Monetary Policy:
From Theory to Practices

by

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Monetary Policy: From Theory to Practices[+]

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Abstract. The paper proposes an overview of the literature on monetary policy. It shows the influence of the debates in the theoretical literature on the actual implementation of policies, as well as the counter effect. The European Economic and Monetary Union (EMU) is largely studied as an example of this counter effect with regard to the study of the credibility concept in an open economy setting.

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1. Introduction

For many centuries, monetary policy was seen as a twofold process: deciding about the money supply, and deciding to print paper money to create credit. While now thought of as part of monetary authority, interest rates were not coordinated with the other forms of monetary policy. Monetary policy was generally in the hands of the executive body, which benefited from seigniorage, or the power to print money.

Created in 1694, the Bank of England acquired the responsibility to print notes and back them with gold. With this, the idea of monetary policy began. The aim of monetary policy was to sustain the value of the currency, and print notes. In the late 18th and 19th centuries, the establishment of central banks in industrializing nations was mostly coupled with the wish to preserve the nation's peg to the gold standard. Central banks began setting the interest rates that they charged to both their own borrowers, and other banks that required liquidity.

During the 1870-1920 period, the industrialized nations set up central banks, with one of the last being the American Federal Reserve in 1913. The central bank was beginning to take on a new role as the "lender of last resort." This supplementary responsibility led to the nationalization of central banks; the Bank of England, for example, was nationalized on March 1, 1946. Although the notion of interest rate was already debated between the Mercantilists and the Physiocrats in the 18th century, it was also increasingly understood that interest rates had an effect on the real economy. It also became clear that there was a business cycle, and economic theory began emphasizing the relationship between interest rates and this cycle. Macroeconomics was born with Keynes's General Theory (Keynes 1936).

In the 1980s, many economists began to believe that making a nation's central bank independent was the best way to ensure a most favourable monetary policy. This would prevent the plain

manipulation of the tools of monetary policies to effect political goals.

In the 1990s, central banks began adopting formal inflation targets. A central bank may, for example, have an inflation target of 2% for a given year. The goal was to make the outcomes, if not the process, of monetary policy more transparent. The Bank of England illustrates both of these trends. It became independent of government through the Bank of England Act 1998 and adopted an inflation target of 2.5%.

2. Definitions

Monetary policy is the process of overseeing a nation's money supply to complete specific objectives such as restraining inflation, or achieving full employment. Monetary policy can involve setting interest rates, margin requirements, capitalization standards for banks, and acting as the lender of last resort.

The primary tool of monetary policy is open market operations. This entails overseeing the quantity of money in circulation through the buying and selling of a variety of credit instruments, foreign currencies, or commodities. Among such credit instruments, one finds public bonds. In order to prevent distortion in its independence, article 21 of the European Central Bank (ECB)'s statutes forbids the Bank from buying public bonds. This makes the ECB very unique among monetary institutions across the world. All of these purchases or sales result in more or less base currency entering or leaving market circulation. Usually the short-term goal of open market operations is to reach a specific short-term interest rate target. However, monetary policy might entail the targeting of a specific exchange rate relative to some foreign currency, or else relative to gold instead of targeting interest rates.

For example, the Federal Reserve targets the Fed Funds rate, the rate at which member banks lend to one another overnight. In Europe, the ECB targets the Main Refinancing Operations Rate, also known as Repo.

