

Inflation targeting drawbacks in the absence of a 'natural' anchor  
A Keynesian appraisal of the FED and ECB policies over the period 1999-2006

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Abstract

The economic performances of the Eurozone look weaker than those of the United States over the period 1999-2006, in spite of the fact that the former applies more thoroughly the 'new macroeconomics' governance rules concerning public deficits and inflation control. The literature emphasizes Alan Greenspan's pragmatism when discussing the relative success of the Fed, but the reasons why pragmatism ought to do better than a thorough application of the 'new macroeconomics' theoretical recommendations remain unexplored. The paper focuses on the advantage of monetary policy pragmatism in the face of Keynesian uncertainty. More specifically, it points out the trials of the 'new macroeconomics' principles of monetary policy when they are implemented in a Keynesian context, that is, within a system which does not have any 'natural' anchor.

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## Introduction

The paper focuses on the effectiveness of the Fed and ECB monetary policies over the period 1999-2006. As Fontana (2006) put forward, the Fed's 'dual mandate' allows for more flexible monetary policy than the single mandate of the ECB. That is an important topic of the characterization of both monetary policies over the short run. But the 'dual mandate' vanishes when the long run monetary policy objectives are considered, at least in the official discourse. In the long run, the official primary objective of both central banks merely amounts to ensure price stability, as recommended by the 'New Consensus' principles of governance (see Rochon, 2006). In practice, however, the policies show some distance from the theory, especially in the case of the Fed (Galbraith, 2006).

Yet, while the European Union follows more accurately the new-economics recommendations on prices and public deficits control, the Fed's policy seems to be more effective. Various authors have put forward the Greenspan's pragmatism or the ECB's dogmatism as the main cause of the Fed's relative success<sup>1</sup>, but the reasons why pragmatism ought to do better than a thorough application of the mainstream theoretical recommendations remain unexplored. The paper explores those reasons by considering the advantage of pragmatism in the face of Keynesian uncertainty. The argument is basically that the 'New Consensus' macroeconomic policies entail pernicious effects when they are implemented in a system which doesn't tend spontaneously toward any 'natural' position.

We put forward three arguments. a) According to the 'New Consensus', monetary policy may be helpful in stabilizing the economy around the assumed 'natural' trajectory in case of nominal rigidities. But in a system without natural anchoring, as the one Keynes considered in his *General Theory*, if the central bank takes the current rate of unemployment as a 'natural' one, it tends to anchor the economy away from full employment. b) Distributive tensions (like wages, mark-up or fiscal pressures) feed the demand for money and push monetary authorities to arbitrate between providing more money so as to preserve the economic activity (which feeds the cost push spiral) or raising the rate of interest so as to repress inflationary pressures. While reducing monetary inflation has no permanent cost in terms of unemployment in the mainstream theory for the supply side is the driving force in the long run, it does in a Keynesian world where the effective demand is the driving force the short and in the long run. c) As macroeconomic policy involves both monetary and fiscal authorities, independent decisions may produce coordination failures. It happens that unconditional low inflation targeting is likely to produce adverse policy interactions in the Eurozone. For example, a rise

in the rate of interest aiming at countering the average inflationary effects of the fiscal impulse implemented in any country weakens the effective demand for all the member countries.

The paper contains two sections. The first one starts by comparing the 'official' monetary policies of both regions. Then, the 'New Consensus' precepts are emphasized and compared with the implemented policies. Section 2 discusses the advantage of pragmatism in the face of Keynesian uncertainty.

## 1. Similar discourses, different practices

This section shows that, in accordance with the 'New Consensus' macroeconomics which clearly inspires the official discourses, the Fed and ECB mission in the long run amounts to stabilize the price index (1.1). But in practice, the ECB applies the low inflation targeting policy more thoroughly (1.2).

### 1.1. Similar discourses

The official documentation of the ECB refers quite transparently to the essential features of the 'New Consensus' (namely, money neutrality and supply side leading role<sup>2</sup>), and therefore denies any influence of the monetary policy on output and employment in the long run:

"(...) in the long run, real income is essentially determined by supply-side factors (e.g. technology, population growth, the flexibility of markets and the efficiency of the institutional framework of the economy). It is therefore the task of fiscal and structural policies – but also of those involved in the wage-bargaining process – to enhance the growth potential of the economy." ECB (2006) *The European Central Bank - History...*, p 47.

"(...) the theoretical foundations of monetary policy as well as experience drawn from the past demonstrate that monetary policy can ultimately only influence the price level in the economy (...)." ECB (2006) *The European Central Bank - History...*, p 45

"Thus, price stability is the only feasible objective for the single monetary policy over the medium term" ECB (2006) *The European Central Bank - History...*, p 45

Actually, the ECB and the Fed discourses about the benefits of price stability in the long run<sup>3</sup> are perfectly similar (though, in *The Federal Reserve System, Purposes and functions*, the Fed does not explicitly mention the neutrality of money in the long run):

