive nature of this process: the profit rate before distribution drops in sector M, but slightly increases in sector C (figure 10 on the left). It means that firms of sector C have to reach a higher profit rate if they are to restore their initial self-financing rate after the price drop. The phenomenon is also apparent after dividend distribution (figure 10 on the right).

Figure 10. Effect on profit rates

From a macroeconomic viewpoint, the rate of growth of employment slightly increases after the initial peak (due to the “quantity effect”) in sector C. It goes from 3.83 % to 3.88 %.
This means that the fall in the price of the consumption good has a lower effect on employment when the constraint is transferred to upstream firms. This phenomenon is imputable to the hierarchy in bank discrimination: as firms of sector M are more dominated by banks than firms of sector C, the drop in $P_c$ transferred in a drop in $P_m$ ends-up in making the charge of adjustment lay on the one who has the weakest ability to bear it. The drain of profit margins realised by firms of sector C on firms of sector M is more costly to upstream firms than it is profitable for downstream firms.

Concerning real wages, they increase in the same way as before in the scenario n°1, because the price of consumption goods has decreased with unchanged nominal wages for the three sectors (figure 12).

If we have a look at the financial position of firms in each sector, we find again the conflictive nature of the process: firms of sector C succeed in keeping their ratios (and especially the self-financing rate) unchanged, but firms of sector M undergo the consequences of the constraint transfer since all of their financial indicators are deteriorated, in particular the self-financing and debt ratios (figure 13).
Figures of scenario n°2 show that constraint transfer from sector C to sector M has profound consequences on this last sector. We previously mentioned the role of bank discrimination. In figure 9, we notice an increased gap between desired and accepted accumulation rates. It straightforwardly implies a tension on productive capacities and utilization rate. If we combine this effect with the decline in self-financing rate and the rise of interest rates, we can easily conclude that these firms will not be able to remain in this situation without reaction. Competition among firms in sector C has pushed upstream firms in a delicate situation. If this competition lasts or strengthens, the suppliers or sub-contractors will not be able to survive. They cannot reconcile quantities and prices demanded by downstream firms. The survival of upstream firms will depend upon their ability to answer to downstream firms’ constraints.

The conclusions of scenario n°2 necessarily lead to a scenario n°3: firms of sector M have no choice but trying to transfer the constraints while reducing their costs. Upstream firms are in a weakness position in the economy (towards firms of sector C and banks). But they can nevertheless side step, because what is at stake is not necessarily to be the strongest, but not to be the weakest. And firms of sector M have the upper hand on weaker agents: their own workers will be the last link of the process of constraint transfer. Upstream firms may use their difficult financial position to justify wage moderation (or even wage reduction) or additional productivity gains to their workers. Again, these firms’ reasoning is microeconomic: trying to restore a desired financing structure by costs’ reduction is the only solution, at the microeconomic level, for firm survival. We thus make targeted wages $\tilde{m}_l^f$ of firms in sector M endogenous. We make it depend on the gap between the self-financing rate of the previous period ($TAF_{m(-1)}$) and the desired self financing rate ($TAF_m$):
\[
\Delta \tilde{w}_m^f = \beta_m \cdot \left( T\tilde{A}F_m - TAF_{m(-1)} \right)
\]
which gives:
\[
\tilde{w}_m^f = \tilde{w}_{m(-1)}^f + \beta_m \cdot \left( T\tilde{A}F_m - TAF_{m(-1)} \right)
\]
(45)

In our model, this constraint transfer from firms of sector M to their own workers is the only way to deal with the price drop imposed by sector C while keeping in touch with a self-financing target. This is the price to be paid if they want to preserve banks’ confidence and be able to answer the orders of firms on sector C without increasing their utilisation rate up to 100%.

From here, we will present the same variables than in the scenario n°1 and n°2, but introducing two “cascading” constraint transfers: from firms of sector C to firms of sector M, and from these to their own workers. Figure 14 shows that this solution allows for not making the utilisation of productive capacity too tense. Thanks to labour costs’ reduction, these firms manage to maintain i) a profit rate which is identical to its initial value (figure 16), ii) a stable debt ratio and a self-financing rate consistent with its target value (figure 19). This robust financial performance also allows for keeping banks’ confidence and limiting the gap between desired and accepted accumulation rates (figure 15). Thanks to this relatively unconstrained accumulation dynamism, the rise of productive capacities allows for a “soft landing” of utilization rate of firms in sector M (figure 14).

