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**New-Consensus Macroeconomic Governance in a Keynesian world,
and the Keynesian alternative**

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March 2006

Abstract

The paper presents both the New Consensus and Keynesian equilibrium within the usual four competitive macro-markets structure. It gives theoretical explanations of the pernicious effects that the NCM governance, which has been designed for ergodic stationary regimes, brings about in Keynesian non-ergodic regimes. It put forward Keynesian principles of governance which include monetary, budgetary and fiscal instruments, and suggest new directions for the positive and normative analysis of macro-policies.

JEL classification: E10,12,13,60,61,62,63

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1. Introduction

Macroeconomic governance includes two levels of decisive determinants which take part in the designing of macroeconomic policies. The institutional frame fixes the constitutional obligations and objectives of monetary and budgetary-fiscal policies, like price stability, high levels of employment and growth, limited deficits... With respect of the institutional frame, the second level concerns general principles for the conduct of macro-policies: macroeconomic targets (unemployment, budget balance, inflation...), automatic rules or discretion, flexibility of the policy mix around the constitutional objectives...

Macroeconomic governance and policy design depend, in a crucial way, on the vision regarding the long run properties of the economic system. For example, stochastic stationary regimes, say disturbed economic systems with constant rate of growth, may possess strong regulatory forces which anchor the system on a predetermined trend¹, and make rational expectations reliable. In such regimes, which inspired the New Consensus Macroeconomics (NCM), the economic governance only consists in stabilizing around the trend. On the other hand, there is no predictable trend in non-ergodic regimes, with the result that people do not have full confidence in their expectations, whether they make use of probabilities or not, and whatever kind of probabilities they make use of. That is the starting point of the liquidity preference theory, and of *The General Theory*. In these regimes, economic policy takes part in the trajectory of the economic system.

The weakening of Keynesian ideas among mainstream economists stems from a misplaced analysis of the relevance of demand policies in ergodic stationary regimes. Since automatic adjustment towards a 'natural trend' is postulated (owing to the beneficial 'competitive forces') in such regimes, monetary and fiscal policies may at best have some temporary effect, as New Keynesianism pointed out in the presence of nominal rigidities. Hence, the sole valid goal that monetary policy may target concerns inflation control so as to avoid excessive demand policies that could degenerate into public debt, seigniorage and finally, inflationary penalties owed to the inconsistency of discretionary policies. Moreover, budgetary and fiscal policy may involve temporary or permanent effects on relative prices and real variables because of distortions on the resources allocation process, which put the economic efficiency in opposition to the fiscal redistributive laws on which the social order is based.

¹ This point supposes that competitive mechanisms anchor the system in a predetermined trajectory. It has been identified as the dynamic stability of a stochastic process (ergodicity). See Vercelli (1991: 40, 154) and Davidson (2002: 39, 69).

But the problem Keynes pointed out is not about aggregate demand management in ergodic regimes, with the result that most of the critics addressed to Keynesian economics lack of consistency. The paper aims to theorize the inadequacy of the New Consensus Macroeconomics governance in non-ergodic regimes and to propose Keynesian principles of governance including monetary, fiscal and budgetary instruments. Section 2 compares the two alternative modelling principles within the usual four competitive macro-markets structure and discusses on markets interactions, adjustment processes and equilibrium properties. Section 3 deals with macro governance and economic policy issues. Section 4 concludes.

2. The four competitive macro-markets structure

This section first discusses the main implications of non-ergodicity with respect to the macroeconomic adjustment process; then we formalize and compare the New Consensus and Keynesian short run equilibrium behaviour within the usual four competitive macro-markets structure.

2.1. Uncertainty, confidence and macroeconomic adjustment

Because they disagree about the long run properties, the New Consensus and Keynesian Macroeconomics have distinct conceptions of the macro functioning of competitive markets. The former believe in the existence of natural laws, which reduce uncertainty to some short run phenomenon that does not matter in the long run (risk). The latter considers that the real world evolves within a stronger kind of uncertainty, which is inconsistent with the idea that there is any predetermined system trajectory. In such regimes, people may of course make expectations, including rational expectations, but the meaning and usefulness of such forward looking information is quite different from the one usually given to it. Keynesian rationality of expectations could admit that people make the best use of all the available information, not

that the long run trajectory is foreseeable. Whatever the kind of probabilistic tools people might make use of, they can not rationally consider their expectations as a sufficient basis for decision making as regards the long run. That is the reason why Keynes thought that decisions actually depend on the degree of confidence people have in the better previsions they can do (*The General Theory*, ch. 12). That is the very reason why the liquidity preference makes sense, with so heavy consequences for the macroeconomic adjustment process.

