

Inflation Targeting, Economic Performance, and Income Distribution: A Monetary Macroeconomics Analysis

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Abstract

Since the adoption of inflation targeting in New Zealand in 1990, a number of developed as well as developing and emerging market economies have followed suit. Often the sole goal of central bank policies, the strategy of inflation targeting is to reduce the inflation rate and, in some cases, also interest rates and output volatilities. Yet, while there is some evidence that these objectives have not been reached, we intend to look at the impact of inflation targeting on the distribution of income, more specifically on the wage share. Our conclusions show that there appears to be a decline in the wage share in the countries that have adopted an inflation targeting regime.

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Introduction

Inflation targeting has become today a fashionable monetary policy strategy in a number of countries. Indeed, since the adoption of inflation targeting in New Zealand in 1990, a host of countries have adopted an inflation targeting regime. This regime and the relevant monetary policy strategy gravitate around an acceptable inflation rate (a point target, as in the cases of Finland, Spain, and the United Kingdom), or a limited range of inflation rates (such as in Australia, Canada, Israel, New Zealand, and South Africa), targeted over a previously defined time horizon. In fact, the rate of inflation targeted by the monetary authority (often) is the sole goal of a central bank's monetary policy.

Proponents of inflation targeting argue that this regime leads to "better" monetary policy, more transparency, more accountability, and a better, more suitable anchor for inflation expectations. They point to the success of this strategy in reducing the rate of inflation in several advanced economies. As this regime is becoming increasingly popular, emerging economies are looking at the experiences of advanced economies, and wanting to adopt it as well. Indeed, in the late 1990s and early 2000s, a number of emerging economies have adopted inflation targeting policies (such as Brazil, Chile, Colombia, Mexico, and Peru in Latin America, and the Czech Republic, Hungary, and Poland in Europe).

As the popularity of inflation targeting gains momentum, there are a number of questions that need to be asked, assessed, and answered. In particular, has inflation targeting been a successful strategy in reducing the level of inflation rates? This is tantamount to asking whether the monetary policies based on an inflation targeting strategy can really claim to have reduced inflation independently of other policies or factors. Further, how different is a strategy centered on inflation targeting from previous monetary policy strategies? How desirable is this new strategy? In other words, why is inflation targeting seen as a superior policy over a policy of, say, supporting employment or output growth? Why is the central bank entrusted with the objective of stabilizing the general price level?

Proponents of inflation targeting often trumpet the success of inflation targeting regimes. Success in these cases, however, is usually measured in terms of their impact on inflation, with little or no consideration for real factors or other economic policy goals, such as the reduction of unemployment and poverty, as well as the maximization of output (see Rossi 2004). In fact, a successful monetary policy should be measured also in terms of stronger growth, higher levels of capacity utilization, and a somehow less unbalanced functional and personal distribution of income. Although several mainstream economists consider output stabilization to some extent, they usually neglect capacity utilization and income distribution, especially with respect to monetary policy.

This paper investigates this set of questions in light of available empirical evidence. The conclusion is that the success of any kind of economic policy ought to be measured with respect to employment, real growth, and the well-being of the population, which are the primary goals of any policy in the long run.

The structure of this paper is as follows. The next section reviews briefly the literature on inflation targeting. The third section questions whether the recently observed decrease in inflation rates in a number of countries is really attributable to monetary policy alone. In the fourth section we measure the success of inflation targeting regimes considering other macroeconomic variables, notably the share of wages in national income. The last section concludes.

Inflation Targeting in Theory and Practice

Emanating from the New Consensus Macroeconomics (NCM), inflation targeting has a rather recent analytical history (see Taylor 1993). By contrast, restrictive, disinflationary monetary policies have a long history in economic analysis. Indeed, as Rochon (2004) shows, the NCM view has its historical roots in the work of Wicksell, and therefore could be referred to as the “Wicksellian Revival.” As a matter of fact, central banks set their policy interest rates according to inflation rates (or inflation expectations) relative to their target. Indeed, the Taylor rule, advocated today by a number of economists, is strangely reminiscent of Wicksell’s emphasis on cumulative causation and his use of two interest rates (market and natural rates) to explain the causes of inflation. Proponents of the NCM approach to economics and economic policy use a very similar explanation.

