

MONETARY POLICY MONITOR

- **TRENDS IN MONETARY POLICY**

The Costs of Inflation

- **CONVERSATION WITH CHARLES GOODHART**

José Julio Senna

■ Trends in Monetary Policy

THE COSTS OF INFLATION¹

■ Under the gold-standard system, the price level oscillated in the short run, but it was relatively stable over the medium and the long term. After World War II, when the whole world migrated - apparently in a definitive way - to fiduciary money, inflation became a potential problem. After all, previous experiences with fiat money (some of which were temporary abandonments of the metallic system) had led to very rapid rates of price increases, normally accompanied by severe economic difficulties. As Irving Fisher once put it, “irredeemable paper money has almost invariably proved a curse to the country employing it”. (Fisher 1963, p. 131).

Perhaps surprisingly, inflation did not become an issue in the immediate post-war period. On the one hand, prices were not rising fast in any major economy. On the other, the then dominant economic paradigm – Keynesianism – did not have a theory of inflation. The fact of the matter is that inflation did not turn into a subject normally discussed by economists.

The inflationary phenomenon was introduced into the main body of economic analysis only after the birth of the Phillips Curve, in 1958, when A. W. Phillips showed an empirical relation between the unemployment rate and the rate of nominal wage change. The work involved data for the United Kingdom, covering the period 1861-1957. (Phillips, 1958).

Soon after the publication of that paper, Paul Samuelson and Robert Solow reproduced the same sort of study for the US economy, using annual rates of price growth rather than nominal wage variations. (Samuelson-Solow, 1960). The authors were aware of the fact that the curve could shift and have its shape modified over time.

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Nevertheless, they made use of the expression “menu of choice” and somehow stimulated the notion that a trade-off was there to be exploited.

In the following years, the idea that by accepting higher inflation economic policy makers could obtain a permanently lower rate of unemployment became somewhat widespread. Behind this reasoning was some sort of a disregard for the costs of inflation and, as shown below, the belief that whatever the costs they could be largely mitigated by indexation.

The Traditional Approach

In any discussion on the costs of inflation, it is necessary to make the distinction between unanticipated and anticipated inflation. In the past there were numerous cases of unanticipated inflation associated with wars and serious domestic conflicts. World War I is a case in point. Struggling for resources to finance the war effort, countries involved in the conflict abandoned the gold standard and resorted to the printing of fiat money. Most of them did so in a gigantic scale. The general price level increased tremendously, a phenomenon which ended up affecting economies not directly involved in the dispute. In some countries (the UK, the US and Canada, for example) prices went continuously up until the end of the War and fell during the following years. In others, like Germany, they acquired an explosive trend.

The episode was analyzed by Keynes in his 1923 book, *A Tract on Monetary Reform*. To illustrate the magnitude of the problem, the author put together a series of statistics provided by the old League of Nations. Between 1914 and 1920, wholesale prices tripled in the UK and more than doubled in the US and Canada. In France and Italy they increased more than five and six-fold, respectively. In Germany, the early 1920's was a period of hyperinflation. (Keynes 2000, p. 3).

To fully understand the nature of the problem one must realize that a large number of the economies affected by the inflationary phenomenon used to operate under the assumption of price stability. Individuals and firms were not prepared for those absurd changes in the value of money. Under this circumstance, a rapid rise in prices generates a wealth-redistribution process of a random nature. Wealth is transferred

from one person to another without any particular criterion. In the mentioned episode, particularly troublesome was the enormous destruction of private wealth. As pointed out by Keynes, in Europe, pre-war savings invested in bonds, mortgages and bank deposits were largely or entirely wiped out by the War and the monetary policy which accompanied and followed it. (Keynes 2000, pp. 13-14).

Decades later, when economists started to get deeper into the problem of the costs of inflation, it became common to consider the arbitrary redistributions of income and wealth associated with unexpected inflation the main cost of such a phenomenon.

Unexpected inflation redistributes wealth from nominal creditors to nominal debtors. At first sight, since the governmental sector is a great debtor in most or all countries, there might be a tendency to believe that the issue is purely one of wealth transfers between the private sector, on the one hand, and the government, on the other. However, one must realize that, to the extent that government debts are largely issued in nominal terms, unexpected inflation reduces the real value of the stock of debt and this means that the amount of future tax payments required to service or retire the debt is accordingly reduced. Younger and future generations tend to benefit, while older generations are liable to lose. Current owners of the national debt are harmed by inflation to the benefit of future taxpayers. In this case, we have basically a question of intergenerational transfer of wealth.

As to income redistributions, important examples are those involving wages and profits. In consequence of unexpected inflation, recipients of profit income may be benefited at the expense of wage earners. A similar phenomenon might occur between those who pay rents, on the one hand, and those who receive rents, on the other. In the private credit market it is the same. Given that inflation is not expected, loan agreements tend to be specified in nominal terms. If inflation comes as a surprise, the ex-post real rate of interest will differ from what both parties expected. One party will lose and the other will win.

What are the welfare costs of such redistributions? To begin with, most people are risk averse, that is to say, they dislike uncertainty. The unpredictability of the final results can thus be considered harmful to almost everyone. One may argue, however, that gains and losses associated with unanticipated inflation tend to cancel out over

the economy as a whole. If we did not care about redistributing wealth and income among individuals, the costs of unanticipated inflation could be viewed as minor. But things are not that simple. Poor segments of the population might be hurt to the benefit of the rich, which would be unfair. And this is a big problem once we realize that political stability requires the economic system of any economy to be perceived (by the public at large) as basically fair.

In any case, independently from who loses and who wins, the random character of the problem is always present. The mentioned redistributions can be considered costly to society mainly because they mean that income and wealth are transferred on a random basis. Keynes emphasized the role of wealth redistributions and the loss of legitimacy such redistributions imply for capitalist institutions.

Economists started to go deeper into the costs-of-inflation issue in the late 1970s and the first half of the next decade. In a series of papers published during that period, Stanley Fischer dedicated himself to the theme. (Fischer 1981, 1984). In the first of those articles he had Franco Modigliani as his co-author. (Fischer and Modigliani 1978). The approach originally adopted, and maintained in subsequent works, involved organizing the discussion by means of a listing of the major real effects of inflation. The usefulness of such an approach leads us to maintain it in the present article. The list of costs includes: a) welfare losses; b) menu costs; c) price level uncertainty; d) relative price variability; and e) non-adaptation of the tax system.

Welfare losses

A couple of decades before Fischer and Modigliani started organizing the discussion by listing the main components of the costs of inflation, Martin Bailey wrote on the welfare losses provoked by inflationary finance. (Bailey 1956). All subsequent studies on the subject incorporated Bailey's approach.

Bailey starts out by assuming that a given and unchanged rate of inflation is expected by everyone, after the government communicates the monetary policy it intends to follow. He further assumes that cost-of-living adjustments are then made and bank deposits are negligible. By making these hypotheses the author wishes to show that

the welfare costs are independent from the distributive and disruptive aspects of inflation and cannot be avoided by sliding-scale arrangements or by foreknowledge of the course of prices.

In Bailey's analysis it is also assumed that the demand for real cash balances is a stable function of the nominal rate of interest. There is an initial desired amount of real money. When the government announces inflation the nominal rate of interest goes up and hence raises the opportunity cost of holding cash. In consequence, the demand for real money balances diminishes. The excess is used in the acquisition of goods and services.

