SUBCONTRACTING AND MONOPSONISTIC POWER IN A THREE SECTOR STOCK-FLOW CONSISTENT MODEL

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Abstract

The aim of the paper is threefold. It first tries to develop the real side of Stock-Flow Consistent models while introducing three sectors, especially one "input sector". Secondly, the paper analyses the consequences of the use of monopsonistic power by one of the sector, illustrating what can be at stake in subcontracting relationships in the economy. It then stresses a double domination phenomenon undergone by small firms: they are dominated by big firms and by banks. It concludes that the competitive situation in which the small firms are can be negative for the economy as a whole if these firms try to report price cuts on workers either through wages' restraints or productivity pressures.

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Introduction.

Since Lavoie and Godley published their seminal paper in 2001, the stock-flow consistent way of modelling economic activity has become very fashionable among Post Keynesians, especially those interested in financial and monetary analysis. Stock-flow consistent models bring a consistency between stocks and flows, and so avoid "black holes" (Zezza and Dos Santos, 2004, p: 84) and inconsistent assumptions.[1] This discipline allows for taking historical time seriously with the representation of a capitalist system that stresses traverse and shifting equilibria. However, as Kim (2006) points out, there has been little development in models including two sectors. SFC models have indeed been developed with a vertically integrated firms sector, producing its own capital goods, and producing consumption goods with labour. Kim (2006) provides for his part a two-sector model with target return pricing.

In this paper, we try to go further by adding a third sector to the model. We build a model where the consumption good sector is not integrated but buys a primary good to another sector (the input sector), both buying capital goods to the investment sector. In particular, we will analyse what happens when there are subcontracting relationships between the consumption good sector and the primary good sector. In that framework, we can model an economy where the consumption sector is composed of a small number of large firms whereas the input sector is composed of a large number of small firms. This means that the consumption sector can use monopsonistic power to impose price cuts to the input sector. But small firms of the input sector are not only dominated by the consumption sector, but also by banks, who impose them higher interest rates and limit credit due to their smaller size and higher risk.

The paper is divided into four sections. In the first section, we discuss the links between the three different sectors, sometimes illustrated by French examples. In the second section, we will build the social accounting matrixes and establish the behavioural equations. The third section will be devoted to simulations on the basis of chosen shocks. The last section will be devoted to economic policy discussions concerning the recurrent claims for competition enhancement.

[1] SFC modelling is no longer economics, if one believes the famous definition of economics attributed to Michal Kalecki (see Godley and Lavoie, 2006, p. 1): "I have found out what economics is; it is the science of confusing stocks with flows."

I. Real side of stock-flow consistent models.

SFC modelling has become increasingly fashionable among Post Keynesian economists since the publication of the "Lavoie-Godley" model in 2001 in the *Journal of Post Keynesian Economics*. Since then, a lot of developments have been achieved. However these developments often deal with the financial and/or monetary sides of the model. This trend is logical since it is precisely the purpose of that kind of model to focus on these aspects. The development of the real side of SFC models is not very frequent, if not inexistent for the moment. The decomposition between several sectors is not very widespread among Post Keynesians. For example, Lavoie (1992), Lavoie and Ramirez-Gastón (1997) build a two-sector Kaleckian model. For his part, Kim (2006) introduces two sectors in a SFC model. But the distinction always concerns the difference between the investment sector and the consumption sector. In this paper we want to bring in a third sector so as to build a relation between the production of consumption goods and an input which is required to produce them. This kind of disaggregated framework is nearly absent of the Kaleckian models, except in Harck (1980) and Harck (1981).

However, these relationships between sectors can have important consequences. A notable one is the fact that the link between these two sectors can be more complex than a simple "buying" relationship. To the contrary, the consumption good sector can try to develop sub-contracting relationships with some firms of the primary sector[2]. Sub-contracting implies a subordination link: the "order giver" decides of the quality and the quantity of the primary good produced. If, as is the case in France, the order-giver sector is composed of a small number of big firms and the primary sector of a lot of small firms, the order-givers have indeed some monopsonistic power. They can use this power to make prices of the primary product decrease. If economists have always insisted on monopoly power, they have much less underlined the power a firm can have on the prices of its inputs. In some important industries, like cars industries or supermarkets, the evidence for France reports that the practice can be to impose 2 or 3% price cuts each year to suppliers.

The big problem from the analytical point of view is that if one uses usual pricing policies (mark-up pricing, full-cost pricing or even target return pricing) in a Kaleckian model, the price cut in input goods will be passed on the price of consumption goods mechanically. This will also be interpreted as a simple margin reduction for the primary

[2] We will not discuss here of the reasons why firms may develop subcontracting instead of own production.

sector. But in the real world, on the one hand input price cuts are not necessarily passed on by big firms, and on the other hand suppliers can try to report the price cut to other agents, notably on workers through wage cuts "agreements", often presented as the only way to make the firm survive. This is precisely what we will try to do in the paper. We will thus examine two types of mechanisms:

- First, the order-giver firms can maintain their price while imposing cost reductions in the price of their inputs;

- Second, order-taker firms may try to transfer, though not immediately, these price cuts to workers while trying to reduce wages, if we assume as Dallery and Van Treeck (2009), that in an economy where different social groups have different, not necessarily compatible objectives and different ability to impose them, conflicts prevail and so one class of agents may transfer the adjustment constraint to another one which is not dominant (workers in this case).

In such a framework, it is necessary to make some prices exogenous in the model, at least at the beginning in order to study the dynamics of the model. The model we will present is thus composed of three producing sectors, one producing capital goods for every sector (including itself), a second sector producing primary/input goods for the third sector, which produces consumption goods.