The emphasis on fighting inflation, either by targeting inflation rates directly or by some general reference to price level stability, relies on traditional mainstream arguments that inflation:

- makes it difficult for economic agents to recognize changes in relative prices of goods and services, since these changes are obscured by fluctuations in the general price level. As a result, firms as well as consumers can make wrong production and consumption decisions, which then lead to a non-efficient allocation of resources;
- leads to more speculative investment and reduces productive investment, because nominal interest rates include an “inflation risk premium” to compensate creditors for the risks associated with holding nominal assets over the long term;
- makes it more likely that individuals and firms divert resources from productive uses in order for them to hedge against inflation, which hinders economic growth;

and also that a high rate of inflation leads to yet higher inflation rates, encourages capital outflows, and can even create social and political instability as the weakest social groups often suffer the most from inflation, because they have only limited possibilities to hedge against it (Debelle et al. 1998).

Adopting inflation targeting, its advocates argue, would institutionalize “good” monetary policy and impose discipline on reluctant central banks.

Among the motivations convincing countries to adopt inflation targeting, Mishkin (2000) identifies three reasons. First, some countries with a history of high inflation will want to give monetary policy a solid and credible anchor. Secondly, central banks prefer adopting

clear and transparent rules with respect to the goals of monetary policy, and, in that sense, be held accountable for the success of monetary policy. Last, countries want to minimize the social and economic costs of high inflation.

Official inflation targeting strategies differ nonetheless from other anti-inflation policies that were put in practice in the past in the sense that, in the current case, central banks are committed to reaching their inflation target by using the tools of monetary policy (in fact, the base rate of interest). In non-inflation targeting countries, such as the United States, while the central bank may be committed to a low rate of inflation, monetary policy or interest rate policy is not exclusively tied to an inflation target. In other words, in these countries there is no obligation for the monetary authority to set policy in such a way that the forecasted inflation rate is met eventually. It is in this sense that inflation targeting countries usually have a given rate of inflation as the principal objective of monetary and interest rate policy. Secondary objectives, such as output stabilization and real GDP growth, are pursued only as far as they influence the (forecasted) rate of inflation in the target sense.

Bernanke et al. (1999), who analyzed extensively the effect of inflation targeting regimes on inflation rates, define these regimes as:

a framework for monetary policy characterized by the public announcement of official quantitative targets (or target ranges) for the inflation rate over one or more time horizons, and by explicit acknowledgement that low, stable inflation is monetary policy's primary long-run goal. Among other important features of inflation targeting are vigorous efforts to communicate with the public the plans and objectives of the monetary authorities, and, in many cases, mechanisms that strengthen the central bank's accountability for attaining those objectives. (Bernanke et al. 1999, p. 4)

Inflation targeting strategies, however, are not identical across countries. We can notably identify four different types of inflation targeting regimes: point-targets (where a specific rate of inflation is chosen as a target), point-targets with a range (where a point target is defined within a range, to allow for possible deviations), inflation targets defined as a range of two percentage points, and inflation targets defined as a range broader than two percentage points. Table 1 summarizes these strategies and provides a non-exhaustive list of countries adopting one or the other at the time of writing (2005).

INSERT Table 1. **A Taxonomy of Inflation Targeting Strategies**

As Table 1 shows, there are different versions of inflation targeting regimes. This leads Tapia (2001) to refer to the inflation targeting strategy as “a creature with many faces.” In fact, not only are there a number of differences with respect to the numerical target, but also there exist some considerable differences with respect to the time horizon to achieve the target, each time horizon having its pros and cons (see Rossi 2004).

Theoretical Foundations of Inflation Targeting Regimes

Despite some important differences in existing inflation targeting regimes, proponents of these regimes share a common vision of inflation and the inflationary process, as well as of the transmission mechanism of monetary policy. For them, inflation is always a strictly demand-determined phenomenon. While the transmission mechanism operates slightly differently, the underlying process remains therefore the same as in the demand-pull view of inflation (see, for instance, Machlup 1960, Brunner et al. 1973, Barro and Grossman 1974).