To the extent that the announced money growth is pursued on a sustained basis (as assumed in Bailey's example) there will be inflation over the short and the long run. Interest rates and real cash balances will be lower. It is worth noticing that for the stock of real cash balances to diminish, the price level must rise faster than the volume of money, for some time. For a while, inflation is higher than the long-run inflation rate.

The destruction of real cash balances provoked by the announcement of inflation represents a cost to society. (Bailey 1956, p. 110). There is an aggregate loss of utility which can be represented by an area (a triangle) under the demand for money. By adjusting their cash balances to a lower level, people have to make more frequent trips to the bank. We can think of this cost as equivalent to the inconveniences that people suffer as they economize on money balances. Sometimes this is called the shoe-leather cost of inflation.

As the original non-inflationary environment is permanently transformed into one in which there is a constant rate of price growth, the public will be willing to maintain the reduced stock of real money balances. The inconveniences caused by such reduction will be present period after period. So, in comparison to a situation characterized by price stability, inflation provokes a permanent cost, which cannot be removed by institutional adaptation. However, as transaction technology changes, this cost falls. With the intense use of debit and credit cards, observed in recent times, the tendency is for this cost to become negligible.

Bailey's analysis shows that inflation involves not only a cost, represented by the destruction of real cash balances, but also a tax. This tax is different from all others but has similar effects. To see this, one must recall that a sustained growth of the money supply implies a permanent rate of inflation. For the sake of simplicity, we can assume no real income growth. This means that in the long run the public is willing to hold a constant stock of real cash balances - if the inflation rate is constant, so is the nominal level of the interest rate. Given the presence of rising prices, the maintenance of the real value of the money balances requires the public to increase the stock of nominal balances at a rate capable of offsetting the impact of inflation. For this to happen, individuals have to divert part of their income to raise their holdings of nominal money. This effort is simply an attempt to avoid the deterioration of the real value of their stocks of real money. The relevant point is that the desire to maintain such stock constant means that part of people's income cannot be spent. In summary, the government spends more and the public less, just as would happen in case the extra governmental expenditures were financed by regular taxation.

In real terms, the proceeds of this tax are equivalent to the rate of inflation multiplied by the stock of real cash balances. The effect does not differ from that of a direct tax on the holding of money. (Bailey 1956, p. 94). We can then say that the inconveniences that people suffer are the result of their attempt to escape the inflationary tax.

Menu costs

Menu costs are those associated with the physical costs of changing prices. In the presence of inflation, firms need to modify their posted prices with some frequency. In principle, the higher the rate of inflation, the more often they have to do so. And this involves printing and distributing new catalogs. In the case of restaurants, it involves printing new menus, hence the way this cost is normally identified.

Price level uncertainty

In their 1978 paper, Fischer and Modigliani called attention for the fact that “there is no necessary link between the rate of inflation and the variability of the inflation rate”. They added, however, that, apparently, “the variability of the rate of inflation [...] increases with the level of inflation”. (Fischer and Modigliani 1978, p. 828).

An empirical investigation of this last statement was conducted by Fischer in his 1984 article. At the occasion, the author presented a graph in which he plotted CPI rates of inflation against the variability of the rate of inflation, measured by its variance. The sample covered the period 1973-1983 and included only OECD countries. Although a simple look at the graph allows one to notice a number of cases of high-inflation economies with relatively inflation variability, the conclusion was that “the empirical evidence is that there is more uncertainty about future price levels at high than at low average rates of inflation”. (Fischer 1984, pp. 38-39).

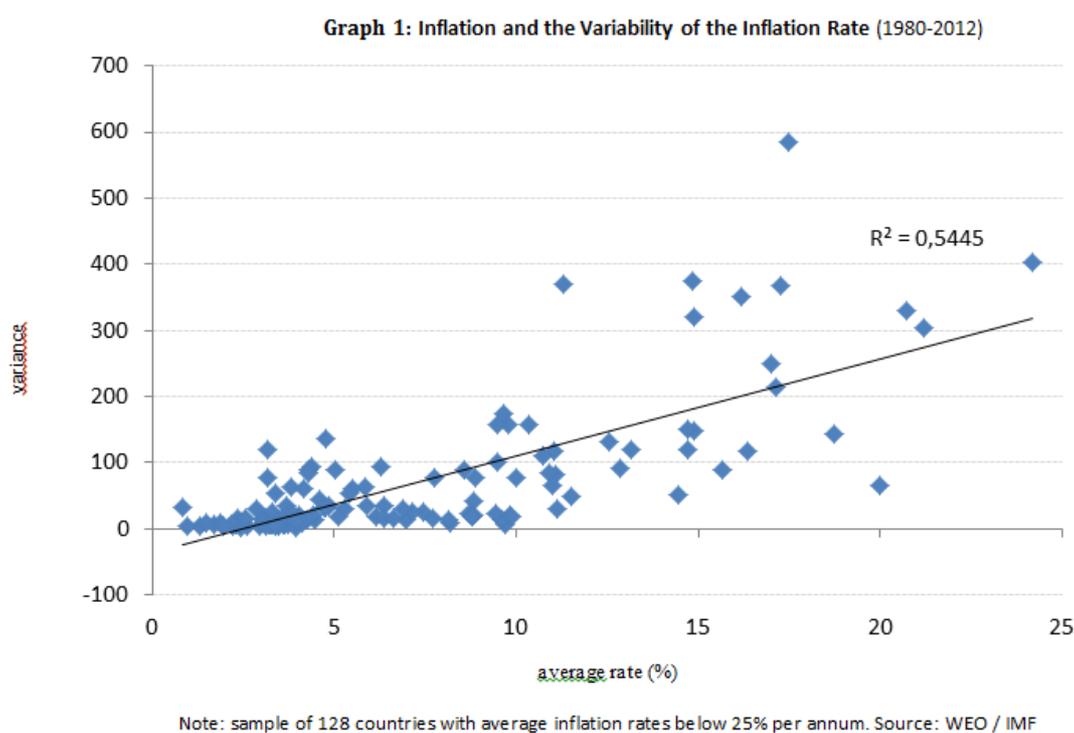
Even assuming that people can predict short-run inflation, long-term inflation cannot be foreseen. In reality, the higher the rate of inflation (current and expected rates for the near future), the more insecure people tend to be. In economies with long tradition of price stability, or very low inflation rates, this sense of uneasiness does not exist.

The point is that significant uncertainty about the price level which will prevail in the future implies costs to society. Even if indexed assets are available, this simply reduces the costs to the public associated with long-run uncertainty about the price level, but it does not eliminate it. Such uncertainty diverts people’s attention from productive activities. Individuals and firms are compelled to spend a great deal of time and effort in attempting to manage the inflationary risk. A second source of cost has to do with the tendency for individuals and firms to shorten their time horizons and contracts. A third one relates to the increased attractiveness of real assets as hedges against inflation, particularly real estate and assets denominated in foreign currencies.

One important consequence of all this might be a decline in the savings and investment rates. In the financial sector, the shortening of horizons implies a reduction in the average maturity of the sources of funding available to the banking

industry, forcing banks to avoid long-term financing. This is detrimental to the process of physical-capital accumulation. The higher the rate of inflation, the more important these considerations tend to be.

In the graph below we provide further evidence of the relation between the level of inflation and its variability. The exercise is based on IMF data and involves a sample of 128 countries, covering the period between 1980 and 2012. Economies which experienced average rates of price growth higher than 25% per annum (a total of 38) were not included in the sample. We can see from the graph that the higher the average rate of inflation, the greater the variance, especially for rates of inflation higher than 10.0% per annum. Such a relation holds for the highly inflationary economies as well (not shown).