In ergodic competitive regimes, aggregate demand adjusts to the supply of goods, in the same time that investment adjusts to the supply of saving, because nothing hinders the adjustment of real wages and interest rate. If aggregate demand (and prices) decreases, the need for transaction-money falls, and the rate of interest decreases, rising the demand and the price of goods and moving the real wages towards their full employment level². But, in Keynesian contexts, the magnitude of the decrease in interest rate (the so-called 'Keynes effect') and of any positive real balance effect (people do not want to hold idle cash balances and therefore increase the demand for goods) depends on speculative decisions concerning the demand for money, with the result that income and employment finally depend on the degree of confidence of the moment and its impact on the demand for money³. Since nominal wages decrease does not ensure positive effects on effective demand (and price index) either⁴, there is no endogenous correction of unemployment, and, furthermore, Keynesian unemployment has to be thought as a situation where both real wages and interest rates meet a kind of threshold⁵.

² Theoretically, it is possible that flexible nominal wages reach this solution without any variation in the rate of interest (but some obstacles may jeopardize it; see *The General Theory*, Ch. 19): through positive effects on the marginal efficiency of capital and effective demand, wage flexibility may produce inflation, reduce real wage and rise production. If on the other hand nominal wages are sticky, the role of interest rate becomes crucial.

³ This is why Keynes thought about his general theory as a theory of shifting equilibrium (*The General Theory*, Ch. 21, Section I, third paragraph).

⁴ See the footnote n° 2.

⁵ Otherwise, wages would decrease continuously because of unemployment pressure. See Tobin (1975) and Palley (2005) about this kind of instability.

2.2. Markets interactions and general equilibrium

Within the usual four macro-markets framework, general equilibrium supposes a set of conditions which expresses suppliers and demanders plans. Because of the Walras law, three markets only must be explicit. Moreover, since the money supply is assumed to be exogenous for the moment, the general equilibrium conditions reduce to five: the supply and demand for labour conditions, the supply and demand for goods conditions, and the market for money clearing condition (see Table 1)⁶.

Table 1: NCM general equilibrium conditions (deviations from the 'natural trend')

Labour markets ($\rightarrow n, w$)	$n = \rho(p - w - \xi \hat{t}) + d$	(1) Demand: marginal productivity equalization to real labour cost (including taxes, see appendix n°1)
	$w - p^a = \theta n$	(2) Supply: marginal disutility of labour equalization to the expected real wage
Markets for goods ($\rightarrow y, \hat{t}$)	$y = \alpha n + c$	(3) Supply: short run production function (diminishing marginal product: $\alpha < 1$)
	$y = -\sigma \hat{t} + \lambda(\phi g + a) - \gamma \hat{t}$	(4) Aggregate demand (see appendix n°2)
Market for money ($\rightarrow p$)	$m = y + p - \eta \hat{t}$	(5) Market clearing condition (exogenous supply*); by setting the quantity of money, the central bank controls p and may (temporarily) impact the demand for labour and the supply of goods through inflation surprises: $p - p^a$
Market for bonds	Implicit	Walras law

* The case for endogenous money is discussed below.

n is the relative variation in employment

w is the nominal wage relative variation

p^a is the expected increase in prices till the next period

⁶ The reader will find more details on the methodological aspects of our modelling in Asensio (2005).

d is an exogenous term

y is the relative variation in volume of output

c represents exogenous technological factors

g is the relative variation in the government demand for goods

\hat{t} is the variation in the tax rate

a is the relative variation in the exogenous part of aggregate private demand

\hat{i} is the variation in the rate of interest

m is the relative variation in the quantity of money

We focus on the short run behaviour of the system, in the sense that the productive physical stock of capital is assumed to be constant during the period. Hence, variables are expressed in terms of relative variations from their initial value, excepting the rate of interest and the tax rate, which are expressed as variations. All parameters are positive.