A policy maker may choose either to apply open market operations to reach certain targets (inflation targeting), or to have intermediary objectives (monetary aggregates) with no consideration *ex ante* of the outcome in terms of inflation. Let's have first a look at inflation targeting. Inflation is approximated by the rate of change in the Consumer Price Index (CPI). It requires that a basket of consumer prices be monitored, and from these prices a CPI defined. For example, the target might be to keep the CPI index between 2% and 3% per year through periodic changes of the interest rate. The interest rate is targeted for a specific period using open market operations. In general, the period will vary between months and years. As a rule, a committee reviews this interest rate target on a monthly or quarterly basis. There has been considerable attention paid to simple interest rate rules for monetary policy. These rules offer a hypothetical path for the policy instrument — short-term interest rates. The Taylor rule is a well known example of a monetary policy rule, with the path for the short-term interest rate depending on deviations of inflation from target, and output from trend (Taylor 1993). Changes to the interest rate target are made in response to a variety of market indicators in an attempt to forecast economic trends, and keep the market on track towards achieving the defined inflation target. This monetary policy approach was initially pioneered in New Zealand. It is currently used in Australia, New Zealand, Sweden, South Africa and the United Kingdom. Differing slightly from inflation targeting is price level targeting. The dissimilarity is that CPI growth in one year is offset in subsequent years, such that the aggregate price level does not move over time. Price level targeting was used in the 1930's by Sweden, and seems to have helped the Swedish economy during the Great Depression.

Second, let's have a look at monetary aggregates. In the 1980's, while countries faced a double-digit inflation rate, several countries used an approach based on constant growth in the money supply. This approach was refined to include different definitions of money and credit (M0, M1, etc). In the US, this approach was discontinued with the selection of Alan Greenspan as Fed Chairman. Called monetarism, this approach focuses on monetary quantities, whilst

most monetary policy focuses on a price signal of one form or another.

Another monetary policy is to enter into a monetary regime in order to import the credibility from another central bank. Base money is bought and sold by the central bank on a daily basis to target the determined exchange rate. For instance, this type of policy is used by China. The Chinese Yuan is managed such that its exchange rate with the United States dollar is fixed: 1 US$=8.2765 Yuan.

A currency board illustrates a slightly different version of the former policy. In order for a currency board to be established, a country must decide to relinquish its monetary policy to another country. This decision is often made after a country's unsuccessful struggle against inflation. The currency board will no longer issue fiat money, but instead, will only issue one unit of local currency for each unit of foreign currency it has in its reserve. The growth of the domestic money supply can now be coupled with the supplementary deposits of the banks at the central bank; these deposits equal the additional hard currency reserves in the hands of the central bank. In such a system, questions of currency stability no longer apply. The drawback is that the country no longer has the ability to set monetary policy according to other domestic considerations. Hong Kong and Bulgaria operate a currency board. Argentina discarded this policy in January 2002 after a severe recession. This illustrates the fact that currency boards are not irrevocable, and hence, may be abandoned in the face of speculative attacks by foreign exchange traders.

A gold standard is a special case of a currency board where the value of the national currency is linked to the value of gold instead of a foreign currency. The gold standard is a system in which the price of the national currency, as measured in units of gold, is kept constant by the daily buying and selling of the base currency. This process is called open market operations. The gold standard might be regarded as a special case of the "Fixed Exchange Rate" policy, and the gold price might be regarded as a special type of "Commodity Price Index." A form of gold standard was used widely across the world prior to 1971: the Bretton Woods system.

3. Practices since the end of Second World War

At the Bretton Woods conference in 1944, 44 allied countries created a new international financial system in which the U.S. dollar became the anchor: each member country fixed its currency to the U.S. dollar, and the U.S. dollar officially fixed to gold at 35 dollars per ounce. When foreign countries had a trade surplus, they could, theoretically, have used the excess dollars and asked the U.S. to exchange them for gold. With a fixed parity between dollar and gold, this would have restricted dollar creation.

In the late 1960s and early 1970s, as the Vietnam War accelerated inflation, the United States was running not just a balance of payments deficit, but also a trade deficit (for the first time in the twentieth century). The crucial turning point was 1970, which saw U.S. gold coverage deteriorate from 55% to 22%. In the first six months of 1971, $22 billion in assets fled the United States. On August 15, 1971, Nixon decided to "close the gold window," making the dollar inconvertible to gold directly, except on the open market.

The blow of August 15 was followed by efforts under U.S. leadership to develop a new international monetary system. Throughout the fall of 1971, there was a series of multilateral and bilateral negotiations within the Group of Ten seeking to develop a new system.