Relative price variability

In market economies, the price system plays a crucial role. Market prices convey information on consumers' preferences and product scarcities. In such economies,

resources are allocated in response to movements in relative prices. To the extent that the system works freely, resources tend to be allocated in an efficient way.

The efficiency of the system is damaged, however, in the presence of significant inflation. The reason is that, in such case, it becomes harder for economic agents to distinguish price movements arising from general inflation from movements caused by changes in demand and supply conditions. The quality of the signals sent by the price system deteriorates.

Over the long run, efficiency in the allocation of resources is of fundamental importance for the economic growth process of any economy. This means that inflation may hurt the growth process. High inflation implies greater uncertainty about the price level as well as greater uncertainty about relative prices. Inflation not only shortens economic agents' time horizons and affects decisions to save and invest, but it also causes microeconomic inefficiencies. These problems may substantially reduce the pace of economic growth. However, in spite of the great deal of research that has been done on the possible relation between inflation and economic growth, the results are still inconclusive. To the extent that one agrees on the causality, one important question to which there is no consensual response has to do with the level of inflation beyond which the inflationary process starts hurting economic growth.

Non-adaptation of the tax system

In the real world, people normally think in nominal terms. Indexed assets and contracts are not uncommon, but indexation is usually restricted and tax codes, in particular, are not adapted to changes in the value of money. At least, they are not entirely adapted. This is true even in economies which have experienced high rates of inflation for long periods of time.

Governments are reluctant to fully index their economies for understandable reasons. First, decisions in such a direction might be viewed as an expression of failure. Second, indexation might increase the tolerance to inflation. Third, as regards tax codes, governments benefit by avoiding that sort of adaptation, since in such case inflation increases the real value of individual's tax liabilities.

The major distortions caused by lack of adaptation of the tax codes can be explained as follows. First of all, if nominal income brackets are not adequately corrected, inflation moves individuals into higher income-tax groups. This leads to the taxation of nominal income gains and thus reduces real disposable income. Secondly, capital gains are usually taxed based on the differences between the prices at which assets are sold and the prices at which they were originally acquired, without allowing for the monetary correction of these ones. Taxes are levied on nominal gains. Thirdly, to the extent that the corporate income tax legislation is progressive, inflation shifts firms into higher income groups. In this case, the problem of taxing nominal profits is aggravated by the fact that estimates of depreciation are usually based on the unadjusted value of fixed assets. The same is true as regards the lack of monetary correction of the firm's capital base. These factors reduce the real rate of return to the shareholders and work as a disincentive to savings and capital formation. Additionally, such distortions give rise to a sense of injustice and stimulate tax evasion.

Could we conclude from this discussion that high inflation would be perfectly acceptable as long as we made use of extensive indexation? After all, indexation would eliminate a great deal of the distortions caused by inflation. Should it be considered an adequate substitute for price stability?

Abstracting from the usual reluctance to adopt it, and noting that full indexation is neither possible nor desirable, extensive indexation is indeed capable of eliminating a good number of the distortionary effects of inflation. But other costs would remain. And these are: a) the so-called shoe-lather costs; b) menu costs; c) aggregate price level uncertainty; and d) relative price uncertainty. The first two ones cannot be considered particularly relevant in the modern world, but the last two ones are of great importance. Indexation would not make them disappear. Inflation uncertainty would still be present and the price system would still work with reduced efficiency.

At a more technical level, one can raise several objections to indexation. One of them has to do with the fact that it reduces the flexibility of the economy to deal with supply shocks, especially if wages are indexed. Another one relates to the loss of efficacy of demand management policies associated with the fact that indexation

increases the persistence of inflation. The inertial component, which is present in any inflationary process, becomes even more important. The more one prepares the economy to live with inflation, the bigger this problem becomes. In this case, anti-inflationary policies become a lot more costly, for fiscal and monetary tightening produces smaller effects on inflation and greater impact on economic activity. The introduction of mechanisms which supposedly make life easier under inflation tends to increase the tolerance to rapid rates of price growth. The increased cost of combating inflation operates in the same direction. Both factors contribute to the perpetuation of the inflationary process.

The experience of Brazil illustrates the point. The introduction of monetary correction mechanisms in the 1960s created the illusion that living with inflation was not that bad after all, since it was possible to eliminate a great deal of its damaging consequences. As the pace of inflation accelerated, the number of indexation mechanisms increased and prices and contracts became formally adjustable at shorter and shorter time intervals. The period of very high inflation lasted until the mid-1990s. But before managing to put an end to the process, by means of an ingenious monetary reform (the Real Plan), Brazilians were forced to bear the consequences of several (very costly) heterodox plans, involving not only wage and price controls, but the freezing of financial assets as well.

Authors who wrote about the subject in the 1970s and 1980s were not aware of the serious problems caused by indexation as most economists are now. The Brazilian experience certainly contributed to this increased consciousness. Perhaps this can best be illustrated by recalling how common it used to be, at that time, to observe that, to a large extent, the costs of inflation were avoidable consequences of the inflationary process. Robert Shiller, for example, once noticed that the cost associated with price level uncertainty would disappear if the economy were more fully indexed. “We thus do not need to eliminate inflation to deal with this cost”, he concluded. (Shiller 1984, p. 52).

In this regard, it is interesting to notice that even Friedman, who always worried about the damaging consequences of inflation, considered indexation a good idea. “The side effects of changes in the rate of inflation can be substantially reduced by encouraging

the widespread use of price escalator clauses in private and governmental contracts”, he once said. (Friedman 1974, p. 25). He suggested the use of indexation in his own country, while warning that Brazil had adopted it “on a wider scale than I would recommend for the United States”. It would be “far better to have no inflation and no escalator clauses. But that alternative [eliminating inflation in the US] is not currently available” (Friedman 1974, p. 35).

Are the costs of moderate inflation small?

The traditional analysis of the costs of inflation led to the conclusion that those costs are small, for moderate rates of inflation. Fisher and Modigliani, for example, started their 1978 paper with the following reasoning: “there is no convincing account of the economic costs of inflation that justifies the typical belief – of the economist and the layman – that inflation poses a serious economic problem, relative to unemployment”. (Fisher and Modigliani 1978, p. 810). In the summary made by Shiller in his comments on Fischer’s 1984 article, “the standard list of costs of inflation really amounts to nothing much at all, for inflations of moderate range or variability, if the government takes steps to allow indexation”. (Shiller 1984, p. 53).

It is interesting to notice that the paper by Fischer and Modigliani was published close to the end of the decade during which, for the first time since World War II, inflation had become a significant phenomenon, in the developed world. In fact, the average rate of inflation (CPI) in the US in 1975-79 was 8.0%. In 1978, the annual rate was 9.0%. In the following year, inflation went up to 13.3% and Paul Volcker was made Fed’s chairman.

Volcker’s anti-inflationary crusade had already come to an end when the Federal Reserve Bank of Kansas City organized the Jackson Hole symposium around the theme “Price Stability and Public Policy”. The year was 1984. Inflation had been brought down from almost 14.0% in 1979 to 3.8% in both 1982 and 1983. At a huge cost - the GDP level observed in the 3Q1982 was practically the same as that in 3Q1979. In spite of the fact that inflation had entered into the double-digit range (becoming number one public enemy) and the tremendous mobilization to bring it

down, the tone of the debates, as expressed in Fischer's opinion, was that for those who considered inflation a "deep societal problem" the results of the economic analysis of the costs of inflation - the mirror image of the benefits of price stability - were simply "disappointing". (Fischer, 1984, p. 33).