"Price stability makes it easier for people to recognize changes in relative prices since such changes are not obscured by fluctuations in the overall price level. This enables firms and consumers to make better-informed decisions on consumption and investment. This in turn allows the market to allocate resources more efficiently. By helping the market to guide resources to where they can be used most productively, price stability raises the productive potential of the economy". *The European Central Bank –History...*, 2006, p 46.<sup>4</sup>

"When prices are stable and believed likely to remain so, the prices of goods, services, materials, and labor are undistorted by inflation and serve as clearer signals and guides to the efficient allocation of resources and thus contribute to higher standards of living. Moreover, stable prices foster saving and capital formation, because when the risk of erosion of asset values resulting from inflation—and the need to guard against such losses—are minimized, households are encouraged to save more and businesses are encouraged to invest more. (...) price stability can help achieve maximum sustainable output growth and employment over the longer run,...". FRS, 2005, p 15

Thus, over the long run, the objective of both institutions amounts merely to price stability:

"Stable prices in the long run are a precondition for maximum sustainable output growth and employment as well as moderate long-term interest rates." FRS, 2005, p 15

"Indeed, as shown above, the best contribution which the ECB can make to promoting, among other things, “*sustainable and noninflationary growth*” and a “*high level of employment*”, as referred to in Article 2 of the EC Treaty, is to pursue a monetary policy aimed at price stability." *The European Central Bank –History...*, 2006, p 47

In the short run however, exogenous shocks may induce the central bank to concede some deviation from the long run objective. On this subject also the Fed and the ECB do agree:

"For a wide variety of shocks (e.g. demand shocks, which move output and prices in the same direction) a prompt reaction by monetary policy is often adequate and will not only preserve price stability but also help to stabilize the economy. However, there are other types of economic shock (e.g. of a cost-push nature, like oil price hikes) that move output and prices in opposite directions. An excessively aggressive policy response to restore price stability in a very short span of time may, in these circumstances, risk imparting a significant cost in terms of output and employment volatility which, over a longer horizon, could also affect price developments. In these cases, it is widely recognized that a gradual response of monetary policy is appropriate both to avoid unnecessarily high volatility in real activity and to maintain price stability over a longer horizon." *The monetary policy of the ECB* (ECB 2004, p 54).

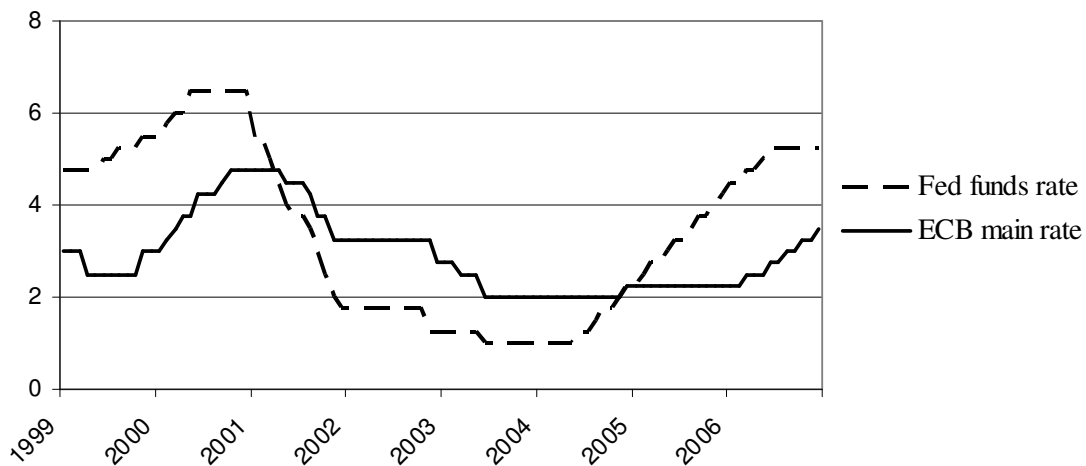
"Although price stability can help achieve maximum sustainable output growth and employment over the longer run, in the short run some tension can exist between the two goals. Often, a slowing of employment is accompanied by lessened pressures on prices, and moving to counter the weakening of the labor market by easing policy does not have adverse inflationary effects. Sometimes, however, upward pressures on prices are developing as output and employment are softening—especially when an adverse supply shock, such as a spike in energy prices, has occurred. Then, an attempt to restrain inflation pressures would compound the weakness in the economy, or an attempt to reverse employment losses would aggravate inflation. In such circumstances, those responsible for monetary policy face a dilemma and must decide whether to focus on defusing price pressures or on cushioning the loss of employment and output." FRS, 2005, p 15

Clearly, both central banks aim at counter short run price deviation related to temporary demand shocks (which supposes active support to activity), but in case of supply shocks, they will arbitrate between reducing inflationary pressures and smoothing their impact on employment and activity. Hence, according to the official discourses, the Fed and ECB monetary policies could only differ in the way they manage supply shocks in the short run. Over the long run, they should not differ or have real effects. The experience of the ECB maybe is too short to allow drawing robust conclusions, but empirical comparison with the Fed's policy nevertheless provide interesting information on the subject.