Gold became a floating asset: in 1971, it reached $44.20 per ounce, and in 1972, it climbed as high as $70.30 per ounce and continued climbing. By 1972, currencies began abandoning even this devalued peg against the dollar. In February of 1973, the Bretton Woods system collapsed after a last devaluation of the dollar to $44 per ounce.

Since then, the international monetary system has consisted in a multitude of different currency arrangements ranging from currency unions and currency blocs, to floating exchange rates, with many other schemes in between, such as unilateral fixed parities, managed floating or currency boards, and currency baskets.

As early as 1970, the members of the European Economic Community decided to prepare for the establishment of a common currency. The Exchange Rate Mechanism (ERM) crisis in the early 1990s severely threatened the Economic and Monetary Union (EMU) project.

On December 30, 1998, eleven members of the European Union locked their currency exchanges at irrevocably fixed rates. This was the establishment of the EMU with the inception of the euro on January 4, 1999. [1]

Currently, twelve European countries take part in the European Monetary Union. Goodhart (1989) notes that "monetary policy operations of the Central Banks" can be viewed as "quantity, or rate setting actions." Generally, central banks have viewed short-term interest rates as their preferred policy instrument. Occasionally a central bank, (such as the German Bundesbank starting in the 1970s), has focused on monetary aggregates, a practice that still survives in the European Central Bank's much-debated "second pillar" of monetary policy. In the process of disinflation beginning in the late 1970s, other central banks, such as the Federal Reserve and the Bank of England, briefly paid attention to quantity targets.

4. Monetary policy in the economic literature

Rules or discretion? This question is at the heart of the modern theory of central banks and monetary policy. This debate, which took its real dimension after the publication of the General Theory by John Maynard Keynes in 1936, has evolved over time. Responses to Keynes gave birth to new questions, and the tools developed to solve them brought forth new research directions.

Taking as a starting point the work by Argy (1988) and Fischer (1990), this section gives a brief overview of the theoretical literature on the "rules versus discretion" debate considering also

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[1] The financial markets were closed from December 31, 1998 to January 3, 1999 for the switchover.

historical and analytical points of view. Creating, on purpose, an anachronism, the premises and evolution of the debate are represented as a simple model in order to create a homogenisation of the literature. The reasoning behind this approach is threefold: to clarify the dissensions between the various schools of thought; to facilitate the description of the common points; and to give the debate some congruence with the current literature. Finding its geographical origin in the country to first use central banks – the United Kingdom – the debate "rules versus discretion" dates from the dissensions between the Currency School, and the Banking School that preceded Peel's Act of 1844. Head of the Currency School, though, he deceased in 1823, Ricardo could not attend its rise in the 1830s. This school did not conceive the bank deposits as money. Ricardo defended the idea that the quantity in circulation would fluctuate, as it would if the currency were gold. This implied that the balance of payments would determine the changes in the quantity of currency. The Currency School was in favour of control over monetary growth rather than leaving this decision in the hands of the authorities of Bank of England. Imagining that central bankers, framed by clear and transparent statutes, would set up its program, the Currency School approaches recent discussions on independence of the central banks.

The Banking School was opposed to the idea that bank deposits constituted the only currency. Based on the fact that the evolution of the stock of money depended on the movements in the reserves of the Bank of England, on the one hand, and whether these movements were permanent or transitory, on the other, its authors criticized the rule of the gold standard. Naturally, the Banking School defended the idea of discretionary authorities. However, it proposed an abstract rule for the operations of the Bank of England: the "Real Bills doctrine." Credit was to be emitted only at a discount on those invoices whose object was to finance real goods in the course of production and distribution. In this case, monetary creation could never be excessive, i.e. inflationary, since these doctrines claimed to bind monetary creation to the real production (Sijben 1990). The Act of 1844 ended up separating the Bank from England into two entities, an "Issue Department" and a "Banking Department," the latter functioning as a commercial bank. Reflecting the ideas of the Currency School, the "Issue Department"

was to convert banknotes of England into gold or coins according to a precise rule of convertibility: there was to be a fiduciary issue of 18 million pounds, and above that, at the margin, there was to be 100 % gold reserve for notes.