Inflation and the Public Opinion

The idea that the costs of inflation are small does not square well with the aversion to inflation reflected in surveys of public opinion. In fact, when the public is surveyed on the issue of inflation, the phenomenon emerges as a social problem of great importance. In the US, prior to the implementation of Volcker's policy, opinion polls indicated it had become the greatest public enemy. But what is it exactly that those surveys generally reveal?

In his 1984 comments, Shiller cited the results of a survey conducted in 1968-70, in the US. Respondents who said their income was higher than it was four years ago were asked to explain why they were now making more. Within the mentioned group, 44 percent said that the income increase was the fruit of their own efforts. They worked hard, acquired more experience and skills, etc. Only 25 percent made reference to external causes, like business conditions or labor unions. And only 6 percent mentioned inflation as the cause of their wage increase. (Shiller 1984, pp. 54-55).

One important result of that survey is that, for the average person, pay raises are not associated with inflation. Respondents apparently believe that they would receive those raises anyway, even in the absence of inflation.

In the mid-1990s, Shiller conducted his own survey. The objective was to understand the reasons why people were apparently so concerned and dismayed by inflation. No doubt, a good understanding of the way the public reacts to the inflationary phenomenon might be quite useful as a guide to economic policy making, helping the government in the process of choosing among different policy options.

Shiller worked with research assistants. They all conducted informal interviews with a randomly chosen sample of people and asked them to answer three different

questionnaires. One of them was open-ended (applied only to US respondents) and the others involved multiple choice questions. Besides the US, people in Germany and Brazil were also surveyed. Respondents were classified according to whether they were young or old, economists or non-economists. “Among non-economists in all countries, the largest concern with inflation appears to be that it lowers people’s standard of living. Non-economists appear to believe in a sort of sticky-wage model, by which wages do not respond to inflationary shocks, shocks which are themselves perceived as caused by certain people or institutions acting badly”. (Shiller 1996, abstract).

The most striking differences between groups were observed between economists and non-economists. In particular, says Shiller, “the general public in the US clearly thinks differently from professional economists about the costs of inflation, far more likely to think of inflation as lowering standards of living”. (Shiller 1996, p. 21). The idea is that inflation erodes the purchasing power of wages and therefore eliminates the benefits of justifiable pay raises. Individuals become poorer as a result of inflation.

Understanding what people think are the causes of inflation is of course crucial to the understanding of the reasons for the general belief that inflation hurts people’s standards of living. And inflation seems to be attributable to a large number of factors, including greed, big business, (non-specified) government actions, people willing to borrow and spend too much, etc. (Shiller 1996, p. 15). In general, inflation appears to be caused by bad behavior. When prices rise rapidly, people tend to believe that they had been cheated somehow, giving rise to a sense of injustice.

It can be easily seen that the answers differed quite substantially from the list of real effects that Fischer and Modigliani originally offered in their 1978 paper on the costs of inflation. There is little or no mention to the inconveniences created by inflation, to the distortionary effects associated with inflation, to menu costs, etc.

In addition to these findings, the survey conducted by Shiller confirmed the idea that, in general, the public fails to see inflation as a process which tends to affect labor incomes just as it affects the prices of goods and services. “People tend to see the causes of their income increases in personal terms, rather than due to inflation”, says

the author. (Shiller 1996, p. 16). Such misperception probably explains the significant aversion of wage earners to inflation.

In addition to all this, respondents in the three countries covered by the survey were given two extreme possibilities to choose. One involved a hypothetical very low rate of inflation and a high rate of unemployment. The other involved high inflation and low unemployment. The results indicate that “most people in all countries would choose the low inflation even if it meant that millions more people would be unemployed.” (Shiller, 1996, p. 19).

Fischer and Huizinga had come to the same conclusion, as normally happens with anyone who conducts or examines opinion polls on this subject. In a joint paper published in 1982, however, they found an interesting complement. The public generally considers inflation a more serious problem than unemployment, but tends to prefer that economic policy be directed at reducing unemployment, an apparent contradiction deserving further investigation. In the words of the authors, “the results are clearly that the public is in general *not* willing to fight inflation at the cost of higher unemployment – and that is exactly the choice that has been offered by most economists and governments”. (Fischer-Huizinga 1982, p. 18).

The Monetarist’s View

Harry Johnson once examined the social and intellectual conditions which make possible a revolution or counter-revolution in Economics. (Johnson 1971). As had happened with Keynes, the monetarist counter-revolution became a reality only after the appearance of an important economic and social problem which the prevailing orthodoxy could not deal with.

For more than two decades, Friedman had been the leader of a series of research aimed at convincing politicians, economists and the public in general that inflation constituted an important problem and that, contrary to Keynesianism, monetarism explained the phenomenon and had a solution to offer. As emphasized by Johnson, agreement on the second proposition depended on the acceptance of the first one.

(Johnson 1971, p. 7). And this only happened as we entered into the 1970s, when the rate of price growth reached a significant level in the United States.

Friedman and his followers dedicated themselves to the study of a subject for which there was no demand in their own country. To obtain an empirical base for their research they concentrated their attention on the inflationary problems of other nations. Demonstrating how things work in practice was a crucial part in the development of the monetarists' ideas. In this regard, the study made by Milton Friedman and Anna Schwartz on the monetary history of the United States was of great importance. Their book examined the evolution of the stock of money in the US during almost 100 years. From this work emerged a large number of empirical relations which helped defining the basic principles of the mentioned school. In particular, the study revealed clear and stable relations between changes in the stock of money, on the one hand, and changes in nominal income, economic activity and prices, on the other. When inflation became a problem, the theoretical framework had already been built.

Friedman's contribution was complemented by his analysis of the Phillips Curve. In a 1967 article (published in the following year), he showed that the trade-off between inflation and unemployment had a temporary nature. In the long run, there was no such trade-off, a conclusion which Edmund Phelps also arrived at, almost simultaneously. As Alan Blinder once put it, "by 1972 the 'vertical-in-the-long-run' view of the Phillips curve had won the day". (Blinder 1992, p. 195).

However, agreement on the inadequacy of exploring the short-run Phillips Curve is not equivalent to recognizing the importance of pursuing low and stable inflation. In fact, years after the idea of the vertical curve had won the day, Friedman's preference for low inflation and for the use of monetary policy was not consensual. (Friedman 1968, p. 13). There was disagreement both in regard to the preferable instrument as well as on how important it was to have low inflation.

Paul Samuelson, Arthur Okun, Walter Heller, James Tobin and several others had opinions quite distant from the ones defended by Friedman. Those economists tended to agree with at least one (if not all of them) of the following statements: a) inflation had its origin in cost pressures; b) incomes policies were highly recommendable; and

c) attempts to fight inflation by means of fiscal and monetary restraints would not work. Disagreement in terms of the diagnosis and on the adequate instrument to deal with the inflationary phenomenon was thus quite clear. As to the question regarding how desirable low inflation is, perhaps it suffices to recall a famous reasoning expressed by Tobin: “it takes a heap of Harberger triangles to fill an Okun gap”. (Tobin 1977, p. 17).

Central Bankers and Price Stability

On the issue of price stability, academic economists took the backseat. Central bankers took the lead. In the United States, the rate of price growth started to move upwards in the first years of the 1970s. Until then inflation was not a significant phenomenon. Measured by the CPI, the average inflation rate during the preceding decade was 2.3% per annum. For the period 1971-74, inflation figures were distorted by the fact that the initial governmental response to the inflationary problem was the introduction of a program of wage and price controls. Between 1975 and 1979 the price level rose annually at the pace of 8.0%, on average.