## 1.2. Monetary policies in practice

The period considered starts with a sharp increase in oil prices and a tightening of monetary policies that will be ephemeral in both regions because of the change of the international macroeconomic context. In the United States, the burst of the speculative bubble at the end of 2000 and the terrorist attacks of September 2001 weaken the economic growth; in Europe, the end of the fiscal adjustments strengthens the economic recovery started in 1998. Yet, the activity bounces rapidly in the United States, strengthened by the rapid decrease in the Fed interest rates and the prompt budgetary response, while it runs out of steam in the Eurozone from spring 2000, in spite of the decreasing rates of the ECB (see figure 1).

Figure 1 Fed. and ECB main interest rates (%), 1999-2006



Source: U.S. Federal Reserve, European Central bank

The moderate increase of the Federal funds rate in 1999-2000 brings them to 6,5% at the end of 2000. The interest rate then decreases quickly during the first five months of 2001 (50 basis points by month) before the slowdown of the summer when they reach 3,5%. The terrorist attacks trigger a second wave of decreases: from 3,5% in the early September, the federal funds rate pass to 3% on September 17, 2,5 in October, 2 in November, and 1,75% in December, staying at this level about one year). Clearly, the oil prices inflationary pressures are relegated in the background because of the deflation threat, with the result that the monetary policy supports aggregate demand strongly.

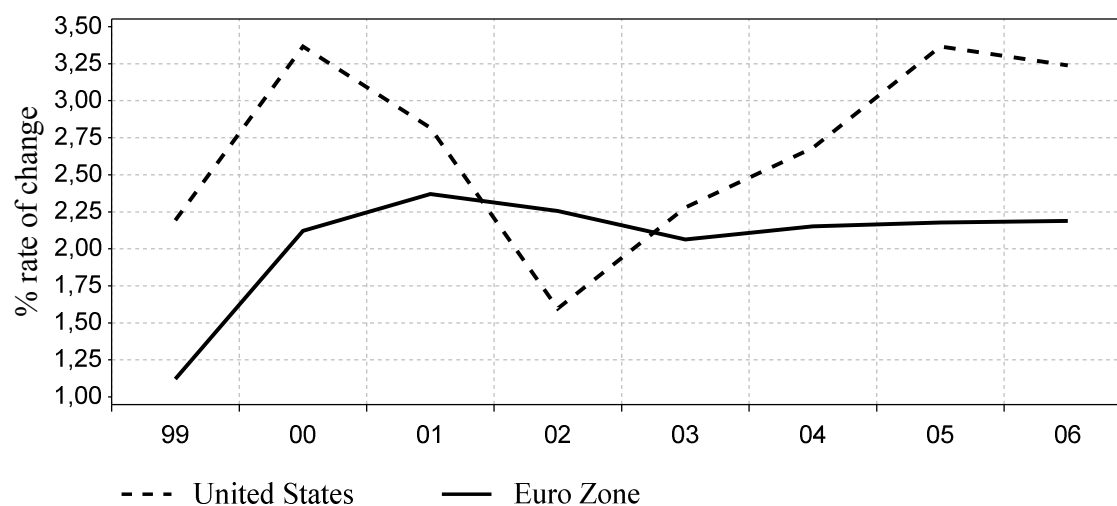
In the same time, the recession in Europe prompts the ECB to relax its policy, but the response is much weaker. Considering that monetary policy does not influence real magnitudes over the long run, the ECB gives priority to the stabilization of inflation expectations<sup>5</sup>. This analysis corroborates the results of Creel and Fayolle (2002) concerning the responses that would have been those of the ECB if it had applied the Fed's 'Taylor rule' estimated by Mankiw (2001) over the nineties.

"Si on applique brutalement cette formule aux données de la zone euro, on trouve deux résultats : le taux de refinancement pratiqué par la Bce depuis 1999 aurait du être en permanence franchement plus bas qu'il ne l'a été, et même négatif, mais il aurait dû aussi connaître depuis début 1999 une remontée nettement plus prononcée que celle qu'il a connu..." Creel et Fayolle (2002), p 195.<sup>6</sup>

Here can be seen the consequences of declaring an inflation target: by committing to maintain the inflation rate near to 2% over the medium term, the ECB indeed leaves itself some room for manoeuvre in the short run<sup>7</sup>, some discretionary power, all the more as the 'short' and 'medium run' notions are not precisely defined. But, on the one hand, that power is more limited than the Fed's one, for the Fed does not specify any quantitative target<sup>8</sup>, and on the other hand, it makes it dangerous to support frankly the economic activity in the face of important shocks, since the inflation gap which would result could be considered an infringement of the declared target, and therefore could harm the ECB's credibility and feed inflation expectations<sup>9</sup>.