Figure 14. Effect on utilization rates of a drop in \( P_c \) transferred to \( P_m \) and then to \( w_m \)

We notice that this “cascading” transfer of constraint allows for dampening reactions in desired and accepted accumulation rates for sector M firms. While sidestepping the constraint due to drop in profit margins, firms succeed in preserving a kind of homogeneity of their productive situation. Transferring the constraint may be a solution for these firms to survive to a renewal of price drops imposed by firms in sector C.
Figure 15. Effect on accumulation rates

Desired accumulation rates

Accepted accumulation rates

Sectors C, M and I

Figure 16. Effect on profit rates

Before distribution

After distribution

Sectors C, M and I

Figure 17. Effect on the rate of growth of employment

At the macroeconomic level, the rate of growth of employment follows the same evolution: after a one-period peak due to a “quantity effect” in households’ consumption, it stabilises to a slightly superior level than its initial value: from 3.83% to 3.87%.
Concerning real wages evolutions, we have a mechanical effect of this transfer on workers of sector M: due to the price drop in sector C, the purchasing power of workers in sectors C and I improves, unlike the purchasing power of workers in sector M, which is worsening due to the constraint transfer (the nominal wages reduction in sector M is more important than the price decrease in sector C). The cascading constraint transfer thus leads to larger wage dispersion and rising inequalities (figure 18).

Figure 18. Effect on real wages

At the opposite of scenario n°2, the financial situation is stabilised for the three sectors: while transferring the burden of change on their workers, firms of sector M succeed in keeping their financial indexes to their past values, which means that the self-financing rate is at its target value (figure 19).

Figure 19. Effect on firms’ financial situation
Basically, this scenario n°3 indicates that the cascading transfer of competitive constraints is the only way for firms to face a competitive situation without causing deteriorated financial situations or/and tensions on productive capacities utilisation. Suppliers and/or subcontractors and (then) workers bear successively the charge of the dissociation between financial and productive structures which is initially triggered by competition pressure.

The last comment we want to stress concerns the evolution of profit margins in the three scenarios. In our last scenario, profit margins of sectors M and C rise compared to their initial values. At first sight, this could mean that competition strengthening in sector C, when transferred to other sectors in the economy, leads to rises in profit margins. This outcome partly stems from the slight increase in accumulation rates (figure 15). Desired and accepted accumulation rates go up in the three sectors after the adjustment of each sector to its desired self-financing rate. The second part of the explanation comes from the reduction of costs which mechanically raises the profit margins compared to unit costs. In the end, profit margins are not dependent upon market structure, but are dependent upon the couple accumulation plans / financing structure, as postulated by the Wood (1975) and Eichner (1976) tradition.

Synthesis and concluding remarks

We hereafter list the main conclusions of our model.

− A competitive price cut has small but globally beneficial effects on the economy, but leads to a deterioration of the financial situation of firms in the consumption sector (scenario n°1) who have to react in order to restore their self-financing rate;
− By transferring the constraint on the price of the intermediate good, that is to say by transferring the constraint on their suppliers, firms of the consumption sector manage to get out of this deteriorated situation, but contribute to offset the effects on the rate of growth of employment, and transfer their situation to the firms of the intermediate sector, who have less the ability to bear it, because of banking discrimination (scenario n°2). Small firms thus need, more than others, to maintain their profit margins;
− While reporting the constraint on their own workers, firms of the intermediate sector reduce again the effects on the rate of growth of employment (scenario n°3) and contribute to raise the inequalities among workers. Figure 20 presents the consequences of each scenario on the rate of growth of employment, and shows that transferring the constraint of price competition is not neutral at the macroeconomic level: each transfer contribute to offset the initially beneficial effects of the price cut;
− Last but not least, a competitive pressure on the consumption goods market does not lead to a reduction in profit margins, even if prices have fallen.
Of course, scenario n°3 is not the end of the story. As firms have stabilized their financial targets, competition can go on and the economy can go back at the beginning, and experiment scenario n°1 once again. Empirical values observed in the real world can thus just indicate at which step of the competitive process firms of different sectors are.