The debate between the Currency School and the Banking School turned to the advantage of the former, and the monetary policy of the Bank of England was supposed to follow a simple rule: the offer of currency varied according to the gold reserves of the central authorities. Although the gold standard is often quoted as an illustration of a monetary rule, the functioning of the system implied a high degree of discretion on behalf of the British monetary authorities. During the period between 1844 and 1914, the Bank of England actively adjusted the discount rate to answer for changes in the gold stock. For example, in the case of a deficit in the current balance, the Bank of England increased the discount rate in order to protect gold convertibility and the gold reserves by reducing the outflows of capital and the domestic demand (Schaling 1995). *De facto*, discretion overrode the rule.

In 1926-1927, the Congress and the Federal Reserve System (Fed) were opposed on the action to be taken regarding monetary policy. Congressman Strong wanted to force the Fed to follow a monetary rule, whose objective was price stability. Based on the "Real Bills doctrine," Miller, administrator of the Fed, privileged monetary discretion (Sijben 1990). The Fed won the debate. The Twenties were years when the American monetary policy was very strongly discretionary. With that, two explanations: the transformation of the Fed as a true central bank by the Federal Reserve Act of 1913 and the suspension of the gold standard during the First World War. Nevertheless, the act of 1913 made price stability the main goal of the Fed, without specifying the means of the central Bank to reach this end. At the time of its creation, the Fed was supposed to exist within a system of gold standard. But, World War I finally ended. During the war, the movements of the discount rates were neither limited by the Federal Act Reserve, nor by the need for facing external pressure in order to protect the American gold reserves.

4a. The Chicago plan

After the Great depression of 1929 (Wheelock 1992), a group of economists in Chicago proposed a system in which each bank would hold 100 % of reserves on easily verifiable deposits. A whole set of specific arguments was developed in favour of the rule- like principle of monetary policy in the United States. Entitled the "Chicago Plan," this proposal for a monetary reform had as partisans: Simons (1936), Fisher (1945), and Friedman (1959). Taking as a starting point the work of Simons, Fisher proposed alternative rules such as a rule of stabilization of prices, or a rule of constant money supply.

In the first case, the political authorities can have a range of instruments, like the discount rate, the coefficient of reserve and operations of open market, which they use in a discretionary way. As Sijben (1990) indicates, in this mode, the authorities are forcedby the final goals of the monetary policy: the inflation target.

In the last case, the monetary authority could be obliged to respect a growth rate of the money supply, for example X% per annum. This approach to the rule is constrained by the instruments of monetary policy, i.e. intermediate objectives (Poole and Rosenthal 1986). Taking again the typology of Fischer (1994), under the mode of the authority, the central bank has an independence of objective, whereas under the mode of the rule, it does not have independence in the choice of the instruments.

The ideas of Simons, and more generally of the Chicago School, would be taken up and adapted a few years later by Milton Friedman at the time of a new era for the macro-economy that which started with Keynesianism and continued with monetarism.

4b. Keynesianism

Born in the Great Depression of the late 1920's and the beginning of the Second World War, the Keynesian revolution moved aside the question of the choice of the monetary modes to address a new problem: what economic policy should be to set up in order to reach full employment (Lerner 1944)? Centering the debate on a

more specific question, the Keynesians postulated discretion, insofar as their analyses required interventions with economic instruments. In 1936, J. M. Keynes pleaded in favour of discretionary policies, because of the multiplier effect on economic growth.

Logic was deterministic: the political authorities led the monetary and fiscal policies by knowing the structure of the model perfectly. Based upon information in sufficient quantities, and an ideal model comprising multiple targets and instruments, the political authorities were able to choose a "good" policy-mix.