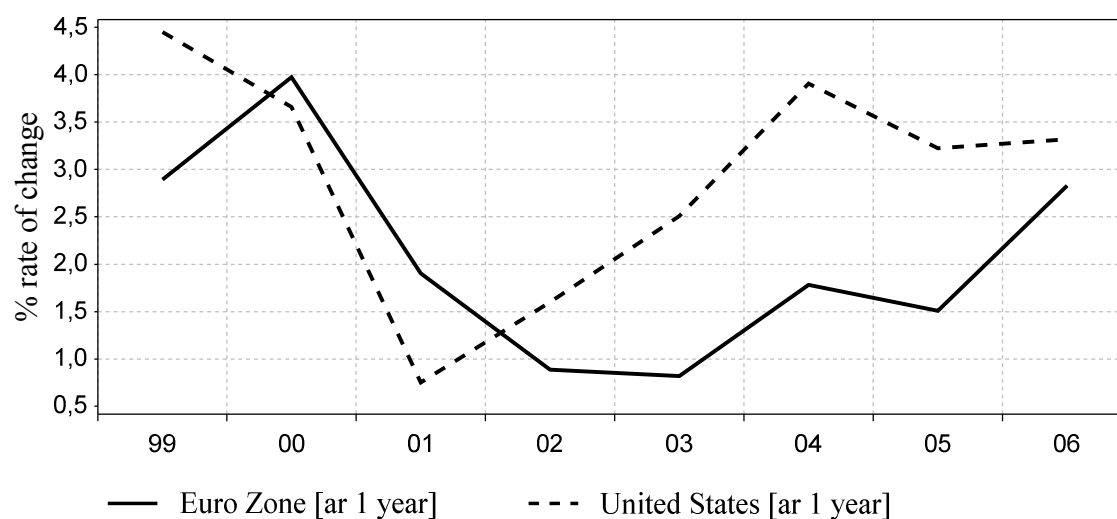
Finally, the sort of 'constrained discretion' implemented by the ECB seems to be more effective to stabilize prices (see figure 2), but the data suggest that there is a substantial cost in terms of economic activity (see figure 3).

Figure 2 Consumer prices indices



Source: Reuters EcoWin

Figure 3 Gross domestic product, volume, market prices



Source: Reuters EcoWin

## 2. The pernicious effects of dogmatism in monetary policy

It is paradoxical to believe in money neutrality and to be so anxious about inflation. To believe in money neutrality and to affirm at the same time, as both central banks do, that inflation is prejudicial to resources allocation. The central banks purpose is actually that money is neutral provided there is no inflation, because inflation does interfere with the real prices adjustment and resources allocation, which amounts to say, tautologically, that money is neutral provided money is neutral. Either money is neutral and inflation does not really

matter, or it is not, and then inflation and monetary policy must be investigated within an appropriate theoretical framework.

The Walrasian approach to general equilibrium, in the form proposed by Arrow and Debreu in 1954, rests upon a theoretical market system which allows for spot and future contracts. The hypothesis of a complete set of markets ensures that spot and all futures prices are initially determined by the supply-demand matching conditions. Therefore, the system is not really dynamic, since the future is reduced to the accomplishment of the transactions initially decided.

In this framework, where any competitive equilibrium is shown to be Pareto optimal as concerns resources allocation, integrating money and inflation raises important difficulties, for it would require that spot markets will open in the future so as to take account of possible changes in prices, and that would contradict the view that transactions are predetermined for all dates in the future (which is required for the intertemporal Pareto optimal equilibrium being determined). Hence, in this conceptual intertemporal framework, inflation and monetary policy can not be integrated but in the neutral way. That supposes to reduce uncertainty to risk, in order for the future prices to be initially foreseeable within a stochastic 'white noise' around the assumed 'natural' trajectory. Actually, from the theoretical point of view, it is well known that optimality is not a general property of competitive markets since the stability of the walrasian competitive equilibrium is questionable, even in the absence of uncertainty; stability requires specific conditions (namely gross substitution of aggregate demand functions). But the 'Sonnenschein-Mantel-Debreu' theorem stated that nothing ensures such conditions within the Walras-Arrow-Debreu framework. Thus, efficiency of competitive markets unfortunately simply is a postulate that reflects the beliefs of those who refer to it, it is not a scientifically established result. Finally, it is because they deny uncertainty and believe to competitive market optimality that central banks claim that prices stability is a precondition of efficiency.

The view on the effectiveness of uncertainty and on the efficiency of markets is crucial in monetary policy theory, for the adequate policy closely depends on the long run properties of the economic system. For example, in the mainstream's ergodic representation of the world, the economic system is assumed to possess strong regulatory forces which, in the long run, anchor the economy on a predetermined trajectory and make rational expectations reliable. Within such a representation, the best monetary policy can do is to stabilize the economy around the predetermined or 'natural' trajectory<sup>10</sup>. On the other hand, there is no predetermined trajectory in non-ergodic regimes, with the result that people can not

reasonably have full confidence in their expectations, even rationally conceived. That is the starting point of Keynes's liquidity preference theory, and of *The General Theory*. In these regimes, monetary policy takes part in the trajectory of the economic system both in the short and in the long run. It is not neutral.

This section discusses the effects of uncertainty on the macroeconomic adjustment mechanisms and then considers the drawbacks that may result from implementing the monetary policy of the 'New Consensus' in a Keynesian system which does not have any 'natural' anchor or trajectory.