Furthermore, we suppose that labour contracts have been negotiated, at the starting point of the period, on the basis of the expected rate of inflation for the current period (p^a). Hence, if $p^a = p$ (which is assumed to be true in the 'long run', as a result of rational expectations in ergodic stationary regimes), inflationary shocks have no effect on employment (equation 1) and production (equation 3), but in case of inflationary surprise ($p \neq p^a$), demand shocks influence the level of employment through the prediction error ($p - p^a$).

The model lends itself to an analysis in terms of aggregate supply and aggregate demand. Equations (4) and (5), which are similar to the IS-LM conditions, give the demand equation $y(p)$, which may be written as $p(y)$:

$$p = \frac{-(\eta + \sigma)y + \eta\lambda(\phi g + a) - \eta\gamma\hat{t}}{\sigma} + m$$

Equations (1), (2), and (3) give the supply equation:

$$y = \frac{\alpha\rho(p - p^a) + \alpha d - \alpha\rho\xi\hat{t}}{1 + \rho\theta} + c$$

Resolution yields y and p , which permits to solve for n by (3), then w by (2), and finally \hat{i} by (5). Remember that output variations do not really depend on current price index variations, but on the current price index error of prediction, as clearly shows the supply equation.

In recent versions of the NCM (see Romer, 2000), monetary policy consists in controlling the rate of interest rather than the quantity of money, which has to be considered as an endogenous variable⁷. In this case, output (y) is determined by the sole aggregate demand components (equation 4). Then we can get n by (3), w by (2), p by (1) and finally m by the function LM (equation 5), which actually is not required for determining real magnitudes⁸. It is however important to note that this demand led behaviour only may hold temporarily. Indeed, it can be shown that if authorities set the rate of interest so as to avoid any price index error of prediction (that is $p=p^a$), then the results are the same as in the case of exogenous money supply where m is set so as to avoid errors of prediction (the interest rate remains in this case at the 'natural' level). Since there can be no systematic prediction errors, but only stochastic ones, it is obvious from Table 1 that in the long run a) employment is exclusively determined in the market for labour, b) output and interest rate are determined in the market for goods, conditionally to the market for labour results, and c) money is necessary exogenous and governs the price index behaviour, in accordance with the pure Classical features.

Let now consider a context of Keynesian unemployment in which the rate of interest is exogenously determined by the monetary authorities (which does not control it perfectly however, especially if reductions are concerned; see below), and real wages have met an exogenous threshold (\bar{w}) owing to workers resistance. The current wage may deviate from this threshold when certain events occur, such as a change in unemployment rate or exogenous disturbances, like in equation 2_k of Table 2 (where n_f is the total labour force).

⁷ As Palley (2006) stated, this assessment of endogenous money substantially differs from the post-Keynesian one.

⁸ Notice that employment is determined by conditions which involve the market for goods, whereas prices are determined by conditions involving the labour market.

**Table 2: Keynesian 'shifting equilibrium' conditions
(deviations from the previous equilibrium)**

Markets for goods ($\rightarrow y, p$)	$y = -\sigma \hat{i} + \lambda(\varphi g + a) - \gamma \hat{i}$	(4) Effective demand drives aggregate supply
	$n = \rho(p - w - \xi \hat{i}) + d$ \Leftrightarrow $p = w + n - y - \dot{\alpha} + \xi \hat{i}$	(1) marginal productivity equalization to the real labour cost provides the mark-up price equation ('1 st postulate' holds; see appendix n°3)
Labour markets ($\rightarrow n, w$)	$n = \frac{y - c}{\alpha}$	(3) Demand: short run production function (diminishing marginal product: $\alpha < 1$)
	$w = \bar{w} - \theta_k (n_f - n)$	(2 _k) Rationed supply ('2 ^d postulate' rejected). Variable wage threshold
Market for money ($\rightarrow m$)	$m = y + p - \eta_k \hat{i}$	(5 _k) Market clearing condition (endogenous money supply); the demand for money is unstable, hence the CB imperfectly controls \hat{i} .
Market for bonds	Implicit	Walras law

Another Keynesian fundamental topic is the liquidity preference, which can explain unforeseeable shifts in the demand for money owing to the impact of uncertainty on the 'state of confidence' (*The General Theory*, Ch. 12). This specificity will be formally underlined through considering η_k as an exogenous variable which is subject to the volatility of expectations⁹. It has heavy implications on monetary policy because it makes the central bank control of long term interest rates questionable. When the monetary base is increased through lowering the short term rates, lower long term bank rates in principle boost the demand for credit, provided the liquidity preference do not shift too much. But an increasing liquidity preference may conversely make banks able to sell more credit without having to reduce their interest rates, for non-bank loans rates in this case tend to rise in order to compensate the

⁹ Actually, it is important to bear in mind that most equations of Keynesian models do not pretend to the stability that is usually assumed.

increasing liquidity preference. Moreover, the liquidity trap may also block the transmission process in case of generalized 'bearishness'. For these reasons, the NCM optimal monetary rule, which assumes that authorities always may adjust the rate of interest to the natural level, is irrelevant in a Keynesian context.