As already emphasized, and with the exception of the monetarists, at that time economists were not particularly concerned with the costs to the economy associated with substantial inflation. In the US, as regards the defense of (and the search for) price stability, the lead was taken by policymakers. They were the ones who set the intellectual trend, the first ones to call attention for the importance of low and stable inflation and inflation expectations.

The US experience is obviously quite relevant. But it is important to register that the real pioneers as regards the search for price stability were German and Swiss policymakers. In fact, in the early 1970s, monetary authorities in Germany and Switzerland were long convinced of the need to pursue monetary policies compatible with inflation rates lower than the ones they observed at the time. In Germany, the rate of price growth varied between 5.0% and 7.0% per year. In Switzerland it was even higher. In both countries the dominant influence of money on prices was something already largely recognized. They also understood that in order to obtain

lower rates of inflation, monetary policy had to be conducted in an independent way. And that was not possible under the old order represented by the Bretton Woods system of fixed but adjustable exchange rates. Priority was given by individual countries to the stability of the foreign prices of their currencies and this implied lack of control by the monetary authorities over the domestic money supplies. This was particularly true for the two above-mentioned economies.

In the early 1970s, US monetary policy was loose. The economy was weak and experienced external deficits. In a way, the US was exporting inflation to other countries. Germany and Switzerland suffered the most because their currencies were the best candidates to appreciate in any realignment of rates or in case the Bretton Woods system broke down. To defend their currencies, the Germans and the Swiss were forced to acquire enormous amounts of dollars in the international markets. Capital flows were too huge to be fully sterilized, which implied high rates of monetary expansion. This is what produced the relatively high rates of inflation in those economies.

With the collapse of the Bretton Woods system in the first months of 1973, the Germans and the Swiss were free to pursue independent monetary policies. The flexible exchange-rate regime which accompanied that collapse led them to start aiming at lower rates of inflation.

The strategies adopted in both cases were quite similar. Both countries formally introduced monetary targeting, as they established numerical objectives for the expansion of the money supply, whose parameters were set based on informal targets for the inflation rates and were determined by means of the so-called quantity equation. The basic lesson taught by Milton Friedman and his followers was fully absorbed: inflation was a monetary phenomenon and the task of promoting price stability would be best executed if the central bank opted for targeting a variable under its direct control (the money supply). The objectives were pursued in a non-rigid way and the common strategy was frequently referred to as “pragmatic monetarism”, an expression later to be used in the US, during the Volcker administration.

The final results of those two experiences are generally considered to be quite good. In both countries, the average inflation rate converged to less than 2.0% per annum, and stayed at that level for many years. In Germany, the results were particularly good from 1983 onward. From that year until 1990 the average rate of price growth was 1.8%. From 1994 until the creation of the euro, the average rate was 1.6%. This pattern was altered during the period 1991-93 due to the difficulties caused by the German reunification. In Switzerland, something very close to price stability was enjoyed since the mid-1970s. For 25 years, that is, until 1999, when monetary targeting was abandoned, the average inflation rate was 2.7%. From 2000 to 2008 it was only 1.0%.

Back to the US experience, the first thing to recall is that the high rates of price growth observed during the 1970s – especially in the second half of the decade – had transformed inflation into the number one public enemy. This fact clearly created an environment which somehow facilitated a certain change in policymakers' attitude towards inflation.

In mid-1979, the inflation rate was in the double-digit range. In international markets, the dollar had already weakened substantially. Commodity prices were at very high levels, particularly gold. Apparently, there was little confidence in fiat money. There would be elections in the next year. Something had to be done.

At that time, the Fed's chairman was a former executive of an aircraft manufacturer, poorly qualified for the function. Under an atmosphere of crisis, William Miller was given the command of the Treasury, leaving vacant the chairman's position at the Fed. Paul Volcker's experience as a government official, particularly as president of the New York Fed, led several people to suggest his name to President Carter, who (rather reluctantly) accepted the indication.

But before accounting for Volcker's ideas on what needed to be done, and what he actually did after taking the command of the Fed, let us register the then prevailing view regarding anti-inflationary policies in general. In a lecture delivered a few days before Volcker dramatically changed the course of events, Arthur Burns gave a fair picture of that view. Burns was a distinguished academic and had left the Fed's chairmanship the year before, after eight years in the post (1970-78).

The lecture was dubbed “The Anguish of Central Banking” and the question under discussion was the acceleration of inflation in the US. From price stability in the end of the 1950s and early 1960s the country headed for double-digit inflation rates. Burns attributed the persistent inflationary phenomenon to “the philosophic and political currents” that had transformed economic life in the US and elsewhere since the 1930s. He had in mind the activist policies initiated during the New Deal, the Employment Act of 1946 (which made the government responsible for “maximum employment”) and the multiplication of governmental programs. (Burns 1979, pp. 9-10). Behind the creation of any new program, benefiting society at large or some particular group, there was the assumption that monetary policy would accommodate the action. In such an environment, the narrative continues, the Fed was always “testing and probing the limits of its freedom” to put inflation under control. (Burns 1979, pp. 15-16). In the end, economic policymaking became dominated by fear of immediate unemployment, rather than fear of current or future inflation. (Burns 1979, p. 13). Years later, Stephen Axilrod, an important economist at the Fed, described the prevailing culture of that time as one of “excessive policy caution”. (Axilrod 1996, p. 233).

Greenspan and Bernanke had a similar understanding of the prevailing environment when Volcker took power. In his 2007 book, Greenspan put it this way: “there was a widespread feeling in Washington that since you couldn’t bring down inflation without causing more unemployment, it wasn’t worth the cost”. (Greenspan 2007, p. 83). Bernanke emphasized the absence of “appetite for taking the actions necessary to reduce inflation”. (Bernanke 2006, p. 7). Before them, Milton Friedman had already argued that the commitment of the government to a policy of full employment had led the authorities to “overreact to temporary recessions by measures leading to rapid monetary growth”. (Friedman 1974, p. 28).

As president of the Federal Reserve Bank of New York, Volcker was a permanent member of the Federal Open Market Committee (Fomc). And as such he had been pressing the Committee for tougher measures against inflation. The transcripts of several Fomc meetings leave this very clear. In one of those meetings, for example, he stressed how impressed he was by the degree that inflation was built into the thinking

of businessmen. (Senna 2010, pp. 314-317). He took power as chairman in August 1979, when the annual rate of price growth was around 12.0%.

Within the Fed, the idea of changing the operational procedures of the institution had been a subject under discussion for quite some time. Volcker thought that the right timing for moving from interest-rate targeting to money-supply targeting was finally arriving. In his view, the appropriate moment for that had to coincide with concrete signs of public support for drastic measures against inflation.

In the Fomc extraordinary meeting held on October 6, Volcker stressed the significant worsening of inflationary expectations and submitted the proposal involving regime change to the Committee. He added that there was need for a consensual decision and for a “program that is strong in fact and perceived as strong in terms of dealing with the situation”. (Senna 2010, p. 217).

The proposal was approved and the Fed’s money desk was given the task of aiming at certain targets for the expansion of the non-borrowed reserves (the main component of the monetary base) of the banking system. The basic interest rate would fluctuate according to the circumstances. In the first three years of the 1980s, it oscillated between 8.0% and 22.0%.