In fact, whilst mainstream economists once argued that inflation was caused by excessive money on the assumption that central banks could control money supply, their underlying argument was that excess money holdings would swell households' portfolios, translating into an excess demand and higher prices on the market for produced goods and services. Mainstream Keynesians, on the other hand, would argue that low interest rates will lead to higher investment, increased economic activity, and higher prices owing to a Phillips-curve-like relation between prices and output/employment.

Today, in the NCM approach, the story is not dissimilar. While references to any specific relationship between money and prices have disappeared, money still plays a causal role in determining prices and inflation rates, via the banking system. In fact, proponents of inflation targeting at least implicitly admit the endogeneity of money. Indeed, money is now endogenous: banks grant loans at the request of borrowers, and this gives rise to a bank deposit as post-Keynesian theory explains (Allsopp and Vines 2000, p. 7, Abraham-Frois 2003, Villieu 2004, p. 293). Yet, if central banks set interest rates below the natural rate of interest, firms find it more profitable to borrow from the banking system to carry out their investment plans and thus output will grow (the output gap will become narrower). As such, money is created, and inflation can result if the number of money units increases faster than output (for a discussion of the NCM approach, see Lavoie 2004, forthcoming, Rochon 2004, and Gnos and Rochon 2005). The transmission mechanism operates via the banking system, which creates money endogenously to meet the needs of production and circulation.

As regards cost-push inflation, proponents of the NCM approach generally ignore this phenomenon, arguing that supply shocks are either transitory in nature or will cancel each other out as a random walk. Arestis and Sawyer (2003, p. 14) note this clearly: "The position taken by IT on cost inflation is that it should either be accommodated, or that supply shocks come and go – and on average are zero and do not affect the rate of inflation". The emphasis is therefore strictly placed on demand, more specifically on the output gap. Interest rate policy is therefore the key: as long as market rates of interest are set equal to the natural (Wicksellian) rate, the output gap will be nil and inflation will be tamed. As Blanchard (2005, p. 414) explains, in the setting of an inflation targeting strategy "[c]ost shocks are present, but their effect works through the natural level of output, and so through the output gap. Put another way, the output is a sufficient statistic for the effect of real activity on inflation."

Moreover, fiscal policy is still considered inflationary. Indeed, to succeed in hitting their inflation target, monetary authorities must be free of “fiscal dominance.” In this respect, central banks ought to be, at best, independent, although this is not a strict requirement. Fiscal policy should not be allowed to dictate monetary policy. Proponents of inflation targeting therefore insist on disciplined fiscal policy and balanced budgets (at least over the whole business cycle). The assumption is that irresponsible fiscal policy will lead to inflation, through artificially increasing demand or by monetizing the public debt. Public sector borrowing from the central bank should therefore remain low or not exist at all. As Debelle et al. (1998, p. 2) summarize, “[i]f fiscal dominance exists, inflationary pressures of a fiscal origin will undermine the effectiveness of monetary policy by obliging the central bank to accommodate the demands of the government, say, by easing interest rates to achieve fiscal goals.” Hence, an inflation targeting regime forces “fiscal policy to align with monetary policy” (Mishkin 2000, p. 2).

Further, advocates of the NCM require central banks to have only one policy goal, since they have only one instrument (namely, the interest rate) at their disposal: multiple targets would endanger the success of monetary policy and thus lead to inefficiencies. Therefore, countries that have, say, both an inflation and an exchange rate target will not be able to adequately control inflation rates. This is what Meyer (2001, p. 1) dubs the “hierarchical principle:” the targeted rate of inflation is the primary (or unique) objective of monetary policy. While NCM adherents often assume that low rates of inflation, high growth, low unemployment, and stable exchange rates are envious goals, they consider it implicit in inflation targeting strategies that low inflation is the goal that will ensure strong growth, low unemployment, and stable exchange rates.