Interestingly, from a formal point of view, the model of Table 2 looks very much like the NCM model with endogenous money, especially when the labour force is constant in the short run ($n_f=0$), as it is usually assumed. Here again, output (y) is determined by the sole aggregate (effective) demand (equation 4), n by the production function (3), conditionally to the output level, w by equation (2), p by equation (1) and finally m through LM. These similarities have been a source of confusion for a long time, because they hide fundamental differences as concerns the signification and properties of equilibrium.

In Keynesian regimes, aggregate demand has not only temporary effects; it matters in the long run, and deficient effective demand may keep the economy away from full employment. In addition, there is volatility of expectations, and therefore volatility of aggregate relations and multiple possible equilibria and trajectories, since there is no objective anchor for them (no foreseeable trend). It is also this kind of volatility that makes the control of the long term interest rate, and therefore the role of monetary policy, questionable. More generally, it calls for a quite different macroeconomic governance approach.

3. Macro governance principles and macroeconomic policies

This section first presents the two competing macro governance approaches. The trials of applying NCM principles of governance in non-ergodic contexts then are compared with a more pragmatic Keynesian approach of macroeconomic policy.

3.1. Divergent governance principles

3.1.1. Controlling inflation

As shown in Table 2, equation (1) may be written as a mark-up relation, which reveals the distributive factors of inflation. These factors influence the rate of unemployment indirectly, through the monetary policy they may induce. Indeed, monetary policy may limit inflation by increasing the unemployment pressure on wages via higher rates of interest, so as to preserve the confidence of the public regarding the value of money.

In other circumstances the central bank may prefer to let cost-pushed inflation develop in order to preserve the economic activity, which supposes an increase of the money supply. Obviously, even when increasing costs are the primary cause, inflation always is a monetary phenomenon since it expresses higher monetary prices of goods and services. But whereas mainstream economics incriminate irresponsible or lax policies, the Keynesian approach points out the dilemma involved by distributive tensions. The former think that reducing monetary inflation has no permanent cost in terms of unemployment, whereas it does for the latter, as far as persistent tensions induce monetary authorities to maintain high interest rates.

3.1.2. Demand side policies

Because of the conviction that markets work as efficiently as possible in the long run, mainstream economics pleads in favour of little discretionary freedom and strong monetary control of inflation, which means avoiding excessive public debt and systematic temptation to get 'extra output' by means of inflation surprises. On the demand side, monetary and fiscal policies may be employed so as to reduce the output and price index volatilities around their long run known trajectory (Table 3). On the supply side, competitive distortions and other real rigidities, which explain the gap between the natural level of activity and the full capacity level, come under the competence of 'structural' policies.

Table 3: NCM governance principles (stabilization = 'natural trend' oriented rules)

Monetary policy ($\rightarrow \hat{i}$, 'Taylor rule')*	$p = -\beta n$	(6) $\beta \geq 0$, 'flexibility' of monetary policy, i.e. relative weight of unemployment deviations compared to price deviations (structural parameter)
Budgetary-fiscal policy ($\rightarrow g, \hat{t}$)*	$b = \psi n$	(7) $\psi \geq 0$, relative weight of unemployment deviations, compared to budget balance deviations (b) in the government preferences (structural parameter)

*These simple policy rules can be derived by minimization of loss-functions¹⁰.

Keynesian economics on the other hand states that the central bank imperfectly controls the long term rate of interest, inflation and/or employment, and would redeem budgetary and fiscal policy¹¹. Furthermore, since anti-inflation monetary policy may have depressive effects, income policy is preferred in case of inflationary distributive conflict.

As concerns demand policies, in contrast with the automatic policy rules of the NCM, the Keynesian approach suggests a pragmatic and progressive approach of discretionary macroeconomic policy, where authorities carefully avoid destabilizing expectations and private decisions, and therefore the whole aggregate system, because changing behaviours finally might make the policy inappropriate (as popularized the Lucas critique)¹².