Our model describes important features of capitalist economies. We showed why and how firms have to resist to a reduction in their profit margins, and that constraints’ transfer are not neutral at the macroeconomic level. Price cuts don’t lead to a reduction in profit margins, but can be transferred to suppliers, which don’t have any choice but transferring it too, to their workers, who become the “small invisible hands” of the market. These transfers can offset the initially positive effects of a price cut. From this point of view, competition is no longer a way of allocating scarce resources but a way of sharing constraints.

Bibliographie


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Résumés

Price competition, inter-firms relationships, bank discrimination and wage inequalities: a post Keynesian perspective

The article analyses the impact of price competition on inter-firms relationships, bank discrimination and wages inequalities in a Post Keynesian micro/macro perspective. It engages in the debate on the effect of price competitive pressures on profit margins. Underlying the ability of firms to transfer the constraint of price pressures to other agents in the economy, and the role of credit discrimination by banks, the paper focuses on the case of a transfer to suppliers and/or subcontractors. We then build a macroeconomic model of a disaggregated economy to show the global consequences of such a mechanism. Simulations suggest that price competition doesn’t lead to a reduction in profit margins but rather to increased wage inequalities. Furthermore, the effect on employment of price pressures is all the more reduced that these price pressures are transferred to other agents.

Concurrence par les prix, relations inter-firmes, discrimination bancaire et inégalités salariales : une perspective postkeynésienne

L’article analyse l’impact de la concurrence par les prix sur les relations inter-entreprises, la discrimination bancaire et les inégalités salariales dans une perspective micro/macro postkeynésienne. Il s’engage dans le débat concernant l’effet des pressions de la concurrence par les prix sur les marges de profit. Basé sur la capacité des entreprises à transférer la contrainte de la pression concurrentielle sur les prix à d’autres agents dans l’économie, et sur le rôle de la discrimination de crédit par les banques, l’article se concentre sur le cas d’un transfert sur les fournisseurs et/ou les sous-traitants. Nous construisons ensuite un modèle macroéconomique sectoriel pour montrer les conséquences d’un tel mécanisme de report de contraintes au niveau global. Les simulations suggèrent que la concurrence par les prix ne mène pas à une réduction des marges de profit mais à une augmentation des inégalités salariales. De plus, l’effet sur l’emploi des pressions sur les prix est d’autant plus réduit que ces pressions sur les prix sont transférées à d’autres agents.

Competencia por medio de los precios, relaciones interfirmas, discriminación bancaria y desigualdades salariales, una perspectiva postkeynesiana

El artículo analiza el impacto de la competencia por medio de los precios sobre las relaciones interempresas, la discriminación bancaria y las desigualdades salariales en una perspectiva micro/macro postkeynesiana. Se introduce en el debate concerniente al efecto de la competencia por medio de los precios sobre los márgenes de beneficio. Basado sobre la capacidad de las empresas de trasferir la restricción de la presión competitiva sobre los precios hacia otros agentes de la economía, y sobre el rol de la discriminación de crédito por parte de los bancos, el artículo se concentra sobre el caso de una transferencia sobre los proveedores y/o los subcontratistas. Nosotros construimos a continuación un modelo macroeconómico sectorial para demostrar las consecuencias de un tal mecanismo de desplazamiento de las restricciones a nivel global. Las simulaciones sugieren que la competencia por medio de los precios no conduce a una reducción de los márgenes de beneficio sino a un aumento de las desigualdades salariales. Por otra parte, el efecto sobre el empleo de las presiones sobre los precios es tanto más reducido cuando esas presiones sobre los precios son transferidas a otros agentes.
Mots-clés : concurrence, économie postkeynésienne, report de contrainte, entreprises sous-traitantes, modélisation Stock-Flux cohérente

Keywords : competition, Post Keynesian economics, constraint transfer, upstream firms, Stock flow consistent modelling

Palabras claves : competencia, economía postkeynesiana, desplazamiento de la restricción, empresas subcontratistas, modelización Stock-Flux coherente

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