According to Argy (1988), the analytical base of the Keynesian's policies of stabilization which followed the war, can be summarized by the three following proposals:
1. The money wages of full employment were rigid,
2. The private sector was very unstable because of strong investments, or weak investments,
3. A negative shock of demand could lower employment.

With rigid money wages, there was no automatic mechanism for adjustment. In the event of negative shock of demand, the political authorities could increase the price level, to reduce the real wages, and consequently, to restore the full employment. The choice between the monetary policy and the budgetary policy depended upon the structural coefficients of the Keynesian model.

4c. Phillips's developments

In the original Keynesian model, the money wages are rigid, and are unable to explain inflation. This gap was filled by Phillips (1958), who highlighted a nonlinear relationship between the level of unemployment and growth rate of the money wages in the United Kingdom during the period 1861 - 1957. The "Phillips curve" suggests the possibility of arbitration between the inflation of the wages and the rate of unemployment. This arbitration rests at the origin of the modern prolongation of the "rules versus discretion" debate. Phillips suggested that inflation resulting from an expansionist monetary policy could have positive impacts on employment, emphasizing the necessity to have discretionary

policies. Friedman, however, (1959) countered this proposal and favoured the growth rate rule of money stock. The adoption of a monetary rule would allow for price stability while avoiding fluctuations created by discretionary policies. This debate was reborn with the appearance of new analysis tools; game theory bent the debate over "rules versus discretion" towards a debate over "credibility versus flexibility."

Phillips was not the first to have highlighted such a relationship between inflation and the rate of unemployment. Humphrey (1985) associates the following authors to the "prehistory" of the Phillips curve: Hume (1955), Thornton (1939), and Tinbergen (1951).
Samuelson and Solow (1960) replicated the Phillips curve to fit the United States. But, it was Lipsey (1960) who would give theoretical foundations to this empirical relationship; at the time, he reformulated it as being a process of dynamic adjustment of the labour market.

4d. Friedman's refinements

Well before Friedman, many critics questioned the Phillips curve. More precisely, the theoretical foundations brought by Lipsey (1960) gave rise to many of these discussions. Holmes and Smyth (1970) explain why there are no reasons to suppose that there is a direct relationship between the surplus demand for work, and the rate of unemployment. But the strongest attacks were those of Friedman (1968) and Phelps (1968) in connection with the monetary illusion.
Poorly specified according to Friedman, the Phillips curve was to be formulated by considering the growth rate of real wages rather than nominal wages. In practice, trade unions negotiate wages in monetary terms on the basis of the forecast rate of inflation. Friedman specified the Phillips curve in terms of the anticipated real wages, called henceforth the "expectations-augmented Phillips curve."

Phelps (1967) launched a second phase of the modern debate following this work showing the concept of natural rate of unemployment. A natural rate of unemployment corresponds to the balance between the job market and full employment production.

When the economy does not face a supply or demand shock, the balance holds. In case of a monetary shock, a long-term deviation from this natural rate of unemployment is impossible.

4e. The modern reading of the debate

The bases of the New Classical School can be found in the works of Lucas (1972), Sargent (1973), and Sargent and Wallace (1975). The object of this new argument is twofold: at the same time, it is a question of reconsidering the Phillips curve in the light of the assumption of rational anticipations; and a question regarding the insistence upon the monetary origin of inflation (Fourçans 1975). Consequently, unemployment deviates from its natural rate only if there are random deviations of the offer of currency compared to its systematic component.

The natural rate of unemployment theory was, nevertheless, not enough to shake the Keynesian edifice, as it did not exclude the relative efficacy of monetary policy in the short-run. Since Lucas (1972), the "New Classical School" defends the idea that systemic governmental action cannot produce long-lasting effects on output and employment by manipulating aggregate demand. Discretionary monetary policy would, accordingly, be ineffective due to the rational formation of expectations by economic agents. The "rules versus discretion" debate was tipped towards the rule more than the discretion.
With the "time inconsistency" concept, the 2004 Nobel prizes Kydland and Prescott (1977) created a turning point. There exists a temptation for a central bank not to respect *ex post* its own *ex ante* monetary objectives. The assumption that agents have rational expectations of this temptation creates an inflationary bias. Thus, the possibility that monetary authorities will not respect their own commitments reduces the confidence that economic agents have in these individuals.