Discretion in this way means that governments fix intermediate reasonable targets in terms of employment, price index and budget balance, according to the confidence they have in the chance of success, which depends on the actual context and move with it. In Table 4 below, public expenditures are adjusted so as to reach the targeted unemployment rate; taxes are

¹⁰ For example, the first order condition that g must verify in order to minimize $L=(1/2)(\zeta n^2+b^2)$ is

$\zeta n(\partial n/\partial g)+b(\partial b/\partial g)=0$, which is equivalent to $b=\psi n$ provided that $\psi=-\zeta(\partial n/\partial g)/(\partial b/\partial g)$. This approach sometimes raises difficulties that will not be discussed here.

¹¹ For a recent discussion, see Arestis & Sawyer (2003a,b).

¹² Because he was concerned with non-ergodic regimes, Keynes, who raised the question in *The General Theory* (Ch. 15, see the last third of Section II), found very different implications of the 'critique' (see Vercelli, 1991).

adjusted so as to more or less limit the budget balance variation, depending on the relative weight of unemployment compared with the budget balance. The central bank adjusts the rate of interest (if it can do it) so as to more or less reduce the rate of unemployment, depending on the relative weight of unemployment compared to inflation, which depends, among other things, on income policy ability to appease distributive tensions. Within this framework, economic policy yields a kind of flexible anchorage around full employment (μ may vary).

Table 4: Keynesian governance principles (pragmatism and discretion)

Income distribution policy	Temper $\bar{w}, \hat{\alpha}, \hat{t}$	appease distributive tensions in order to control inflation without having to tighten monetary policy
Monetary policy ($\rightarrow \hat{t}$, endogenous money)	\hat{t} exogenous or, when \hat{t} can be adjusted: $p = \beta_k(q - n)$	(9) $\beta_k \geq 0$ is set according to the context so as to more or less help the government to reach its objectives, depending on the state of inflationary pressures compared with unemployment
Budgetary-fiscal policy ($\rightarrow g, \hat{t}$)	$n = \mu q$ $b = -\psi_k(q - n) + z$	(10) $0 < \mu \leq 1$ and $\psi_k \geq 0$ are set (11) according to the context

q is the variation in employment that is initially required for full employment (since n is the variation in employment for the current period, $q - n$ measures the level of unemployment at the end of the period).

β_k represents the 'monetary policy flexibility' (the higher β_k is, the more the central bank concedes inflation in order to fight unemployment). It depends on the context; especially, but not only, on the state of the distributive conflict.

μ is a parameter the government also chooses according to the context (effective demand expected sensitivity to the policy instruments, financial constraints, public opinion and other political considerations...).

b is the budget balance variation (relative to GDP); $b \equiv \varphi(y - g) + \hat{t}$ (see appendix n°4).

ψ_k represents the 'fiscal policy flexibility' (the higher ψ_k is, the less the government adjusts taxes, in order to preserve employment, and the higher is the deficit). It depends also on the state of financial constraints, on the political acceptability of tax adjustments...

z represents other factors which may interfere in the short run (deliberate structural deficit due to long run public investments, debt management considerations...).

In this perspective, economic-policy designing hinges as much on the selection of the objectives (value of ψ_k and μ) as on the adjustment of instruments (value of g and \hat{t} which solve (9) and (10), given equations (1), (2_k), (3) and (4)).

3.2. New governance and Keynesian governance in non-ergodic regimes

3.2.1. Trials of the New Consensus Governance

As long as the government can adjust the two instruments (g, \hat{t}) freely, there are three instruments and three objectives. Solving the system of equations (1), (2), (3), (4), (6) and (7) yields: $p=n=b=0$. Thus, the New Consensus governance gets the ideal outcome in terms of prices, output and budget balance stabilization. There is a kind of 'symbiosis' between monetary and fiscal policies¹³.