Employment and economic activity suffered as a result of the tightening in monetary policy. The cost of the program was high. The unemployment rate jumped up from an average of 6.0% in 1978-79 to almost 10.0% in 1982-83. Just prior to completing three years, the program was discontinued and there would be no more monetary targeting for the remaining of 1982. At the end of that year inflation was down to 3.8%.

The pressure for interrupting the Fed’s strategy at an earlier point was enormous. President Carter lost the run for reelection. Farmers demonstrated by taking their tractors to the streets of Washington and car dealers sent Volcker mailbags full of ignition keys of automobiles they were unable sell. In Kentucky, posters were made in which Volcker and the six other Federal Reserve governors appeared as “wanted”. (Treaster 2004, pp. 5-6). In Congress, some members talked about impeaching Volcker, while others considered removing the Fed’s power to control the money supply. (Neikirk 1987, p. 128).

To a large extent, success in bringing down the rate of inflation may be attributed to the following reasons: a) the anti-inflationary policy was implemented when inflation was viewed as number one public enemy; b) the supply-side economics which prevailed during the Reagan administration produced huge fiscal deficits, allowing Volcker to shift to the fiscal situation the responsibility for the observed fluctuations in interest rates and the economy; c) Volcker's determination to complete his task was amazing. To illustrate this last point, it suffices to recall that in a testimony before the Committee on Banking, Finance and Urban Affairs, held in mid-1981, when the costs of his program were already high and clear, Volcker calmly said (in the words of one of his biographers) that "almost certainly business failures would multiply and millions more would lose their jobs". (Treaster 2004, p. 4).

The important point to notice is that Volcker did not have a formal academic model in his mind. And he did not follow the thinking of any particular economist. The Keynesian idea of the need to create an output gap to be able to bring inflation down, for example, did not make part of his reasoning. From the monetarist school, he kept only its fundamental principle: inflation is a monetary phenomenon. Perhaps just as important for the accomplishment of his task (and for future monetary developments) was his emphasis on the role of low and stable inflationary expectations. In an article published three years before ascending to the chairmanship, he made that clear. He rejected Friedman's idea of adopting a constant rate of growth for the money supply. No central banker, he said, would be willing to dispose of some sort of hedge against uncertainty, which is equivalent to saying that it is wise to preserve certain flexibility to be able to face unpredictable events, to test new measures, and to examine market reactions and benefit from them. At that occasion, he made use of the expression "pragmatic monetarism". (pp. 251-52).

While academic economists were arguing that the costs of inflation were small, in Europe and in the US policy makers were fighting to reduce the rate of price growth. In Europe, the economic turbulences which marked the end of the Bretton Woods system caused a revival of the idea of building a monetary union. As a first step in this direction, several European countries embarked into a regime called the European Monetary System (EMS). One important component of that scheme was the

Exchange-Rate Mechanism (ERM), according to which the countries that opted to participate would fix the external price of their currencies to the Deutsch mark. The exchange rates were adjustable, in accordance with some principles. Those countries which decided to take part were attempting to import the German monetary-authority credibility. The mechanism was in place from 1979 until 1993. Disinflation was substantial. The results were summarized by Paul De Grauwe. “From a peak of 11% in 1980, the rate of inflation within the system declined to an average of 2% in 1988. During the early 1990s it hovered around 3%”. (De Grauwe 1994, p. 133).

Volcker was replaced by Alan Greenspan, whose administration continued to work toward stabilizing inflation and inflation expectations. In the first few years of the Greenspan period, inflation rose again. But taking advantage of the weakness of the economy in the beginning of the 1990s, the Fed managed to bring inflation down, substantially. From 1991 until 2005 (Greenspan left at the end of January 2006), the average rate of inflation was 2.6% per annum. In the words of Ben Bernanke, “like Volcker, Greenspan was ahead of academic thinking in recognizing the potential benefits of increased price stability”. (Bernanke 2006, p. 9).

The early 1990s marked the appearance of a new monetary policy strategy. In the first four years of the decade New Zealand, Canada, the United Kingdom and Sweden became pioneers in the adoption of inflation targeting (IT). They were followed by a series of other countries. In all those economies the authorities were already convinced of the importance of price stability as a macroeconomic goal. As policy makers moved toward the adoption of IT, it became necessary to give a numerical interpretation to the concept of price stability. The relevant question then was: what particular inflation rate should be targeted?

Some of the IT adopters considered it unwise to head immediately to their preferable long-run target. And while some chose to pursue the conventional headline inflation, other opted for aiming at some measure of underlying inflation. Independently from the revealed preference, the general choice was for a target between 1.0% and 3.0% per annum. (Bernanke-Laubach-Mishkin-Posen 1999).

The early years of the 1990s also saw concrete signs of increasing acceptance by the academic world of the idea of price stability as an important long-run goal. The 1996

traditional symposium sponsored by the Federal Reserve Bank of Kansas City, held in Jackson Hole, was organized under the title “Achieving Price Stability”. Stanley Fischer was there and gave one of the key speeches, dubbed “Why Are Central Banks Pursuing Long-Run Price Stability?”. The change in tone was clear. In his words, “the fundamental reason to pursue long-run price stability is that – as has long been argued by central bankers and is increasingly accepted by academic economists – inflation is economically and socially costly”. (Fischer 1996, p. 8). This statement is essentially different from arguing that the costs of moderate inflation are not only small but can be largely mitigated by indexation. Furthermore, the statement acknowledges the leading role played by central bankers on the issue of price stability and represents an explicit recognition of the fact that academics adapted their views on the subject.

Fischer discussed a list of factors which influenced his idea of “the optimal rate of inflation”. And concluded that the “arguments point to a target inflation rate in the 1 to 3 percent range; more specifically, they suggest that inflation should be targeted at about 2 percent, to stay within a range of 1 to 3 percent per year”. Since inflation is not totally controllable, it seemed wise to specify a range. (Fischer 1996, pp. 18-20).

Also present at the symposium, Lawrence Summers expressed this opinion: “I think it is clear that high rates of inflation, by which I mean rates that exceed 4 or 5 percent, have obvious costs that outweigh any possible benefits”. (Summers 1996, p. 36). Academic opinion on the costs of inflation had really changed.

The Case of Brazil

In June 2004, headed by the Brazilian Finance Minister, the National Monetary Council defined an inflation target of 4.5%, with a tolerance margin of 2.0% in both directions, for the year 2006. These parameters have been kept constant since then. For 2005, the target had already been established at 4.5%, but the margin was half of a percentage point larger in both directions. Since that year, measured by the change in the IPCA, for seven times the observed rate of inflation in Brazil stayed above the 4.5% objective and only three times below it. In the last four years, the average rate of inflation was 6.04%, the lowest rate being 5.84%. Inflationary expectations have

adjusted accordingly. As of this writing, information collected by the Central Bank of Brazil, in a survey presently covering around 100 institutions, indicate that the expected average price level change is 6.2%, for the coming 12-month period. This means that we are far from having price stability.

The way inflation has recently been dealt with in Brazil probably imposes significant costs to our society. To begin with, we must call attention for an image cost, associated with the fact that governments which show difficulties to control inflation tend to be seen as governments which lack the resources and willingness to have other areas of the economy under adequate control as well.

A second component of the costs has to do with the country's tax system. In the past, the years of high inflation forced the system to undergo profound adaptations. Sophisticated mechanisms were introduced with the objective of eliminating (or mitigating) distortions caused by the high rates of price growth. Since the monetary reform of 1994, though, the legislation does not contemplate the possibility of formal monetary-correction devices. This is particularly troublesome as regards firms' balance sheets. Depreciation allowance does not apply to the adjusted values of fixed assets and there is no room for correcting firms' capital bases. Nominal profits are being taxed.