Our model will thus focus on a domination phenomenon of small suppliers by big firms. As is commonly said, small is beautiful but big is powerful. However this is clearly not the only domination small firms are subjected to. Small firms are also dominated by banks. There are several reasons why small firms are more dominated by banks than big firms are. First, there is a "size effect" which insures the lender that he will be reimbursed one way or another. Here it is the "too big to fail" theorem that applies: the current crisis is a good example of a situation where big firms are helped by governments because letting them going bankruptcy would represent a too big risk for the economy. At the opposite, a small firm going bankruptcy is not a danger for the economy. The second reason concerns the sources of finance available to firms. Big firms are in general listed firms which can get money by issuing shares, whereas small (non listed) firms can't do it, or can do it but not in the same proportions. Small firms are thus more dependent on banks in their activity. For banks, small

firms are more risky. All that explains why banks generally apply higher interest rates to small firms, and also limit credit. Small firms are thus "double dominated".

II. The model.

a. Structure of the model.

We start by making some simplifying assumptions, in order to isolate the real side of the economy.

i. There is no government nor foreign sector;
ii. The economy is composed of five sectors: households, banks, investment firms, input firms (or "primary" firms) and consumption firms;
iii. There is no overhead labour;
iv. There are no equities[3];
v. There is no depreciation;
vi. The input good is only a cost for the consumption sector: the output of the primary sector is entirely determined by the output of the consumption sector, given a fixed proportion α. This input does not affect the productivity of workers. One may imagine that the consumption sector just buys the primary good and resale it as it is.

Table 1 presents the balance sheet matrix of our economy. The consumption sector is denoted as subscript "_c", the primary sector as subscript "_m" (as manufacturing), and the investment sector as subscript "_i".

<Insert Table 1 here>

Table 2 presents the stock matrix, which is very simple as we assumed away equities and portfolio choices.

<Insert Table 2 here>

[3] This assumption may appear too unrealistic, but we insist on the fact that we only want to examine the real side of the model and let the introduction of equities for future research.

The next step is to present the accounting identities that come from the transaction matrix.

(i) $W_c + W_m + W_i + \Pi_c^D + \Pi_m^D + \Pi_i^D + \Pi_b^D = p_c q_c + \Delta M^d$

(ii) $p_c q_c = p_m q_m + W_C + \Pi_c + i_c \cdot L_{c-1}$

(iii) $p_m q_m = W_m + \Pi_m + i_m \cdot L_{m-1}$

(iv) $p_i I_c = \Pi_c^U + \Delta L_c$

(v) $p_i I_m = \Pi_m^U + \Delta L_m$

(vi) $p_i I_c + p_i I_m + p_i I_i = W_i + \Pi_i + i_i \cdot L_{i-1}$

(vii) $p_i I_i = \Pi_i^U + \Delta L_i$

(viii) $\Delta L_c + \Delta L_m + \Delta L_i = \Delta M^s$

(ix) $\Pi_c^U = \Pi_c - \Pi_c^D$

(x) $\Pi_m^U = \Pi_m - \Pi_m^D$

(xi) $\Pi_i^U = \Pi_i - \Pi_i^D$

(xii) $\Pi_b = i_c \cdot L_c + i_m \cdot L_m + i_i \cdot L_i$

(xiii) $\Pi_b^D = \Pi_b$

(xiv) $\Delta M^d = \Delta M^s$

We have here 14 accounting identities including 5 "non-trivial" rows[4]. We will have to use 13 of these equations and use one as the hidden equation to check the consistency of the model. The last non-trivial row (equation (xiv)) will be assigned to this role.

b. Households

We then have to define the behavioural assumptions. Concerning households, they are assumed to consume a part a_1 of their current wage, a part a_2 of their current money stock and a part a_3 of distributed profits:

$$C = a_1 \cdot (W_c + W_m + W_i) + a_2 \cdot M^d + a_3 \cdot (\Pi_c^D + \Pi_m^D + \Pi_i^D + \Pi_b^D)$$

The flow of demand for money (i.e., household current saving) is just the difference between households' revenue and their expenses:

$$\Delta M^d = (W_c + W_m + W_i) + (\Pi_c^D + \Pi_m^D + \Pi_i^D + \Pi_b^D) - C$$

[4] A non trivial row is defined as a row that contains at least two different variables.

c. Firms

We assume that firms have a desired rate of accumulation and a desired amount of investment:

$$I_j^d = g_j^d \cdot K_{j-1} \qquad \forall j = c,m,i.$$

We assume a rather traditional desired accumulation function: the desired rate of accumulation depends on animal spirits of firms, the rate of cash flow (rate of undistributed profits), the rate of capacity utilization and on a financial condition index (fci) which denotes the financial situation of firms.

$$g_j^d = \gamma_{0j} + \gamma_{1j} \cdot r_j^{cf} + \gamma_{2j} \cdot u_{j-1} + \gamma_{3j} \cdot fci_j$$

$$fci_j = i_j \cdot lev_j$$

The desired amount of investment leads to a desired amount of external finance[5]:

$$\varphi_j^d = p_i \cdot I_j^d - \Pi_j^U$$

$$r_j^{cf} = \Pi_j^U / \left(p_i \cdot K_j\right)$$

$$lev_j = L_{j-1} / \left(p_i \cdot K_{j-1}\right)$$

$$\Pi_j^U = \Pi_j - \Pi_j^D$$

$$\Pi_j^D = \left(1 - s_f\right) \cdot \Pi_j$$

The equations of profits are specific to each sector:

$$\Pi_c = p_c \cdot q_c - w_c \cdot N_c - p_m \cdot q_m - i_c \cdot L_c$$

$$\Pi_m = p_m \cdot q_m - w_m \cdot N_m - i_m \cdot L_m$$

$$\Pi_i = p_i \cdot q_i - w_i \cdot N_i - i_i \cdot L_i$$

The utilization rates are defined as:

$$u_j = q_j / q_j^{FC}$$

and

$$q_j^{FC} = K_j / \sigma_j \qquad \sigma_j = \sigma \qquad \forall j$$

[5] In the model we will introduce some parameters so as to ensure that the desired external finance is never negative.