Proponents of inflation targeting regimes thereby assert that for any monetary policy to be successful, central bank transparency and communication are key elements. Indeed, the central bank must make an unequivocal commitment to targeting inflation to convince the public that the fight against inflation is taken seriously, and must also issue periodic statements (public announcements) to that effect. Such public announcements are said to improve the communication between central bank policy makers and the general public, who is thus better informed on the goals and strategy of the central bank. According to its proponents, inflation targeting has therefore the advantage of making monetary policy easier and clear to comprehend by the public. Moreover, inflation-targeting central banks must develop ever-more sophisticated inflation forecasting models, to serve their needs in policy making and in particular to allow them to adjust interest rates appropriately.

The Inflation Targeting Experiment So Far

There is today a general consensus within the mainstream literature as to the success of inflation targeting. Most economists studying the topic (see, for instance, Bernanke et al. 1999 for a summary) consider the inflation targeting experiment a success. They point out that in most countries that have adopted this regime, inflation rates have successfully fallen in the months after its adoption, and output volatility has generally been reduced.

Mishkin (1999, p. 595), for instance, gives his unconditional approval to the strategy of inflation targeting: “The performance of inflation-targeting regimes has been quite good. Inflation-targeting countries seem to have significantly reduced both the rate of inflation and inflation expectations beyond that which would likely have occurred in the absence of inflation targets.”

Similarly, King (2002, p. 460) claims that the data from the inflation targeting experiment in the United Kingdom so far show that “not only has inflation been lower since inflation targeting was introduced, but that, as measured by its standard deviation, it has also been more stable than in recent decades. Moreover, inflation has been less persistent – in the sense that shocks to inflation die away more quickly – under inflation targeting than for most of the past century.”

Fraga et al. (2004, p. 365) also maintain that “[t]he performance of inflation-targeting regimes around the world has been positive. Average inflation in both emerging markets and developed economies is substantially lower after the adoption of the inflation-targeting regime than immediately before its adoption”, even if the authors observe that “emerging market economies have had a relatively worse performance.”

In short, as Bernanke et al. (1999, p. 288) put it, “[o]ne of the main benefits of inflation targets is that they may help to ‘lock in’ earlier disinflationary gains, particularly in the face of one-time inflationary shocks. . . . In each case, the re-announcement of inflation targets helped to anchor the public’s inflation expectations and to give an explicit plan for and direction to monetary policy”.

The apparent success of inflation targeting in several countries led to the conclusion that this regime encourages “inflation convergence” among countries, in as much as it helps poorly performing countries to converge with those countries whose rates of inflation are successfully being reduced (Neumann and von Hagen 2002). Not surprisingly, Neumann and von Hagen (2002, p. 144) conclude that, “taken together, the evidence confirms the claims that inflation targeting matters” (see also Clifton et al. 2001, Corbo et al. 2002).

In this respect, however, there are some critics within the mainstream. First, even though these authors never really question the importance of inflation targeting regimes, they question whether this monetary policy strategy can actually be responsible for the decline in inflation rates observed in many countries over the last decade or so. For instance, in a rather interesting and provocative paper, Ball and Sheridan (2004) are very suspicious of the conclusions on inflation targeting drawn from empirical literature. When comparing the performance of “targeters” and “non-targeters”, with respect to inflation rates, output stabilization, and interest rates, Ball and Sheridan conclude convincingly that while the “targeters” overall reduced inflation rates by more than the “non-targeters”, this was only because inflation rates were higher in inflation-targeting than in non-inflation-targeting countries at the time of adoption of this monetary policy strategy by the former group of countries. “On average, there is no evidence that inflation targeting improves performance as measured by the behavior of inflation, output or interest rates” (Ball and Sheridan 2004, p. 2). Even with respect to convergence of the rates of inflation across

countries, Ball and Sheridan (2004) conclude that in poorly-performing countries, where inflation rates are higher than elsewhere, the rate of inflation has been in fact decreasing independently of whether these countries adopted an inflation target.

Secondly, as argued by Rudebusch and Walsh (1998), inflation targeting policies reduce flexibility of a central bank in pursuing other macroeconomic goals and unnecessarily put it into a policy straightjacket. These authors argue that in emerging economies discipline may be necessary to implement sound (monetary) policies, but that in advanced countries this is usually not required. Now, even in advanced countries, central banks may want to pursue two policy goals, say inflation and output stabilization (see for instance Mishkin 2000). Although targeting inflation is never questioned, neither in the case of advanced countries nor for developing and emerging market economies, Meyer (2001, p. 1) asks pertinently, independently of the country considered: “Should there be other objectives? If there are multiple objectives, should one of the objectives take priority? And how explicit should the objectives be?” Meyer (2001) labels the case for multiple policy goals as the “dual mandate” approach – an example of which is the Federal Reserve’s approach in the United States.