## 2.1. Uncertainty and macroeconomic adjustment

Keynes, in relation with the widest apprehension of uncertainty, conceived his general theory without postulating any 'natural' position or trajectory. That does not mean that people can not make rational expectations, but the meaning and usefulness of such forward looking information is far weaker than the one usually given to it in mainstream's economics. Keynesian rational expectations admit that people make use of all the available information, of course, but whatever the kind of probabilistic tools they might make use of, true uncertainty makes it not so rational to consider expectations a satisfactory basis for decision making. That is the reason why Keynes thought that decisions actually "also depend on the confidence with which we make this forecast--on how highly we rate the likelihood of our best forecast turning out quite wrong" (Keynes, 1936, ch. 12, s. 2).

The liquidity preference concept, which results from that kind of uncertainty, has heavy consequences as concerns the macroeconomic adjustment process. If aggregate demand and prices decrease, the misleadingly called 'Keynes effect' and the real balance effect do not work as an anchor to the full employment, for speculative and precautionary decisions may increase the demand for money, thereby inhibiting the interest rate and the real balance effects. Furthermore, the money supply may endogenously decrease along with the demand for money. As a matter of consequences, the output and employment equilibrium levels depend on the level at which the monetary policy and the demand for money will eventually put the rate of interest. This is the reason why Keynes thought about his general theory as a theory of shifting equilibrium<sup>11</sup>. Since the nominal wages decrease does not ensure positive effects on the effective demand either (*General Theory*, Ch. 19), there is no endogenous correction of unemployment, and, furthermore, Keynesian unemployment has to be thought as a situation where both, the real wages and the interest rate, have met a kind of threshold<sup>12</sup>.

Let us consider a context of Keynesian unemployment where the rate of interest is exogenously determined by the monetary authorities (which, however, does not control it perfectly, especially if reductions are concerned, because of the demand for money instability; see below), and real wages have met an exogenous threshold ( $\bar{w}$ ) owing to the workers resistance as suggested above. The current wage, nonetheless, is allowed to deviate from this threshold when certain events occur, such as a change in unemployment rate or exogenous disturbances, like in equation 4 of Table 1.

Table 1: Keynesian 'shifting equilibrium' conditions (deviation from previous equilibrium)

Goods market ( $\rightarrow y^*, p^*$ )	$y = -\sigma \hat{i} + \lambda(\varphi g + a) - \gamma \hat{i}$	(1) Effective demand (see appendix n°2) drives aggregate supply ( $y$ )
	$p = w + n - y - \dot{\alpha} + \xi \hat{i}$	(2) Suppliers set the price of goods so as to equalize the real labour cost to the marginal productivity that results from adjusting output to effective demand ('1 <sup>st</sup> classical postulate' holds) <sup>a</sup> . This condition provides the mark-up price equation (see appendix n°3)
Labour market ( $\rightarrow n^*, w^*$ )	$y = \alpha n + c \Rightarrow n = \frac{y - c}{\alpha}$	(3) Demand: given by the short run production function, as a function of the aggregate demand (diminishing marginal product: $\alpha < 1$ )
	$w = \bar{w} - \theta(n_f - n)$	(4) Excess of supply ('2 <sup>d</sup> classical postulate' rejected), except when effective demand is at the full employment level.
Money market ( $\rightarrow m^*$ )	$m = y + p - \eta \hat{i}$	(5) Market clearing condition given the interest rate (endogenous money supply)
Bonds market	Implicit	Aggregate budget constraint

(a) As stated by Davidson (1983), the marginal product equalization to the real labour cost does not provide the labour demand function, but the 'real wage - effective demand' relationship.

$n$  is the relative variation in employment

$n_f$  is the total labour force

$w$  is the nominal wage relative variation

$y$  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 tax rate variation (which has both a supply and a demand effect: see appendix n°1)

$a$  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

Within the usual four macro-markets framework, a general equilibrium supposes a set of conditions which expresses compatible aggregate supply and demand plans. Because of the generalized budget constraint<sup>13</sup>, three markets only have to be explicit (the bonds market will remain implicit), which supposes two relative prices (the real wage in terms of goods, the rate of interest and the real price of money in terms of goods, which inverse is the nominal price of goods). Moreover, since the interest rate is assumed to be exogenous for the moment, the general equilibrium conditions reduce to five: the goods market supply and demand conditions (which compatibility requires the equilibrium values  $y^*$  and  $p^*$ ), the labour market supply and demand conditions (which compatibility requires  $n^*$  and  $w^*$ ), and the money market clearing condition, given the exogenous interest rate (which requires  $m^*$ ). We focus on the short run motion of the system, in the sense that the productive physical stock of capital is assumed to be constant during the period considered. Hence, variables are expressed in terms of relative variations from their initial value, except the rate of interest and the tax rate, which are expressed as variations. All parameters are positive.

Because of the effects of uncertainty on the 'state of confidence', the liquidity preference theory can explain unforeseeable shifts in the demand for money (*The General Theory*, Ch. 12). This specificity of Keynes's approach will be formally underlined through considering  $\eta$  an exogenous variable subject to the volatility of expectations (equation 5)<sup>14</sup>. It has heavy implications on monetary policy because it makes the central bank control of the long term interest rate questionable. When the monetary base is increased through lowering the short term rate, lower long term bank rates in principle boost the demand for credit, provided the liquidity preference does 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 (bonds) rates in this case tend to rise in order to compensate the increasing liquidity preference. Therefore, the 'New Consensus' optimal monetary rule, which assumes that authorities always can adjust the rate of interest to the assumed 'natural' level, is irrelevant in a Keynesian context<sup>15</sup>.