The total level of employment in each sector is given by the ratio of the output and the productivity level:

$$N_j = q_j / \mu_j$$

The level of full employment for the economy as a whole is given by:

$$N_{FE} = \sum_{j=c,m,i} (q_J^{FC} / \mu_j)$$

Which yields a particular but operative definition of the unemployment rate:

$$Un = \frac{N_{FE} - \sum_{j=c,i,m} N_j}{N_{FE}}$$

The determination of the levels of outputs is very specific to each sector:

$p_c q_c = C$ which yields $q_c = (C / p_c)$

The consumption sector is supposed to use a fixed proportion of the primary good for its own production:

$$q_m = \alpha \cdot q_c$$

Finally, the output of the investment sector is equal to the three sectors' investment expenses for the period:

$$p_i q_i = p_i (I_c + I_m + I_i) \Rightarrow q_i = (I_c + I_m + I_i)$$

d. Prices and wages determination

We assume the price of the consumption sector to be constant, so as to examine the consequences of costs cuts which are not passed through to the consumer.

$$p_c = p_{c0}$$

The price of the investment good is equal for his part to a simple mark-up pricing policy:

$$p_i = (1 + \theta_i) w_i / \mu_i$$

Concerning the price of the intermediate good, we will assume that it is subject to a bargaining process between firms of the primary sector and those of the consumption sector, each sector referring to a target price (which seems to be the case in the real world bargaining process about prices of inputs):

$$p_m = \Psi \tilde{p}_m^c + (1-\Psi)\tilde{p}_m^m$$

with Ψ the bargaining position of the consumption firms, $\tilde{p}_m^c$ the price of primary products targeted by consumption firms and $\tilde{p}_m^m$ the targeted price of the primary firms for its own product.

Concerning wages, we will suppose that they are determined by a conflict between firms and workers in each sector:

$$w_j = \lambda_j \cdot \tilde{w}_j^f + (1-\lambda_j)\tilde{w}_j^w .$$

With λ_j the bargaining position of firms, $\tilde{w}_j^f$ the targeted wage of firms and $\tilde{w}_j^w$ the targeted wage of workers.

The total wage bill in each sector is thus:

$$W_j = w_j \cdot N_j$$

e. Banks

Banks are in our artificial economy a key agent. Their behaviour is very important for the activity of firms and the behaviours of other agents. Banks operate by lending money to firms for their investment expenses, and apply different interest rates to these loans. We introduce several specific behaviours.

First, we will assume, as Le Héron and Mouakil (2008) do, that banks can limit credit. Following them, we assume that banks can say “no” to the external finance desires of firms. This does not mean that money becomes exogenous. It just means that the desired rates of accumulation of firms are not always achieved due to banks’ behaviours. The extent to what banks limit credit will depend on several things, notably the risk of borrowers. Banks will lend less money to firms judged as riskier. The core of our analysis is that banks consider small firms to be more risky than big firms, yielding less accepted external finance to small firms than to big firms. Moreover, the more indebted firms are, the riskier they are. And, the more profitable they are, the less risky they are.

The second specific behaviour is that banks apply different interest rates depending on the risk of firms. Not only do they limit credit to risky firms, but they also apply them higher interest rates.

What we will assume now is that the firms of the input sector are the riskiest firms, because they are small, they can't issue shares and banks know that the price of their product (so their turnover) is in part determined by the firms of the consumption sector, who are for their part big, powerful and less dependent to bank credit.

The accepted external finance is thus:

$$\varphi_j^a = \left(1 - LR_j\right) \cdot \varphi_j^d$$

$$LR_j = LR_{0j} + \varepsilon_{1j} \cdot lev_j - \varepsilon_{2j} \cdot r_{j-1}^{cf}$$

This gives birth to the realised or effective investment expenses (Le Héron and Mouakil, 2008):

$$I_j = \left(\Pi_j^U + \varphi_j^a\right) / \, p_i$$

Concerning interest rates, we have (Le Héron and Mouakil 2008):

$i_j = i_0 \cdot \left(1 + LR_j\right)$, i_0 being some kind of central bank base interest rate.

III. Simulations.

III.1. One shot rise in p_c

In a first step, we will briefly present some traditional results for Post-Keynesian economists. Due to a pressure to raise profit so as to satisfy greedy shareholders in a context of financialisation,[6] we assume an increase in the price of the consumption goods. Firms of the consumption sector are the big firms in which financialisation pressures for profit are the most relevant. Here, we assume first that these firms will try to increase their profit margin by increasing their prices, other things being equal. The consequences are straightforward: the

[6] See Hein and van Treeck (2008), Dallery (2009) or Dallery and van Treeck (2009) for an analysis of financialisation.

increase in consumption goods' prices leads to a drop in the purchasing power of all workers, since wages remain constant. This first simulation allows us to reproduce some standard Post-Keynesian results. In this first case, the economy is experiencing decreases in its growth rate, its utilisation rate and its profit rate (see Figure 1). In the Bhaduri and Marglin (1990) terminology, it means that the growth of the economy is wage-led ($\partial g / \partial \pi < 0$), its demand regime is stagnationist ($\partial u / \partial \pi < 0$), and capitalism is cooperative, since the negative effect of decreased utilisation on the profit rate overcompensates the positive effect of increased margin ($\partial r / \partial \pi < 0$).[7]