Thirdly, inflation forecasts are not sufficiently reliable both in theory and practice. Over-estimating inflation may lead to higher interest rates than what is required, and thus may shock the economy unnecessarily. As Mishkin (1996, p. 29) observes, “[o]ften when the monetary authorities have raised interest rates to prevent the resurgence of inflation, no inflation will appear down the road. Although this is exactly what policymakers should seek, it leaves them open to the criticism that they should not have raised interest rates because, after all, inflation never appeared and therefore was not a threat.” This is even more so when inflation is mainly cost-induced: any inflation-forecasting model based on demand considerations is likely to be ineffective and lead to wrong policy interventions.

Fourthly, in terms of accountability and transparency, any stated objective of the central bank meets these requirements. Indeed, a central bank would be all the same accountable and transparent if it were to target output or employment. These characteristics of central bank policymaking are not the prerogative of inflation targeting regimes.

Truman (2002, p. 4) summarizes these criticisms arguing that “with respect to the four elements of an inflation-targeting regime for monetary policy, the goal may be fuzzy; the numerical target may be as well; more often than not, the timeframe for achieving or returning to the target may be unspecified or vague; and transparency and accountability are not unique to inflation-targeting frameworks for the conduct of monetary policy.”

Moreover, as Ball and Sheridan (2004) point out, even the inflation rate of non-targeting countries decreased dramatically in the 1990s and beyond, which leads them to conclude that the general decrease in inflation rates across countries over the last fifteen years must be attributed to factors other than just inflation targeting strategies.

In this respect, Roger and Stone (2005) investigate the experience of inflation targeting countries, to develop stylized facts of their inflation performance and the implications for

design of targeting strategies. In particular, they compare the inflation performance in a number of advanced countries to that in developing economies. Their conclusion is that “[c]ountries targeting stable inflation miss the range about 30 percent of the time, while countries in the process of disinflation miss their target ranges nearly 60 percent of the time” (Roger and Stone 2005, p. 4). Failure to meet the targeted range is on average of 1 percentage point, and persists over about six months. One can thus question the economic performance of inflation targeting countries with respect to the very phenomenon that this strategy wants to control.

Real Economic Performance in Inflation Targeting Countries

Although there is general consensus from the mainstream literature as to the effectiveness and usefulness of inflation targeting strategies, there is some dissension. The dissension, however, never questions the merits of inflation targeting *per se*. Critics never reject the importance of lowering or targeting inflation. In fact, critics do not really address some of the most fundamental shortcomings of inflation targeting regimes.

Several issues need to be addressed specifically. First, should the central bank be given exclusive authority over inflation? Neoclassical theory assumes a direct and predictable relationship between monetary (or interest rate) policy and increases in the general price level. Irrespectively of the specific transmission mechanism, the underlying assumption, as pointed out above, is that inflation is demand-determined. Yet, inflation is primarily explained by cost-push factors, that is, prices are foremost determined, in an entrepreneur economy, by the costs of production, notably, wages, but also by targeted rates of profits. If this is the case, then how can interest rates affect inflation?

A thorough understanding of the inflation process leaves no real role for the central bank. Two arguments are relevant here. In the short run, as banks increase their interest rates on credit to firms and consumers, the cost of borrowing will also increase, thereby imposing an additional cost to borrowers. Given the structure of industry and commerce, this may lead to higher prices. In the long run, however, higher interest rates may reduce inflation, but through a collapse of the real economy. In fact, increases in the rates of interest will redistribute income toward rentiers and away from households, and lead to a collapse of effective demand. Hence, by collapsing aggregate demand and increasing unemployment, central banks may succeed in decreasing prices, but at a great cost to the whole economy.