## 2.2. Inflation targeting drawbacks in the absence of a 'natural' anchor

According to the 'New Consensus' macroeconomics, monetary and fiscal instruments can be activated usefully, in the presence of nominal rigidities, so as to reduce the volatility of aggregate demand, output and prices around the assumed 'natural' trajectory, as indicated in Table 2.

Table 2: 'New Consensus' stabilization policies (around the assumed 'natural' trajectory)

Monetary policy <sup>a</sup> ( $\rightarrow \hat{i}$ , 'Taylor rule')	$p = -\beta n$	(6) $\beta \geq 0$ , measures the relative weight of unemployment deviations compared to price deviations ('flexibility' of monetary policy)
Fiscal policy <sup>a</sup> ( $\rightarrow g$ or $\hat{t}$ )	$b = \psi n$	(7) $\psi \geq 0$ , measures the relative weight of unemployment compared to budget balance deviations ( $b$ ) in the government preferences

(a) These simple policy rules can be derived by minimization of loss-functions<sup>16</sup>.

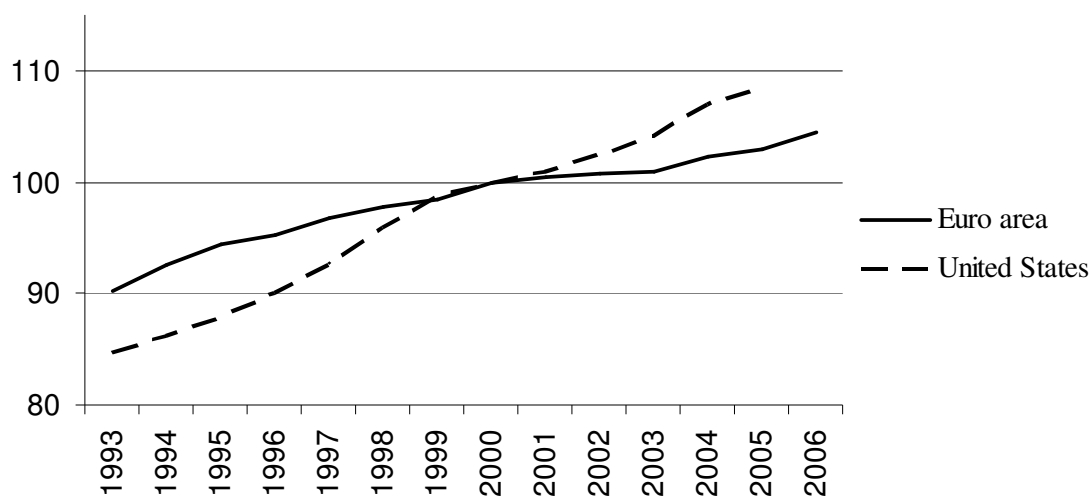
According to these formal policy rules, the central bank implements disinflation measures when the level of unemployment decreases, while the government set taxes and/or expenditures so as to adjust the budget balance ( $b$ , see appendix n°4) in a counter-cyclical way. Such governance principles work symbiotically within the ergodic 'New Consensus' approach<sup>17</sup>. They stabilize perfectly the system, without budget balance deviations since the governments have two instruments and may therefore stabilize both, the output level and the budget balance, while the central bank stabilizes the price index. But the same principles may produce severe drawbacks if they are implemented in the non-ergodic system of Table 1. Indeed, in the presence of Keynesian unemployment, that is to say, without spontaneous return towards the full employment, as long as the actual unemployment and interest rates are interpreted as 'natural' rates, they serve as macroeconomic policy targets, with the result that the policy mix 'symbiotically' anchors the system away from the full employment (provided the central bank has enough influence on the long term interest rate). The situation then may persist for it seems to be the consequence of real wages rigidity ( $p=0$ , and  $w=\bar{w}$  provided  $n_f=0$ ), which is one of the main causes of natural unemployment in the 'New Consensus' Macroeconomics.

This line of argument suggests a kind of unemployment trap, to which the mainstream economics uses to refer as hysteresis<sup>18</sup>: when authorities lack for room for manoeuvre in the face of a negative shock, for example because of budget balance considerations, the output stabilization only works partially, and unemployment increases. Since nothing tends to reduce it then, authorities take the actual unemployment rate as the new 'natural' one. This gives a rationale to the idea that the dogmatism of the ECB, along with the Stability and Growth Pact, could have weighed on the employment situation of the Eurozone after the economic reversal of the early 2000s, therefore explaining the stagnation that followed.