In regard to individual income tax, there are two questions. One relates to transactions in the secondary real-estate market. The difference between the sale price and the acquisition price is taxed at the rate of 15%, with no room for monetary correction of the historical price. The seller may be exempt in case he acquires another property in the same municipality, within six months, but the law clearly hurts the functioning of the market and invites tax evasion. The other point relates to nominal income brackets, which in recent years have been corrected by projected (underestimated) inflation, rather than by observed inflation. As noted above, the government benefits by not indexing the tax system and tends to resist pressures to make the adequate adjustments.

While there may be reasons for not attributing much importance to the so-called shoe-leather and menu costs, the same does not apply to the uncertainty and allocative problems derived from inflation. As discussed earlier, economists do not agree on

how harmful to economic growth moderate rates of inflation are. Nevertheless, the fact that it is difficult to evaluate the impact of a given phenomenon (inflation) on the behavior of a certain macroeconomic variable (GDP growth) does not necessarily mean that the effect does not exist. In our opinion, the hypothesis that inflation hurts economic growth is a good one to work with.

After the disinflation period observed in Brazil in the beginning of the 2000s, inflation has shown a new rising tendency, especially if we concentrate our attention on the behavior of the so-called free prices, representing approximately 77% of the official inflation index (IPCA). This subset of the IPCA stayed below 3.5% per annum between November 2006 and July 2007, excluding food prices. If we observe the behavior of this indicator since that time until the present days, we notice that the monthly average rate went up from 5.2% in 2007-09 to 6.6% in 2010-13, in annual terms. At the same time the variance rose from 4.7 to 8.5.

This finding represents additional evidence of the idea that the higher the rate of price growth, the higher its variability. Its policy implication seems clear. If we want to have lower rates of interest in Brazil (apparently a national demand) we need to have lower inflation and inflation expectations. Under the present monetary policy framework, these require lower (credible) target rates. Otherwise, nominal and real interest rates will continue to incorporate higher inflation expectations and considerable risk premiums, associated with the uncertainty regarding inflation in the future.

Considering the possible unwillingness on the part of the public to bear the costs of anti-inflationary programs – a conclusion based on opinion surveys conducted in the US and which demands broader investigation -, as a general guideline, it seems wise to maintain inflation rates as low as possible, so that it will not be necessary to reduce it at a later point. In principle, the higher the level reached by inflation, the more unstable it becomes and the higher the costs of combatting it.

Thus, for several reasons, it seems really desirable to reduce inflation in Brazil, a decision that would involve setting a new target for the inflation rate. But how low this new level should be?

The main arguments for aiming at some positive rate of price growth are well known. First, price indexes in general do not consider changes in the quality of goods and services. Furthermore, price indexes of the fixed-weight type, like the IPCA, do not take into account the fact that consumers usually diminish the purchases of items whose prices go up and go for their substitutes. There is a tendency, then, for the index to overstate the “true” rate of inflation. Depending on the magnitude of the bias, a positive but very low rate of inflation may in fact represent deflation, an undesirable event.

Second, to the extent that nominal wages present downward rigidity, reductions in real wages (sometimes necessary to avoid increased unemployment) can occur only through inflation. The fact that the Brazilian legislation prohibits reductions in nominal wages makes this point even more relevant, the conclusion being that in the case of Brazil it is particularly important not to aim at too low inflation.

Third, if inflation is set at too low a level, the policy rate of interest, in nominal terms, will be too low as well, thus reducing the leeway that central banks usually need to accommodate their strategy in the presence (or threat) of a weakened economy.

Taking all these factors into consideration, we would suggest that the long-run target be established at 3.0% per annum, with a tolerance margin of 1.0% in both directions. Since it would be too unrealistic, or too costly, to make this change in a single jump, we propose a gradual approach. As a first step, this would require getting back to the 4.5% objective, making sure that inflation expectations have really converged to that level, with no signs of price repression.

J.J.S

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■ Conversation With Charles Goodhart

This conversation was held through an exchange of e-mails between J. J. Senna and Professor Goodhart in the final days of March 2014. Charles Goodhart is Emeritus Professor of Banking and Finance with the Financial Markets Group at the London School of Economics, having previously (1987-2005) been its Deputy Director. Until his retirement in 2002, he had been the Norman Sosnow Professor of Banking and Finance at LSE, since 1985. Before then he had worked at the Bank of England for seventeen years as a monetary adviser, becoming a Chief Adviser in 1980. In 1997 he was appointed one of the external members of the Bank of England's new Monetary Policy Committee, a position he held until May 2000.

Free Banking

■ In your 1988 book, *The Evolution of Central Banks*, you showed that the role and functions of central banks evolved naturally and were a necessary part of any modern banking system. However, two of the main writers who had dealt with the subject several decades earlier, namely Bagehot and Vera Smith, although realizing it would be “childish” (Bagehot’s word) to think of closing the Bank of England, revealed a theoretical preference for an economy without a central bank. That was the “natural” solution, they thought. In the 1970s and early 1980s, the theme was revived by studies which examined some historical experiences with free banking. The conclusion was that free banking was not as chaotic a system as was generally believed. In 1998, Greenspan somehow endorsed such interpretation. In reference to the US case he said that the system was not “as free as commonly perceived” but also not “nearly as unstable”. This view may have contributed to a sort of a laissez-faire approach of some central bankers. The recent crisis probably changed that in a definitive way. Do you agree with this comment? Among the measures taken after the crisis, both locally and by the international community, which ones would you select as the most promising ones, given the objective of gaining firmer control over the banking industry? What are we still missing in that regard?

Greenspan's adherence to the Efficient Market Hypothesis (EMH) was not widely supported by central bankers outside the US. However, they had a different set of false beliefs. These were:

- 1) That so long as the monetary authorities maintained stable inflation, there would be no major macro-economic disturbance;
- 2) That so long as there was no major macro-economic disturbance, the Basel II CARs would guarantee that banks would always maintain sufficient capital to meet difficulties;
- 3) That so long as banks were Basel II compliant, they would always be seen as strong enough to be able to maintain sufficient wholesale funding to meet any temporary liquidity shortages.

As you know, all these three comfortable myths were proven to be mistaken in 2007/8.

There was another generally accepted error, which was that lending on property, both commercial and residential, was relatively safe, particularly in the USA, where a diversified portfolio of houses, diversified over the whole of the USA, had only shown a small decline in prices once since 1945. People, including the regulators, simply did not see the dangers from credit extension for housing. Possibly the best book on this is by Michael Lewis, 'The Big Short', where what is notable is that the people who foresaw and bet on the basis of the sub-prime crisis were all typically 'loners' who took no notice of the conventional wisdom.

One of the great pities of the regulatory ferment following the Great Financial Crisis (GFC) is that attention has been focused on the banking system rather than on the methods, forms and processes of housing finance. I have myself lived through three financial crises in the UK (1973-75, 1990-92, 2007-09), and all of these have been caused by a bank credit-fuelled housing and property boom. This boom was typically financed by standard retail banks, and the suggestion and claim that somehow the problem was due to nefarious risk-taking in investment or universal banks is, in my

view, invalid. It is true that both Bear Stearns and Lehman's were investment banks, but both got into difficulties because of their holdings of mortgage-backed securities, while their derivative books were good, and also because they were not able to access the protection of the Fed.