Further, as Ball and Sheridan (2004) ask critically, how successful has inflation targeting really been in reducing inflation rates? While it is correct that in many cases, although not in all, the rate of inflation has come down after the introduction of an inflation targeting regime, how much of this can be attributed to inflation targeting itself? After all, owing to a generalized technological progress, the prices of a number of commodities and services have been falling across industrialized economies, following a period of relatively high inflation rates. This result is confirmed by Sterne (2002).

As a matter of fact, the strategy of targeting inflation was adopted in many countries at a time when inflation rates were either low or falling. Table 2 lists countries that currently have an official inflation targeting regime, their dates of adoption of this regime, and their rate of inflation when the inflation targeting strategy was adopted.

INSERT Table 2. Inflation Targets and Inflation Rates Right Before Inflation Targeting

As Table 2 shows, most advanced countries adopted inflation targeting in the earlier half of the 1990s, with some converts at the turn of the millennium. In developing countries, by contrast, most countries adopted inflation targeting in the second half of the 1990s or in the early 2000s.

Ironically, for a number of developing countries, inflation targeting was adopted by their respective central bank at historically low levels of inflation rates. This is certainly the case of Brazil, the Philippines, South Africa, South Korea, and Thailand. One can argue, therefore, that the strategy of inflation targeting was perhaps a pressing practical need for some developing or emerging countries to reduce inflation rates, but certainly not for all. For advanced countries, inflation targeting was also adopted at very low inflation rates in a number of cases. For these cases, the question remains why this change of monetary policy strategy (which generally replaced a monetary targeting strategy) appeared to be a pressing issue.

Be that as it may, the data in Table 2 do not give us the whole picture. As a matter of fact, in nearly all countries the rate of inflation was already on a downward trend path before inflation targeting was adopted. As Angeriz and Arestis (2005, p. 7) argue convincingly, inflation targeting regimes cannot be held responsible for the measured reduction in the rates of inflation with no further misgivings: “In most cases, inflation had already entered a downward trend, well before inflation targeting was introduced.”

The cases of New Zealand and Canada have been singled out as catalysts for the adoption of inflation targeting around the world. For instance, Debelle et al. (1998, p. 4) claim that “[t]he success of these two countries in taming relatively high inflation (by industrial country standards) spurred in part the adoption of similar policies by the other five countries [namely, the United Kingdom, Sweden, Finland, Australia, and Spain], where, in contrast, the inflation rate was already comparatively low.”

In the case of Canada, however, measured inflation rates have been gradually decreasing since 1981, that is, ten years before this country adopted inflation targeting. The same can be said for New Zealand, at least to some extent, and certainly also for Australia, Finland, Sweden, and the United Kingdom (Figure 1).

INSERT Figure 1. **Measured Inflation Rates in Inflation Targeting Countries, 1974–2004**

The evolution of the rate of inflation is particularly interesting in the case of the United Kingdom. While the inflation rate peaked at 10.9 per cent in September/October 1990, and steadily came down afterwards, it began to increase again in the months following the adoption of inflation targeting (when it was 3.7 per cent), and only came down below the targeted inflation rate much later, namely, in July 1992. This might be due to the time lags of monetary policy, but there may be other reasons too, such as abandonment of the European Exchange Rate Mechanism (ERM) by the United Kingdom in September 1992.

Further, proponents of inflation targeting regimes claim that economies grow as a direct result of sound monetary policies aimed at lowering and controlling the rate of inflation. This conclusion has been challenged by some recent research, which shows indeed that strict adherence to an inflation target lowers the rate of growth over the long run (Lavoie 2004, Atesoglu and Smithin 2005). The argument here can be grounded on the so-called sacrifice ratio, a concept well popularized by Ball (1994) and defined as “the cumulative increase in the yearly rate of unemployment that is due to the disinflation effort divided by the total decrease in the rate of inflation” (Cukierman 2002, p. 1).

To determine whether the adoption of an inflation targeting strategy causally affects the real economic performance of a country, Bernanke et al. (1999, pp. 257–59) compare the sacrifice ratios of inflation targeting countries during their last disinflation period with the average sacrifice ratio computed for the same countries with respect to the disinflation periods preceding adoption of this policy regime. To make their analysis more robust, the authors (pp. 252–53) introduce a control group of countries, which have several similar characteristics to the inflation targeting countries, including the synchronization of their business cycle, but which have not adopted inflation targeting (at the time of analysis).