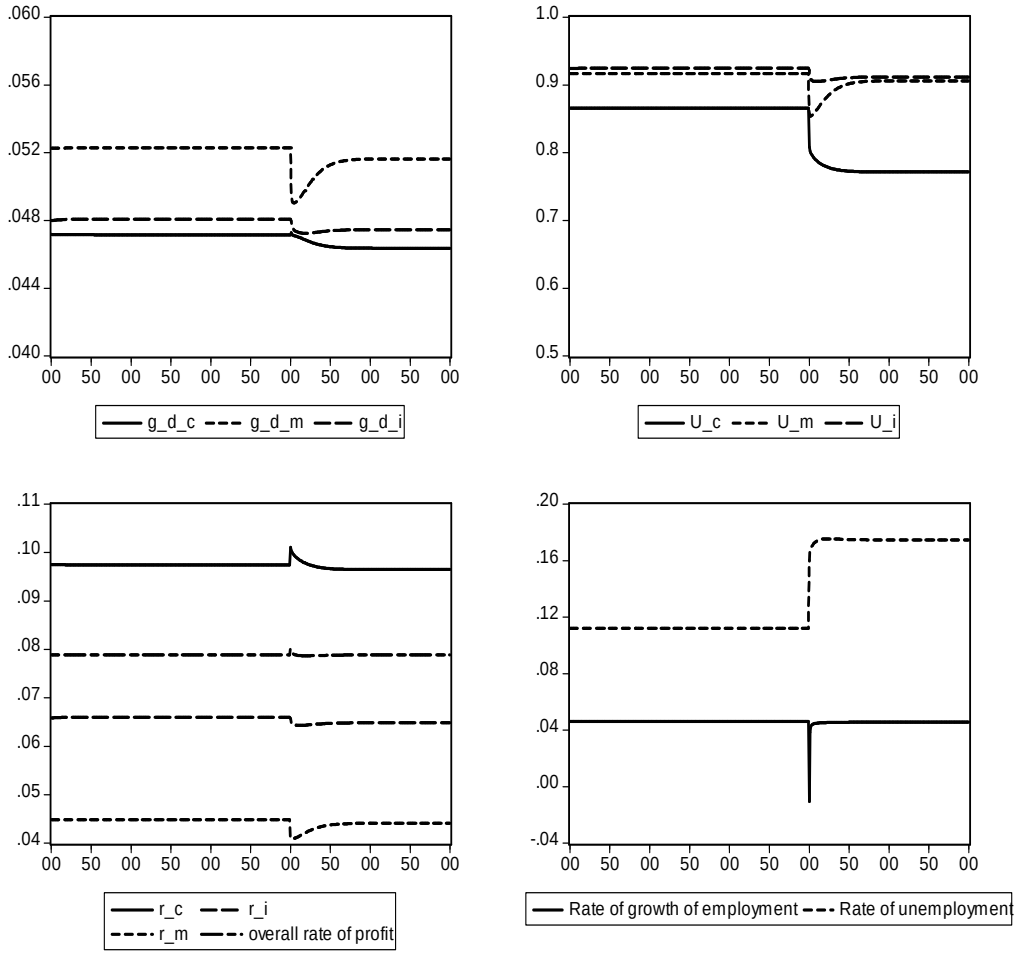

Figure 1: effects of a one shot rise in p_c

[7] It may not necessarily be clear enough on the graph, but the value of the profit rate for the consumption goods sector stabilizes at a lower level in the long run, despite the initial increase due to the increased profit margin (see Figure 1).

III.2. Profit requirements and the report of the constraints on the workers of the consumption sector

Facing strong competition on their market (notably due to the arrival of new competitors stemming from emerging countries), the firms of the consumption sector may not necessarily be in such a position allowing them to increase their prices, so as to boost profitability for shareholders. If the firms of the consumption sector suffer from competition pressures and lacks of power on the prices of their goods, they will try to increase their profit margin by reducing their costs. In a first case, we will assume that the firms of the consumption sector will try to report the constraint of shareholders' greediness on their own workers, by strengthening their wage target in wage bargaining.

The first effect of such a policy is a reduction in the money wage of the consumption sector workers. Since, the price level remains unaffected, the real wage of the main part of the labour force is reduced. This case typically illustrates the "paradox of costs", according to which a reduction of wages is a reduction of costs, but it is all the most a reduction of demand. If one looks at Figure 2, one can see more or less the same effects than before: the economy is still wage-led (inverse relationship between growth and the profit share), stagnationist (inverse relationship between utilisation rates and the profit share), but, with the new sharing of wealth in the consumption good sector, the economy seems to be now conflictive (positive, but weak, relationship between the overall profit rate and the profit share).