Similar drawbacks may arise in case of distributive tensions. According to Table 1, the mark-up price equation (2) shows inflation factors that depend on income distribution concerns (mark-up, fiscal tax rate, wages pressure relative to productivity gains<sup>19</sup>). These factors influence indirectly the unemployment rate through the monetary policy reaction they may trigger. Whatever the causes of inflationary pressures are, the central bank always can restrict the effective inflation by increasing the interest rate and the level of unemployment in such a way that the pressures fade (the control of the long run interest rate is hardly questionable when increases are considered). Actually, inflation always is a monetary phenomenon since it expresses higher monetary prices of goods and services, but while the mainstream's economics incriminates irresponsible or lax policies, the Keynesian approach points out the dilemma involved by the distributive tensions: to preserve the value of money and assume higher unemployment, or to preserve employment and let inflation develop. The former states moreover 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 'incomes policy of fear' (Davidson, 2006)<sup>20</sup>.

As concerns income distribution, beyond the pragmatism of the Fed, the USA has had the advantage of knowing more favourable economic conditions than the ECB. Although the globalization has not been propitious for wage claims (in both regions), there has been nevertheless a noticeable increase of the profit share (and therefore of the mark-up) in Europe, whereas that share revealed more stable in Anglo-Saxon countries<sup>21</sup>. Furthermore, the appreciable acceleration of the United States productivity gains in the second half of the nineties resulted in a persistent difference between the annual rates of change (see figure 4).

Figure 4 Labour productivity index (2000=100), Total economy



Source: OECD, Unit Labour Cost – Annual Indicators

Another drawback of unconditional low inflation targeting may be enlightened in relation with the international monetary regime. The monetary unification of the Eurozone potentially reduces the scale of the policy mix coordination problem, since there is no more than one monetary authority left. But as the common interest rate influences the fiscal policies national outcomes, the policy mix efficiency closely depends on the ECB monetary policy. In order to discuss this point, let us extend the model of Table 1 so as to build a two-country monetary union model (see Table 3).

As the money market and the bonds market have been unified, the system comprises six markets (the two labour markets -immobile factor-, the two markets for goods - imperfect substitutes -, the market for bonds, and the market for money), which supposes five relative prices (the two real wages in terms of goods, the international relative price of goods, the rate of interest and the real price of money in terms of goods, which inverse is the average nominal price of goods). Because of the generalized budget constraint, the equilibrium condition for the market of bonds will remain implicit.

Table 3: 'Shifting equilibrium' in a monetary union (deviations from previous equilibrium)

	Country 1	Country 2
Labour markets ( $\rightarrow n_i^*, w_i^*$ )	$y_1 = \alpha_1 n_1 + c_1$	$y_2 = \alpha_2 n_2 + c_2$
	$w_1 = \bar{w}_1 - \theta_1 (n_{f1} - n_1)$	$w_2 = \bar{w}_2 - \theta_2 (n_{f2} - n_2)$
Goods Markets ( $\rightarrow y_i^*, p_i^*$ )	$y_1 = -\gamma_1 \hat{t}_1 - \sigma \hat{i} + \kappa(p_2 - p_1) + \lambda_1(\varphi_1 g_1 + a_1)$	$y_2 = -\gamma_2 \hat{t}_2 - \sigma \hat{i} - \kappa(p_2 - p_1) + \lambda_2(\varphi_2 g_2 + a_2)$
	$p_1 = w_1 + n_1 - y_1 - \dot{\alpha}_1 + \xi_1 \hat{t}_1$	$p_2 = w_2 + n_2 - y_2 - \dot{\alpha}_2 + \xi_2 \hat{t}_2$
Money market ( $\rightarrow m^*$ )	$m = \frac{1}{2}(y_1 + y_2) + \frac{1}{2}(p_1 + p_2) - \hat{l}i$	
Bonds market	Implicit	Implicit

$(y_1 + y_2)/2$ : is the relative variation in the average output of the Union

$(p_1 + p_2)/2$ : is the relative variation in the average price index

Adapting the monetary rule of the closed economy (equation 6 in Table 2), yields:

$$\frac{1}{2}(p_1 + p_2) = -\beta \frac{1}{2}(n_1 + n_2)$$

In this case, fiscal policies are likely to produce negative externalities, especially if they do not share the central bank objectives. Indeed, if an increase in  $g_i$  aims at reducing the unemployment rate below the level the central bank considers the 'natural' level, the central bank raises the rate of interest so as to stabilize more or less the average level of prices in the union (according to the value of  $\beta$ ), what implies a depressive effect in country  $j$ . Worse, if both countries implement such stimulating fiscal policies, they hinder each other through this negative transmission effect.

## Conclusion

For theories by definition yield imperfect representations of the real world, the thorough implementation of their policy recommendations may have pernicious effects. Our theoretic discussion of the effects of the 'New Consensus' monetary policy within nonergodic Keynesian systems puts forward three 'mechanisms' through which dogmatism may harm the effectiveness of monetary policy: the 'unemployment trap' effect, the 'fighting distributive conflict' effect and the 'conflicting fiscal policies' effect. Empirical observation at the same time suggests that the advantage of pragmatism may be magnified or tempered according to the general context. Indeed, the relative success of the Fed's policy in the Greenspan era was partly due, beyond –or possibly because of- the advantage of pragmatism, to the productivity gains differential (which tempered the income distribution conflict), and to the relatively easy coordination between the monetary and fiscal authorities (as compared with the Eurozone situation).