Bernanke et al. (1999, p. 258) show that for three of the four inflation targeting countries they considered (namely, Canada, New Zealand, and the United Kingdom), the sacrifice ratio associated with their inflation targeting regime is indeed higher than what it was on average during all the disinflation episodes that occurred in these countries under other monetary policy regimes. This ratio is even higher than what the authors could predict using sophisticated econometric techniques (pp. 255–57) (Table 3). Epstein (2003, p. 2) reaches indeed the same conclusion: “Among the greatest disappointments for proponents of inflation targeting has been its apparent inability to reduce the so-called *sacrifice ratio*, the unemployment costs of fighting inflation”.

INSERT Table 3. **A Comparison of Sacrifice Ratios between Targeters and Non-Targeters**

In light of the empirical results provided in Table 3, one can conclude that, contrary to the claim of inflation targeting advocates, this monetary policy strategy does not necessarily induce a benefit in terms of lower sacrifice ratios, hence lower output losses, in respect of other strategies during a disinflation process (Bernanke et al. 1999, pp. 259–65). In light of the recent critical literature on the determinants of sacrifice ratios (see Down 2004 for a survey and elaboration), other lines of enquiry should be followed to investigate the real outcome of inflation targeting strategies. In the next section, we want to explore the issue of functional income distribution in inflation targeting countries.

Inflation Targeting and Income Distribution

The theoretical and policy implications of the NCM view have been studied carefully by a number of post-Keynesian economists. One of their conclusions is that adherence to an inflation target means that, over the long run, central banks will have to keep a higher real rate of interest, thereby pushing the economy onto a lower growth path. Atesoglu (2005) notably concludes that in the long run lower rates of inflation hinder investment, thereby questioning the performance of inflation targeting regimes. As Lavoie (2005, p. 8) writes, “[i]n the case of a permanent increase in demand . . . the central bank would need to take further action and revalue its reaction function. For the central bank to achieve its target inflation rate, the parameter [that is, natural rate of interest] r_0 cannot be a constant when the economy is faced with permanent demand shocks.”

One of the implications of this conclusion is that inflation targeting is likely to affect the distribution of income between wages and profits. Indeed, with higher real interest rates over the long run, income distribution can be affected to the detriment of wage earners. In other words, the rate of interest is a key distributive variable (Rogers 1989, Lavoie 1992, Rochon 1999). Smithin (1994, 2003), for instance, puts this variable at the heart of his approach to macroeconomics.

In fact, the relationship between inflation and income distribution is a well-known post-Keynesian argument. For instance, in his seminal book, Davidson (1972, p. 347) argues that “[t]he distribution of income is both a cause and a consequence of inflationary processes.” Davidson’s view is at the heart of the conflict approach to inflation analysis, which puts functional income distribution at its core. Yet, while the conflict over income distribution can be a cause of inflation, it is certainly a result of inflation, but also of the central bank’s fight against inflation, as we noted above.

If the arguments presented above are correct, we should expect that income distribution worsens for wage earners after adoption of inflation targeting. Indeed, whilst the impact of inflation targeting strategies on income distribution has never been tested empirically, to the best of our knowledge, Argitis and Pitelis (2001) offer a strong argument against using monetary policy to fight inflation, precisely because of its negative effect on income distribution. According to Argitis and Pitelis (2001, p. 620):

Durable variation in the interest rate, *ceteris paribus*, may affect both the intracapitalist distribution of non-wage income between industrial profits and interest and the interclass income

distribution between wages and non-wage income. More specifically, our perspective assumes that an increase in the interest rate, *ceteris paribus*, would cause an increase in the cost of production, resulting in a transfer of non-wage income from industrial to financial capital and result in a decline of the share of industrial profits to non-wage income.

Argitis and Pitelis (2001, p. 620) go on to explain how the resulting adjustment process in prices and wages will affect the interclass distribution of income, and will then “affect the interclass income distribution between wage and non-wage income at the expense of workers.”