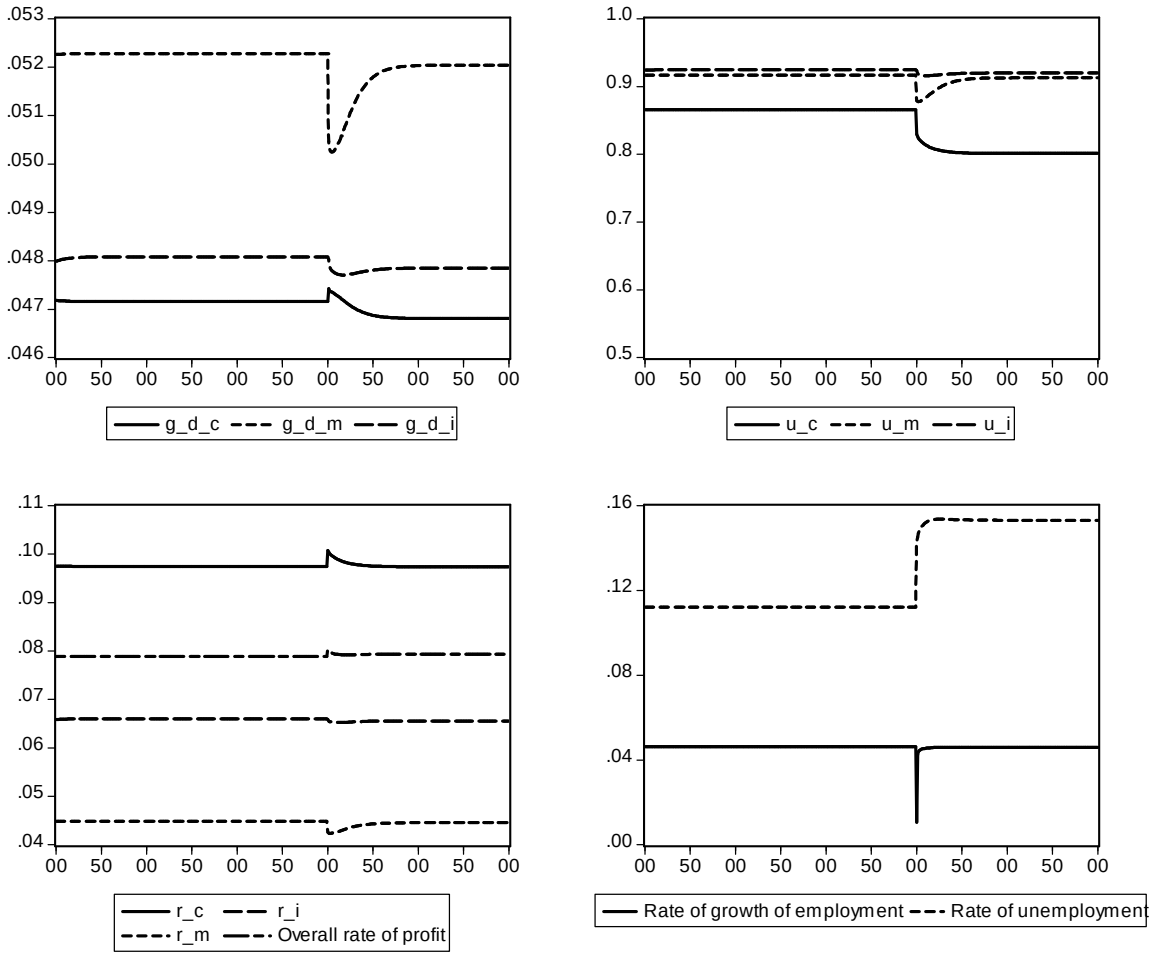

Figure 2: effects of a one shot drop in $\tilde{w}^{f}{}_{c}$

III.3. One shot cut in $\tilde{p}_{m}^{c}$

Another way for firms of the consumption sector to raise their profit margins and satisfy shareholders' greediness is to reduce inputs' costs. In the previous section, costs reduction was oriented towards labour costs reduction. Here, we are now going to examine what happens if the price of the primary product is reduced once without any change in other parameters. More precisely, we will suppose that the target price of the primary product by the consumption sector, $\tilde{p}_{m}^{c}$, decreases nearly by 3 %. The first effect of such a thing is to decrease the actual price of the primary product.

As is shown in Figure 3, in a first time, this leads to a higher rate of profit for the consumption sector and a lower one for the primary sector, the investment sector being only slightly affected. This leads however to a decline in the rate of utilization of the consumption

sector and to a rise in the one of the primary sector. For the two sectors, the mechanisms at work are the same: for the primary (respectively, consumption) sector, the decline in the price of the primary product means a lower (resp., higher) profit margin; Then, initially, for a given level of capacity utilisation, it leads to a lower (resp., higher) profit rate; This lower (resp., higher) profitability discourages (resp., stimulates) investment, so that capital accumulation is reduced (resp., fostered); But, then, in a second time, for given demand conditions, the decrease (resp., increase) in capital accumulation makes the growth of productive capacity become inferior (resp., superior) to the growth of demand, so that the utilisation rate goes up (resp., goes down); This last effect stimulates (resp., discourages) both the profit rate and the accumulation rate. This causal chain explains the reasons why, after the initial negative (resp., positive) shock on profit margin and consequently on profit and growth rates for the primary sector (resp., the consumption sector), the utilisation rate increases (resp., decreases) and stabilises the economy of this productive sector.

In the aggregate, the main result is that if we have a look at ratios of the whole economy, we can see that the average profit rate is left nearly unaffected by this shock, and so is the rate of growth of employment. The rate of unemployment is slightly increased, because of the decline in the utilisation rate of the consumption sector prevailing over the increase in the utilisation rate of the primary sector.[8]

[8] Despite the comparative sizes of change, the change in utilisation of the consumption sector is more important because this sector is more weighted than the others in total production, and just as employment.