The symbiosis however may turn into severe drawbacks when the new governance principles of Table 3 are implemented into the non-ergodic system of Table 2. In the presence of Keynesian unemployment ($q>0$), as long as actual unemployment and interest rates are interpreted as the 'natural' rates, they serve as macroeconomic policy targets, with the result that the policy mix 'symbiotically' anchors the system away from full employment: since they targeted $n=0$, they get $q-n=q$. The situation then may persist for it seems to be the consequence of real wages rigidity ($p=0$, and $w=\bar{w}$ provided $n_f=0$). This line of argument suggests that misplaced economic policy may produce a kind of unemployment trap, to which

¹³ Dixit & Lambertini (2001, 2003) recently extended this result to monetary unions.

mainstream uses to refer as hysteresis¹⁴: when authorities lack for room for manoeuvre in front of a negative shock, for example because of budget balance considerations, the symbiosis only works partially, and unemployment increases. Since nothing tends to reduce it then, authorities take it as the new natural rate.

Monetary policy may furthermore be involved in such a depressive scenario in case of persistent distributive tensions. As long as inflationary pressures are interpreted as the result of a 'natural' lower demand for money, the central bank raises the rate of interest without seeing the negative effects it has on employment. Here again, as far as nothing tends to reduce the rate of unemployment, authorities take it as the new natural rate.

3.2.2. Keynesian macroeconomic governance

Let us now consider the type of policy mix involved by the governance principles of Table 4. The tax-expenditure combination (g, \hat{t}) that is required to reach the employment and budget balance targets (9) and (10) (given equations (1), (2_k), (3), and (4)) depends on the set of exogenous variables and parameters that represent the macroeconomic changing context and the confidence of authorities.

One of these variables is the rate of interest, which expresses monetary influences on the policy mix. Notice that the expected monetary policy is probably taken into account by the government when it decides about the targets and their relative weight (μ, ψ_k) ; for example, if the government thinks that the central bank will accommodate, it can adopt a more ambitious plan. Hence, the central bank can make it more or less difficult for governments to reach their objectives.

Monetary policy modelling is very sensitive in a Keynesian world since controlling the long term rate of interest is uncertain, at least as far as reductions are concerned; but even

¹⁴ On hysteresis, ergodic and non-ergodic regimes see the Minisymposium in the *Journal of Post Keynesian Economics*, 15(3), Spring 1993.

when its own positive influence on effective demand is doubtful, it helps indirectly if it gives the supplementary money that is needed when fiscal-budgetary policy aim to stimulate the effective demand, avoiding by the way a rise of interest rate which otherwise could weaken the policy outcome. Of course such a policy mix could produce some rise in the price index, but remember that, even in the NCM, this is a necessary condition for economic recovery when nominal wages are sticky; relative prices adjustment is quite different from inflation.

4. Conclusion

The paper presents both the New Consensus and Keynesian equilibria within the usual four competitive macro-markets structure. It discusses how market interactions differ depending on the type of uncertainty, and why the optimum-oriented competitive forces at work in ergodic regimes, does not work in the Keynesian representation of the world. It gives theoretical explanations of the pernicious effects that the NCM governance brings about in non-ergodic regimes, and put forward Keynesian principles of governance which include monetary, budgetary and fiscal instruments, and suggest new directions for the positive and normative analysis of macro-policies.

Within a Keynesian perspective, authorities should abandon any reference to the natural rate of (un)employment, and other derivative concepts that do not apply to non-ergodic systems. If there is no long run predictable trajectory along which money would have only nominal influence, the ordinary conduct of monetary and fiscal-budgetary policies can not be guided by any systematic 'optimal rule' designed in order to stabilize the economy near from a predetermined trend. Uncertainty imposes a gradual and pragmatic approach, closely linked to the context.

Furthermore, authorities should renounce to automatic rules disconnected from the context. Discretion is better when there is no predictable trajectory of the economy. From this point of

view, authorities should take advantage of the complementarity between the central bank and the budgetary-fiscal instruments. That certainly would help the government to fight unemployment without denying the financial constraint. It is not necessary a matter of interest rate reduction; it may simply hinge on avoiding interest rates increases when the government aims to reflate the economy. In addition, the dissuasive impact of the liquidity constraint that may result from a reputed non-accommodating monetary policy should not be ignored. Of course such a policy mix could produce some rise in the price index, but remember that, even in the NCM, this is a necessary condition for economic recovery when nominal wages are sticky; relative prices adjustment is quite different from inflation.