Why would a government in charge of the monetary policy fool agents' expectations? The answer is twofold. Firstly, it can change its policy because of external events, (e.g. an asymmetric economic shock that hits the country). Secondly answer is the one studied by several analysts known as the political business cycle, a finding of

Nordhaus (1975). When important elections are approaching, the government may want to falsify agents' expectations in order to give a short run impulse to the economic activity and benefit from the fruits of the welfare improvement that follows.

This lack of confidence and its repercussion on inflation through the inflationary bias has authorized the creation of a new concept: "credibility." Several authors, since Barro and Gordon (1983), wonder about the options available to improve the credibility of a central bank, while keeping open the potential to stabilize the economy. Barro and Gordon (1983) proved that the inflationary bias could be reduced if the central bank improved its credibility. They were the first authors to explain that the degree of confidence in the central bank is relevant for economic agents when they form their expectations on future inflation. However, their study did not propose a practical way of improving the credibility of the monetary authority.

Rogoff (1985) proposes the appointment of a "conservative central banker" to increase credibility. It is question of selecting a candidate whose risk aversion is well known by every agent. Such a central banker must be more risk averse to inflation than the average economic agent. This model is the one that created the momentum for the modern theory of central banks. In parallel to this criterion of risk aversion, which is delicate to implement, the literature developed some new institutional extensions.

Lohmann (1992) discusses the possibility to reintroduce Milton Friedman's proposal of the "k% rule." That is to say the possibility of forcing the central bank to commit itself to a monetary rule. Because all agents know the rule, it allows them to integrate the inflation forecast into their salary contracts. Hence, the option to use the monetary policy to stabilize the economy is non-existent.

Neumann (1991) recalls the advantages of monetary management by an independent central bank. On the one hand, the inflationist bias would almost disappear, and on the other, the central bank would keep an option to stabilize the economy in the case of an economic shock via a well-suited monetary policy

However, some authors discuss the advantages of an independent central bank. Independence separates the monetary power from the political power, and the central banker is the only authority in terms of monetary decisions. Fratianni and Huang (1995), as well as Waller (1995), applied the agency theory to the relationship between a central banker and economic agents. The manager of a central bank is in charge of monetary production, when the agents are in a position vis-à-vis the central bank that looks like stockholders of the central bank. Agents are interested in the fact that the central bank produces the best currency possible, i.e. properly adjusted to the money demand, without the breaching of the initial commitment. The central banker's goal is to augment his/her personal utility function. There may be an incompatibility between the objective of the best currency possible and the personal utility function of the manager. Indeed, the latter may want to augment the central bank's return by offering more money than the economy demands, causing a depreciation of the value of the money in the economy at large. In order to prevent this outcome, a control procedure must be implemented forcing the central banker to renounce to his/her commitments in terms of the stability of the value of the money. Here too, the rule dominates discretion.

Facing some authors' scepticism on "independence" as a means without any objective, Walsh (1995) studies the possibility of performance contracts. New Zealand could be used as an illustration. What do performance contracts consist of? It is basically an incentive given by the government to the central banker to abide by his/her policy announcements to increase credibility In other words, if the incentive is a salary premium, the central banker will received this benefit if he/she succeeded at the end of the period in achieving the goals stated at the beginning of the period.

In a parallel to this literature aimed at finding concrete solutions to the credibility problem, options have since been developed by Barro and Gordon (1983), Backus and Driffill (1985), and Canzoneri (1985) who brought an explanation of the lack of credibility using game theory refinements. The "rules versus discretion" debate has become a "credibility versus flexibility" debate. Canzoneri introduces the concept of private information in the game between agents and the central bank; the latter has information that agents do

not have. Canzoneri explains that when agents play a cooperation strategy, in other words not including an inflationist bias in their expectations, the central bank has a real interest in not playing a cooperation strategy, but cheating. He demonstrates that the equilibrium between both players is when they play a non-cooperative strategy. He justifies the fact that the inflationist bias always exists except if one finds a way to force the central bank to remain in the cooperative equilibrium. He explains the idea that the inflationist bias stemming from temporal inconsistency is the outcome of non-cooperative strategies from players.