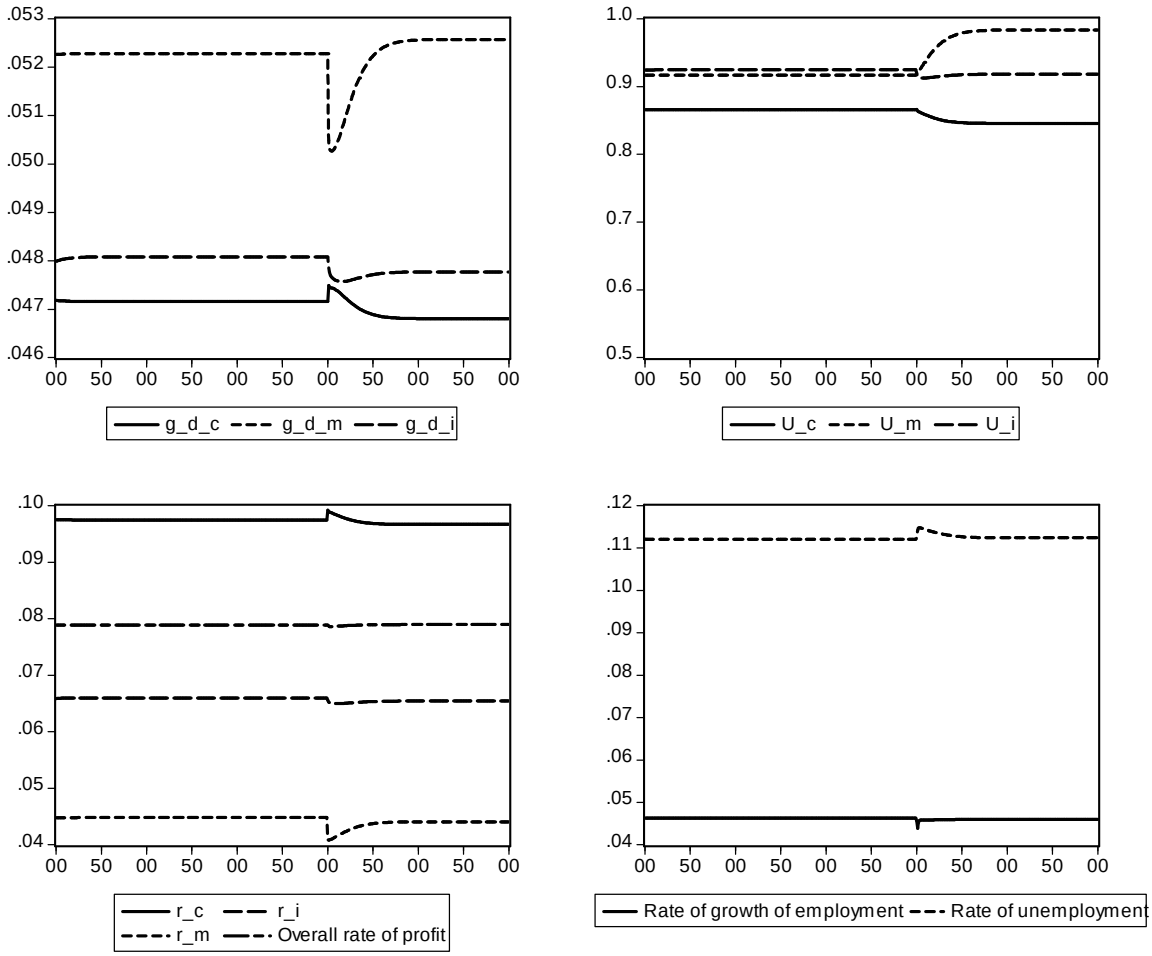

Figure 3: effects of a one shot drop in $\tilde{p}^{c}{}_{m}$

III.4. Report of the constraint on the workers of the primary sector.

Things may of course go differently if the primary sector tries to adjust to this constrained, lower profit margin by reporting the burden of change on their workers. That is to say, in order to meet the requirements of the consumption sector in terms of prices, and instead of reducing its profit margin, the primary sector may try to set a lower price by lowering its wage rate, be it directly or by concluding agreements with workers to raise the number of worked hours without paying them, or even hiring new less-paid workers. Due to the assumed competition between sub-contractors, one may think that they cannot impose their price. But they can of course adjust their costs.

If shareholders' pressure for profit is transferred to the firms of the primary sector through a drop in their prices, and then to the workers of primary sector firms through a proportional reduction of their wages, the dynamics of the economy is depicted by Figure 4.

In this case, the economy undergoes the same tendency than before, but the scale of changes in growth and profit rates are far more negligible. What is noteworthy in this configuration is that the increase in the unemployment rate is far more important. The reason is relatively simple. Since the primary sector has managed to preserve its profit margin, the initial shock on its capital accumulation is lower than before. The growth of its productive capacity is limited, but it is still superior to the growth of demand, so that the utilisation rate of the primary sector goes up, but less than before. In terms of employment, it means that the decrease of employment in the consumption sector is no longer counterbalanced by a strong increase in employment for the primary sector. In the end, the unemployment rate goes up more than in the previous case. Moreover, we can notice an initial, small drop in the utilisation rate of the primary sector. This effect results from the transfer of constraint on workers' shoulders. The drop in primary sector wages implies a reduction of consumption for the consumption sector, and so a reduction of demand for the primary sector (consumption goods are made with the input good, in a fixed proportion α).