So I think that much of the direction of regulation since the GFC has been largely misguided, e.g. the Volcker Rules, the Vickers and Liikenen Report. I have attached a paper setting out some of my heretical views on this. (“Narratives of the Great Financial Crisis (GFC): why I am out of step”).

Inflation and Financial Stability

■ **Inflation is a monetary phenomenon and monetary policy cannot affect real variables in a permanent way. Central banks should aim basically at controlling inflation. Over the medium and long run, this is the only task they can be responsible for. Inflation targeting (IT) relies on these principles. Since the recent financial crisis did not affect the validity of these principles, the merits of IT have been kept intact. The crisis made clear, however, that we should care as much about financial stability as we care about macroeconomic stability. And there seems to be a revival of the idea that to achieve two objectives we cannot rely on a smaller number of instruments. In this case, the traditional policy instrument of the IT regime (the interest rate) would continue being managed to achieve macro stability, while macro-prudential instruments would take care of financial stability, aiming at asset prices, credit growth, etc. Speaking generally, since there are many instruments of that sort, do you think they can effectively work within the IT framework? Are we close to understanding how the “separation principle” proposed by Tinbergen can be applicable to monetary policy?**

Turning to your queries about macro-prudential instruments, I think that in theory they could work within the inflation targeting framework. Indeed, the general idea currently is that price stability is managed through interest rates adjustments, while

financial stability is managed through macro-prudential instruments; and that that should deal with the two objectives, two instruments problem. Of course, macro-pru and monetary policy cannot be fully separated, with many of the instruments of macro-pru, e.g. sectoral capital requirements, impinging on the costs of intermediation, and equally some of the monetary policy instruments, such as QE having an effect on financial stability. Even so, this is no worse than the interaction between fiscal and monetary policies, and should be do-able. But there are other problems with macro-pru; for example, how do you undertake expansionary macro-pru in a depression after a financial crisis, when the micro-prudential authorities will be tightening severely? Also, macro-pru has more direct distributional effects on individual markets, e.g. the housing market, and it may be both politically difficult, and potentially damaging to central bank independence, to take measures which affect some particular financial markets rather than others.

Finally, macro-prudential instruments have not been used much in developed countries until now. With these instruments being untried and their effects uncertain, there is a danger that the monetary authorities may use these initially too timidly to have much effect.

The Funding-for-Lending Scheme

■ Last year, in an article published by the Financial Times, you showed concern with “the increasing desire of officials to tie monetary policy to real outcomes”. That trend was “understandable”, but the risk was the abandonment of the hard-won lessons of the 1970s. A better strategy, you said, involved improving unconventional instruments of monetary policy. The article appeared some six months after the joint initiative of the Bank of England and HM Treasury to launch the funding-for-lending scheme. The banking industry had practically stopped lending to households and firms. The idea then was to stimulate such lending, by assuring funding at below-market rates to banks which effectively increased their loans. You showed sympathy for such program. If we look at the

behavior of bank credit since that time, it doesn't seem that it has been revived. After all, the stock of credit has recently grown at less than 1.0% per annum. Does this mean that that scheme has not been as successful as originally expected? Is the above-mentioned rate of credit growth a poor basis for evaluating the program? Are there lessons to be drawn from this British experiment?

As to your question about Funding for Lending (FLS), I think that it is true that FLS had less effect in encouraging bank lending to the private sector in the UK than some of its proponents, including me, had hoped. But it can always be argued that, without FLS, such lending would have declined much more steeply. Since we can never do the counter-factual of what would have happened in its absence, we can never be absolutely sure that it had less effect than had originally been hoped. Since then, bank lending to the private sector in the UK has begun to expand more rapidly, but in the shape of mortgage lending to persons, largely under the influence of the Help to Buy schemes, but not lending to SMEs; so much so has mortgage lending recovered, that FLS has now been dropped for mortgage lending, and is now only usable for SME lending.

One of the reasons why lending to SMEs has been so slow to recover is that capital requirements on such lending have been increased dramatically, as part of the exercise to raise CARs very sharply since the GFC. With such SME lending being highly risky, and requiring a lot of capital behind it, banks have been unwilling to expand such lending rapidly, except in cases where they are highly confident that they will get repaid and where the spread makes the exercise profitable. Even after the housing crash, mortgage lending in the UK is a better bet for banks than SME lending.

I do not think that policy makers or regulators handled policy, after the immediate crisis in 2008/9 had been defused, very well. I attach a final paper for you setting out my reasons for saying this. ("Why Monetary Policy has been Comparatively Ineffective?").

External Member of the MPC

■ In a not so distant past, decision making in monetary policy used to be in the hands of individuals. The US is an exception, since the Federal Open Market Committee (Fomc) was created in the mid-1930s. Nowadays decision making by committee is the norm. In the case of the UK, the power to conduct monetary policy was given to a committee – the Monetary Policy Committee (MPC) – at the same time the Bank of England acquired operational autonomy, in May 1997, at the initiative of former Chancellor Gordon Brown. The MPC has an interesting structure. There are five internal officials and four external members. These four members do not have executive functions. As far as I know, such a structure is not found elsewhere. With the benefit of being a former external member of the MPC (1997-2000), how do you evaluate such an arrangement? What other activity can an external member hold while taking part in the Committee? Do you consider this an exportable idea?

There is quite a lot of literature on the optimal size of a committee; in particular Anne Sibert has written on this subject (you could look up the reference if you want to do so). For those central banks where there are a large number of participating members, i.e. the FOMC with the Reserve Bank Presidents, and the ECB with the NSB Governors, there is clearly no room for further (external) members.

In several other countries externals, commonly in the form of economists, either academic or business economists, are co-opted onto the decision-making committee, but in such cases they frequently are also given some degree of internal executive function. Examples are the Bank of Japan and the Riksbank. In other countries where the decision-making is more narrowly held, e.g. Canada and New Zealand, the Governor will frequently assemble meetings, including outsiders, to take advice prior to the Governor's decision.

The Bank of England is only unique therefore in having externals who have no other function. My own experience suggests that this duty only takes up about half of one's

time, more than half in the month in which a forecast is being made, and less than half in the non-forecast month. Even so, meetings are frequently arranged, or rearranged, at short notice, which the external really needs to attend, and that makes it very difficult to undertake any other allowable activity, because one is so often having to reschedule. Indeed it would be impossible to do so unless one lived and worked close to the Central Bank.

Because of confidentiality, allowable outside work is really limited to non-commercial activities such as teaching, charitable work or various kinds of administration. I continued to teach at LSE while on the MPC, partly because LSE was so close to the Bank; but Willem Buiter, who was then teaching at Cambridge found that impossible. Since my time, I believe that no other external has continued with part-time academic work, though some have been able to do various work on behalf of government; I think that Kate Barker did her report on the housing market for the Labour Government while still a member of the MPC. Of course externals do undertake, and are sometimes expected to undertake, economic research while serving on the MPC. A good example of that is David Miles' article in the *Economic Journal* a couple of years ago on the optimal regulatory capital.

There are advantages and disadvantages in having externals without any other executive function in a central bank. It enables the externals to play a much larger role in forecasting, which otherwise would probably fall primarily to the staff. Note that the Bank of England's forecast is the responsibility of the MPC, not of the Bank's staff; whereas in most other central bank committees the forecast is that of the staff, not of the committee. On the other hand it provides an imbalance in the forecasting process between the externals, who can play a larger role, and the internals who are otherwise preoccupied with their executive duties. Furthermore, it does not fully utilise the available time of all external members; though note that no external has ever chosen to depart, because they were not fully used.

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