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## Appendices

### Appendix n°1

We have introduced a fiscal effect on the supply side by supposing that in the short run it works 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 price index relative variation ( $p$ ) drawn from this equation (see Table 1 in the text) takes the form of a function of the fiscally-corrected labour cost, which relative variation is approximated by  $(w + \zeta \hat{t})$  for small values of  $\hat{t}$  ( $\hat{t}$  is the variation in  $t$ ).

#### 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 expenditure,  $A$  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  $dG/Y_0 = t_0 dG/G$  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:

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

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

#### Appendix n° 3

It is not essential to make imperfect competition assumptions in order to obtain a mark-up relation. Indeed, starting from 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  $p = w + n - y - \alpha + \zeta \hat{t}$ , where  $\alpha$  is the rate of variation in  $\alpha$  (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°2:

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

Footnotes

<sup>1</sup> According to Sardoní & Wray (2005) however, these factors do not explain correctly the difference in performances between the USA and the Eurozone; fiscal policies should also be taken into account. Fiscal policies are considered below (section 2.2).

<sup>2</sup> See "What monetary policy can and cannot do" in *The monetary policy of the ECB* (ECB, 2004, p. 41-42).

<sup>3</sup> The ECB refers actually to an imprecise 'medium term'; see *The monetary policy of the ECB* (ECB, 2004, p. 55).

<sup>4</sup> For a detailed argumentation see "the benefits of price stability" in *The monetary policy of the ECB* (ECB, 2004, p. 42-43).

<sup>5</sup> See "The outcome of the ECB's evaluation of its monetary policy strategy", *ECB monthly bulletin*, Jun 2003, pp. 80-81.

<sup>6</sup> "If one applies roughly the formula to the data of the Eurozone, we find two results: the refinancing rate the ECB used since 1999 should have been permanently right ahead lower that it has been, and even negative, but it should had known also a markedly more pronounced rise that it had known..."

<sup>7</sup> In the mainstream literature on inflation targeting, the idea of monetary policy room for manoeuvre refers to the 'constrained discretion' pointed out by Bernanke & Mishkin (1997, p 106). It is based upon the theory of dynamic inconsistency of discretionary policies, which recommends limiting the discretionary power.

<sup>8</sup> Various authors have pointed out the discretionary nature of Greenspan's monetary policy. "The low inflation and economic stability of the 1990s shows that discretionary monetary policy can work well. Yet it leaves only a limited legacy for future policymakers. U.S. monetary policymakers during the 1990s may well have been engaged in 'covert inflation targeting' at a rate of about 3 percent, but they never made that policy explicit." Mankiw, 2001, pp. 52-53. James K. Galbraith's interpretation is still more clear-cut : "This brief review of Federal Reserve policy reveals an institution with a striking doctrinal flexibility. [...] In so doing, it has devalued the contribution of theoretical and ideological economists to the point where, at the most, their role is to provide window dressing for decisions taken largely –if not entirely- for other reasons. Doctrine in American monetary policy has become endogenous to the policies that it serves." Galbraith (2006), pp. 431-32.

<sup>9</sup> The mainstream literature recognizes the role of credibility as a precondition of inflation control only. By contrast, in the Keynesian approach (see section 2 below), credibility also affects real magnitudes through the decisive influence on the 'state of confidence'. Le Heron (2006, 2007) argues that confidence was a crucial aspect of Greenspan's strategy.

<sup>10</sup> Actually, the view according to which economic processes are stationary is more and more denied on both empirical and theoretical grounds (Farmer 2002 and Henri 2002). The flourishing literature on regime-switching (Hinich, Foster & Wild 2006, Evans & Ramey 2006), non rational expectations and adaptive learning (Sargent 1999; Preston, 2006), rational beliefs (Kurz 1994, Kurz & Motolese 2001, Wu & Guo, 2003)... show how enlarging is the notion of uncertainty in contemporaneous macroeconomics.

<sup>11</sup> See *The General Theory*, Ch. 21, Section I, third paragraph.

<sup>12</sup> Otherwise, wages would decrease continuously because of unemployment pressure. See Tobin (1975) and Palley (2005) about this kind of instability.

<sup>13</sup> According to the generalized budget constraint, it is not possible for only  $n-1$  markets of  $n$  to be simultaneously cleared. That does not mean, contrary to the mainstream's interpretation in terms of Walras Law, that unemployment is a matter of disequilibrium. As Davidson (1994, p. 178) pointed out, market clearing is a sufficient condition for market equilibrium; it is not a

necessary condition. Markets may be in equilibrium without being cleared, as far as no forces move it.

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

15 See Arestis & Sawyer (2003), Arestis (2006) and Arestis & Chortareas (2007) on this topic.

16 For example, the first order condition that  $g$  must verify in order to minimize:

$$L=(1/2)(\zeta n^2+b^2) \text{ is } \zeta n(\partial n/\partial g)+b(\partial b/\partial g)=0$$

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.

17 See Dixit & Lambertini (2003).

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

19 In an open economy, the prices of oil and imported intermediate goods should also be taken into account.

20 See Palley (1997, 2001) for an empirical discussion.

21 See Lequiller & Sylvain (2006) for a recent assessment.