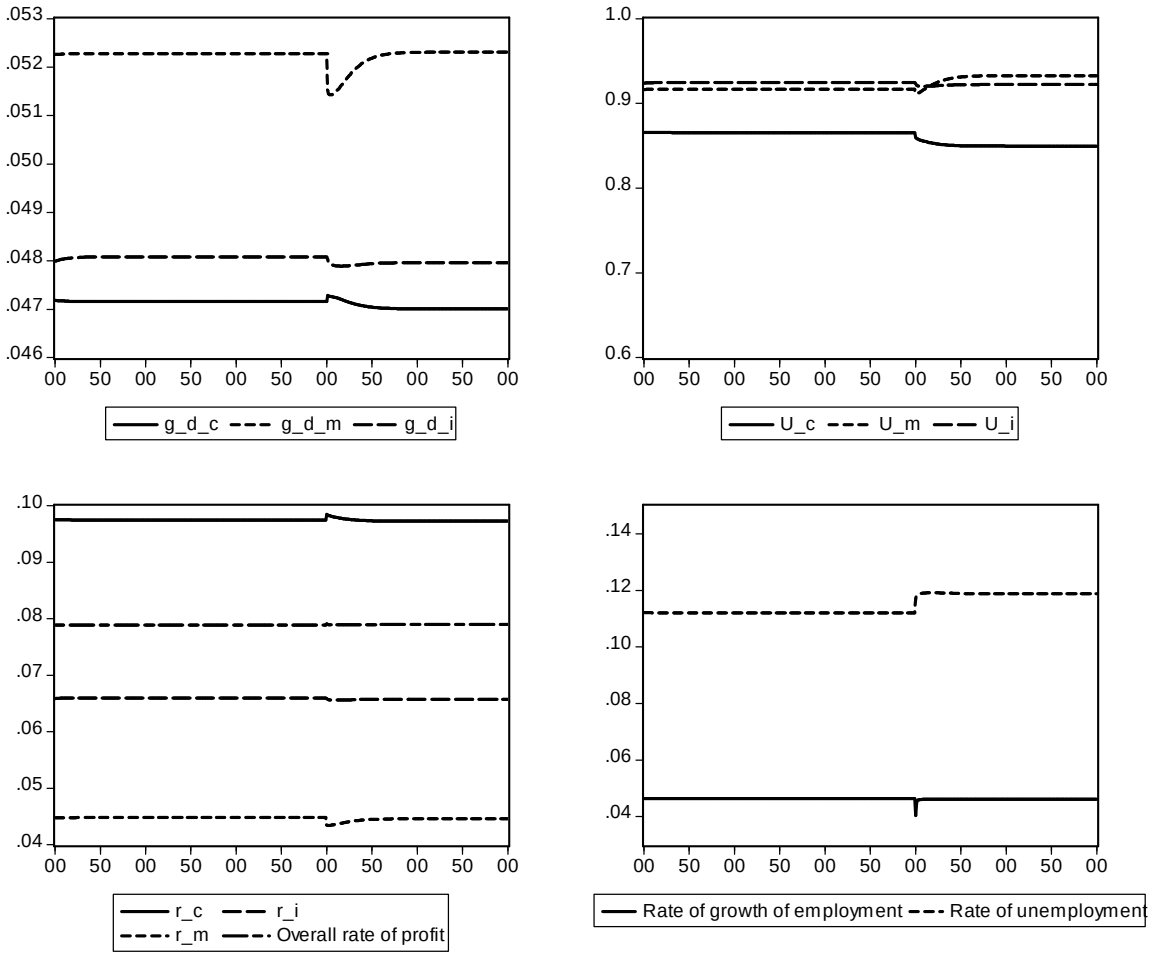

Figure 4: effects of a one shot drop in $\tilde{p}^{c}{}_{m}$ followed by a proportional drop in $\tilde{w}^{f}{}_{m}$

III.5. Report of the constraint on productivity of the primary sector.

Another way for the primary sector to adjust to the power of the consumption sector is to try to enhance the productivity of workers. What we mean here is that firms of the primary sector, instead of reducing wages - which could be difficult and unpopular-, may try to make people work a bit more intensively, or reduce workers' breaks. This kind of productivity gain does not lead to any income distribution. It is only designed to restore the rate of profit of the primary sector by enhancing the pressure over workers. We can call it "pathological" productivity gains as it does not lead to more expenses in new investment goods or expenses in research and development. We thus introduce a new conflict about the rhythm of the production process for workers:

$$\mu_m = \mu_0 + \beta\Delta\tilde{\mu}_m^f + (1-\beta)\Delta\tilde{\mu}_m^w$$

This equation means that the productivity of workers in the primary sector is determined by a "basic productivity" μ_0 and by a conflict over some minor adjustments $(\Delta\tilde{\mu}_m^f, \Delta\tilde{\mu}_m^w)$ in the working conditions, which increases or reduces this basic productivity.

Again, we will assume for purpose of simplicity that when p_m decreases, it reinforces the bargaining position of primary firms over the productivity determination (i.e. we suppose that the decrease in the price of the primary product changes β).