In retrospect, whatever the methodology used to study the inflationist bias is (Barro and Gordon, Backus and Driffill, Canzoneri or Fratianni and Waller) solutions seemed to tend towards a rule of monetary production rather than discretionary intervention of the central bank. However, for some authors, monetary authorities must continue to play a key role, not only in the respect of the rule, but also in the absorption of exogenous shocks by an adequate monetary policy. For instance, at the international level, the monetary policy must remain discretionary; if one wants to avoid destabilizing economic policies, one must link the national monetary policy to a stable international monetary system through a fixed but adjustable exchange rate mechanism. Thus, when there is no shock, the country will import the low inflation from the international system, but in case of an economic shock, one would keep all latitude to absorb it via expansionary monetary policy.

The study of exchange rate mechanisms has closely accompanied the literature about optimal currency areas (Mundell 1961). The exchange regime's integration in the economic analysis seems obvious due to its close relationship with the practice of monetary policies. A fixed exchange rate mechanism disciplines the central bank through integrating it in an international monetary system, yet allows it to act independently in the very short-run, if necessary.

If one compares both approaches, credibility enhancing and fixed exchange rate systems, the former does not consider the open economy model, while the latter is built upon it.

The next question is to know whether it is possible, and desirable, to look at the credibility concept while introducing the open economy assumption. The international pressure on the national monetary policy must be included in the study of the credibility of a central bank. First, it is question of confronting a central bank to another bank to measure the impact of a lack of credibility on the exchange rates. Then, it is necessary to consider the exchange rates by themselves. Indeed, it seems impossible to constrain the question of monetary policy to a closed-economy model, and moreover the study of optimum currency areas (Mundell 1961). Policymakers in open economies face a macroeconomic trilemma (Obstfeld, Shambaugh and Taylor 2004):

1. To stabilize the exchange rate;
2. To enjoy free international capital mobility;
3. To engage in a monetary policy oriented toward domestic goals.

While the second item is a given, and the third is the goal, the first item is the adjustment variable: in case of an inappropriate monetary policy, the exchange rate will adjust to the new economic conditions. One can imagine a large risk premium due to the lack of credibility of one currency on the world market.

Some authors have started to work in this direction. In the field of European monetary integration, De Grauwe (1992) used a methodology close to Barro and Gordon (1983) to measure the differences in terms of credibility between two countries of the European Union. Martin (1996) includes the exchange rates in a model built upon the assumptions drawn from Barro and Gordon (1983) in order to respond to a precise question: the relevance of the excluded countries from the euro zone.

In the consideration of the open economy assumption, it seems interesting to try to ascertain what changes in the strategies of players, and to measure the impact on exchange rates. From there, it would be possible to determine the criteria according to which an exchange rate regime is more credible than another. To this end, the work by Herrendorf (1999) opens a path. This author develops a reputation model with information asymmetries in an open economy setting and opposes flexible exchange rates with the

argument that asymmetry generates instability. With the birth of the Economic and Monetary Union, as well as with the discussions around new monetary unions, these questions are very relevant.

In both a fixed and flexible exchange rate mechanism, the inflationist bias is prevalent. The realization conditions, and the conditions for the success of a monetary union, have to be analyzed using the inflationist bias concept. If a country is part of a fixed exchange rate mechanism, its credibility is not reliant upon its decisions. If it is part of a flexible exchange rate mechanism, integration into a fixed exchange rate zone is a means to improved credibility (Herrendorf 1999, Melitz 1988).

The stakes are high, as the European Economic and Monetary Union has become an example for Mercosur, Northern Africa, and Northern America.

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