As regard inflation, since central banks can not repress recurrent distributive inflationary pressures without having permanent depressive effects on aggregate demand, unless demand depresses itself or through budgetary-fiscal policy, authorities should recognize that another way for fighting this kind of inflation rests on the continuous pursuit of a consensual income distribution. In the paper, the distributive conflict exhibits a dominating influence upon the policy mix, because the central bank all the more may help governments since inflation pressures are weak. From this point of view, income distribution policy turns out to be of primary importance as concerns the costs of inflation control, which corroborates the idea that economic efficiency at the macro level, far from being the automatic outcome of free competitive forces, should not be considered independently of the political and social context.

Appendix n°1

It is possible to introduce a fiscal distortion effect by supposing that, in the short run, it work through the price of the variable input: replacing the nominal cost of labour (W) by $W(1+\zeta t)$, where $0 \leq \zeta < 1$ measures the (weakened) impact of the tax rate on the labour cost, profit maximisation requires $\partial Y / \partial N = W(1+\zeta t) / P$. The demand-for-labour relative rate of variation

(n) then takes the form of a function of the fiscally-corrected labour cost, which relative variation can be approximated by $(p - w - \xi \hat{t})$ for small values of \hat{t} .

Appendix n°2

Starting from the aggregate demand function $v(Y - tY) - \beta(i - p_{+1}^a) + G + A$, where Y represents the output volume, i the rate of interest, p_{+1}^a the expected inflation rate till the next period, t the tax rate (taxes/output), v the propensity to consume, G the governments expenditures, A an autonomous component, the market for goods equilibrium requires:

$$Y = v(Y - tY) - \beta(i - p_{+1}^a) + G + A.$$

Differentiating around a solution indexed by 0 (with $dv=0$ and $dp_{+1}^a=0$), and dividing by Y_0 , we get:

$$\frac{dY}{Y_0} = v \frac{dY}{Y_0} - vt_0 \frac{dY}{Y_0} - vdt - \frac{\beta}{Y_0} di + \frac{dG}{Y_0} + \frac{dA}{Y_0}$$

Since $t_0 = T_0/Y_0$, the equality $dG/Y_0 = t_0 dG/G_0$ holds when the budget is balanced ($T_0 = G_0$).

Writing relative deviation rates with small letters ($x = dX/X_0$), except $a = dA/Y_0$, we have:

$$y = v(1 - t_0)y - vdt - \frac{\beta}{Y_0} di + t_0 g + a$$

hence:

$$y = -\sigma \hat{t} + \lambda(\varphi g + a) - \gamma \hat{t}$$

$$\text{where } \hat{t} = di, \hat{t} = dt, \varphi = t_0, \gamma = \frac{v}{1 - v(1 - t_0)}, \lambda = \frac{1}{1 - v(1 - t_0)}, \sigma = \frac{1}{1 - v(1 - t_0)} \frac{\beta}{Y_0}$$

Appendix n° 3

It is not essential to make imperfect competition assumptions in order to obtain a mark-up relation. For example, starting with the production function $Y = CN^\alpha$, $\alpha < 1$, competitive pricing

requires the marginal productivity to be equal to the real cost of labour:

$\partial Y/\partial N = W(1+\zeta t)/P \Rightarrow P = W(1+\zeta t)/(C\alpha N^{\alpha-1}) = (WN(1+\zeta t)/Y)/\alpha$; hence, by differentiation of the associated logarithmic expression (for small values of \hat{t}), we have $p = w + n - y - \dot{\alpha} + \xi \hat{t}$, where $\dot{\alpha}$ is the rate of variation in α (exogenous). Notice that an increasing mark-up on unit labour cost expresses in this case a declining wages-output ratio ($\dot{\alpha} < 0$) and/or increasing fiscal taxes ($\hat{t} = dt > 0$).

Appendix n°4

The budget balance (B) is defined as:

$$B = tPY - PG$$

Differentiating around a solution indexed by 0 yields:

$$dB = t_0 P_0 dY + P_0 Y_0 dt + t_0 Y_0 dP - P_0 dG - G_0 dP$$

and dividing by the initial value of output:

$$dB/(P_0 Y_0) = t_0 dY/Y_0 + dt + t_0 dP/P_0 - dG/Y_0 - (G_0/Y_0)(dP/P_0)$$

Hence, around a situation of balanced budget where $t_0 = G_0/Y_0$ (remember $g = dG/G_0$):

$$b = t_0(y - g) + dt$$

and, with the same notation as in appendix n°1:

$$b = \varphi(y - g) + \hat{t}$$

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