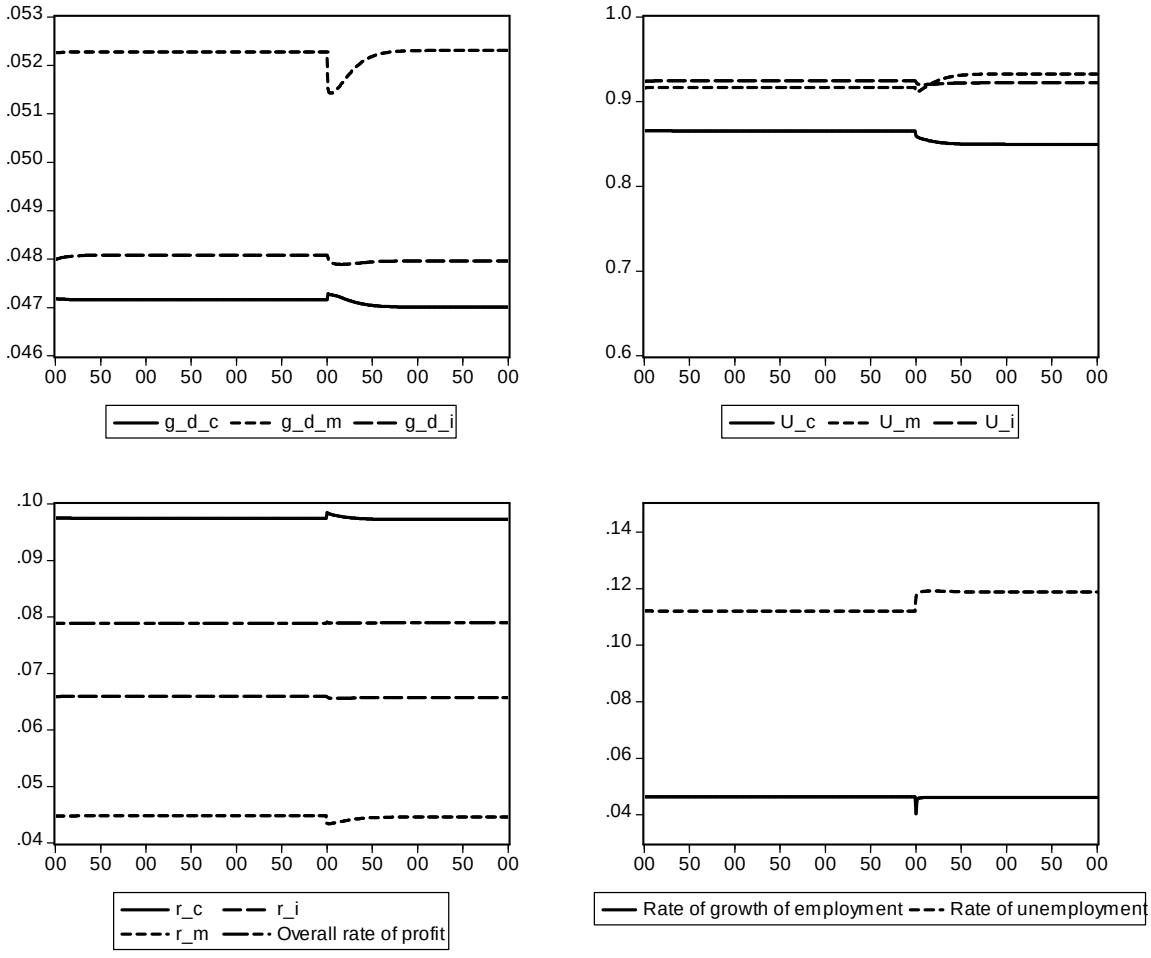

Fig.4 Effect of a 3 % cut in $\tilde{p}_m^c$ reported to the productivity of workers of the primary sector.

As can be seen, the macroeconomic consequences of such a report are the same as when the constraint is reported on wages. The rate of unemployment will increase and the rates of accumulation will be lower than before. This kind of report may seem to be more frequent as it could be unpopular to make workers accept wages cuts. But here the rise in productivity is not created by the rise in investment expenses. It just comes from a deeper

pressure over workers in their working time. This kind of "pathological" productivity gains can be damaging for the economy as a whole.

Conclusion

The paper drafts interesting conclusions on the real side of SFC models. While developing several sectors and especially one input sector in this kind of model, we are able to model subcontracting relationships in the economy. If we assume that "order-givers" are bigger than "order-takers", we can deduce that they get some monopsonistic power. Order-givers can use this power to achieve input price cuts they will not pass through to the consumer. Order-takers are thus in a situation of competition, and cannot refuse these price cuts. Neoclassical theory would thus conclude that competition would make margins decrease. As we showed, this is not the only, and all the most, this is not the most plausible case for the firms of the primary sector. But in a Post-Keynesian perspective, i.e. in markets without auctioneers and with pricing policies (Lee 1998), there is no reason why primary firms would accept to see their unit margins decrease. Everything leads to suppose that primary firms will try to adjust their costs, especially their labour cost, to this new situation. Competition thus leads firms to try to maintain their margins and certainly not to let them decrease. In our discussion, primary firms had two ways of maintaining their unit margins: lowering wages and improving productivity. In either case, the macroeconomic impact is negative, and the consumption sector can only maintain its profit rate if the primary sector doesn't completely offset the price cut by lowering wages or improving productivity. Letting competition rule economic activity can thus have damaging consequences as each agent will try to report the constraint on another one. In decentralised markets with different bargaining position, competition will be passed on by every one until it reaches the weakest agent in the economy. We hope this kind of discussion will serve future research about the Post Keynesian and heterodox conception of competition in economic systems.

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TABLE 1. Transactions matrix

		Households	Firms c		Firms m		Firms i		Banks		Σ
			current	capital	current	capital	current	capital	current	capital	
Final consumption		$-p_c q_c$	$+p_c q_c$								0
Intermediate consumption			$-p_m q_m$		$+p_m q_m$						0
Investment	c			$-p_i \cdot I_c$			$+p_i \cdot I_c$				0
	m					$-p_i \cdot I_m$	$+p_i \cdot I_m$				0
	i						$+p_i \cdot I_i$	$-p_i \cdot I_i$			0
Wages	c	$+W_c$	$-W_c$								0
	m	$+W_m$			$-W_m$						0
	i	$+W_i$					$-W_i$				0
Profits	c	$+\Pi_c^D$	$-\Pi_c$	$+\Pi_c^U$							0
	m	$+\Pi_m^D$			$-\Pi_m$	$+\Pi_m^U$					0
	i	$-\Pi_i^D$					$-\Pi_i$	$+\Pi_i^U$			0
	B	$+\Pi_B^D$							$-\Pi_B$	$+\Pi_B^U$	0
Interest payments	c		$-i_c \cdot I_c$						$+i_c \cdot I_c$		0
	m				$-i_m \cdot I_m$				$+i_m \cdot I_m$		0
	i						$-i_i \cdot I_i$		$+i_i \cdot I_i$		0
ΔLoans	c			$+\Delta L_c$						$-\Delta L_c$	0
	m					$+\Delta L_m$				$-\Delta L_m$	0
	i							$+\Delta L_i$		$-\Delta L_i$	0
ΔMoney		$-\Delta M^d$								$+\Delta M^s$	0
Σ		0	0	0	0	0	0	0	0	0	0

TABLE 2. Balance sheet matrix.

	Households	Firms c	Firms m	Firms i	Banks	∑
Capital		$p_i \cdot K_c$	$p_i \cdot K_m$	$p_i \cdot K_i$		$p_i(K_c + K_m + K_i)$
Loans		$-L_c$	$-L_m$	$-L_i$	$L_c + L_m + L_i$	0
Money	$+M^d$				$-M^s$	0
∑	$+M^d$	$p_i \cdot K_c - L_c$	$p_i \cdot K_m - L_m$	$p_i \cdot K_i - L_i$	0	-