Table 4 shows notably the income distribution for various countries, both before and after the adoption of inflation targeting. To measure functional income distribution, we choose the wage share, which we obtain by dividing “wages and salaries” by GDP, measured at current prices in local currencies. In some cases, where “wages and salaries” are not available, we consider “compensation to employees” data.

INSERT Table 4. Evolution of Wage Shares in Inflation-Targeting Advanced Countries

As the data in Table 4 show, generally speaking, the distribution of income has worsened for wage earners after the adoption of inflation targeting. Indeed, this is particularly acute in the cases of Finland, Canada, and New Zealand. This conclusion is notably more ironic for Canada and New Zealand, to wit, the first two countries to have adopted inflation targeting, which are often trumpeted by the proponents of inflation targeting as the most successful examples of the inflation targeting experiment to date.

Interestingly enough, in the cases of Iceland and Switzerland the wage share has actually increased after the adoption of an inflation targeting regime. In the case of Switzerland, however, there are not yet sufficient data to infer a robust conclusion, as this country adopted an explicit inflation target quite late and its historical record is therefore limited for the time being. Moreover, in Switzerland an explicit inflation target was adopted at a time when the rate of inflation was relatively low and already around the target, thereby not requiring the central bank to implement a tighter monetary policy. Be that as it may, a few more years are needed to understand the evolution of functional income distribution in this country after it adopted an explicit inflation target. In light of the evolution of the wage share in a number of countries that may be compared to Switzerland (see Table 4), it is nevertheless possible to imagine that, over a longer time span than what is the case at present, wage earners in Switzerland could be affected negatively by inflation targeting.

The measured wage shares in inflation targeting countries are in fact quite consistent with the sacrifice ratios in Table 3. Indeed, while income distribution worsened considerably for wage earners in Canada and New Zealand, sacrifice ratios increased considerably as well. In the case of Switzerland, where the wage share increased immediately after the adoption of an explicit inflation target, the sacrifice ratio today should therefore be lower

than before this change of monetary policy strategy, but on this point further research is needed.

Conclusion

Inflation targeting has become a popular regime among central bankers around the world. Indeed, since New Zealand first adopted this regime, a number of advanced and emerging economies have followed suit. Mainstream authors often conclude that inflation targeting has been a success, although they measure the performance of inflation targeting almost exclusively in terms of rates of inflation. In other words, there is a general consensus that inflation targeting regimes have led to lower inflation rates and “inflation convergence” among countries.

Despite this apparent consensus, there is some interesting dissent among the mainstream. While these critics never doubt the rationale for fighting inflation, they do not consider the inflation targeting strategy as a beneficial monetary regime. In particular, they believe that it unnecessarily restricts central bank policy. Moreover, some critics openly question whether inflation targeting did really contribute to lowering inflation rates. Indeed, as has been advocated by mainstream and non-mainstream economists alike, inflation rates were already on the decline at the time of adoption of inflation targeting strategies.

The main focus of this paper, however, is on the real effects of inflation targeting. Indeed, while Bernanke et al. (1999, p. 258) concluded that the sacrifice ratio is often higher after adoption of an inflation targeting regime, we conclude that this result can be attributed to the fact that income distribution worsened for wage earners after the adoption of inflation targeting, which can give rise to a substantial drop in effective demand with the observed negative effects on output and employment as measured by sacrifice ratios.

More work is needed to study the precise, long-run effects of inflation targeting. Suffices it to say now, however, that available evidence and empirical results are not encouraging in so far as real magnitudes and economic performance are concerned.

Notes

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- 1. In this sense, one could argue that not much has changed. In fact, while in the past the monetary base was the intermediate target to control inflation, today the rate of interest has become the operational goal, while the rate of inflation remains the ultimate objective of monetary policy.

2. In fact, there does not appear to be much difference also between NCM and the macroeconomics of Fisher or Friedman.
3. Yet, as Monvoisin and Rochon (2005) argue, while proponents of the NCM approach have endogenous money, they do not have a theory of endogenous money to explain this phenomenon.
4. NCM advocates recognize also other transmission channels, such as the exchange rate channel, but their analysis does not really change: inflation is always and everywhere a demand phenomenon. See Arestis and Sawyer (2005).
5. There is considerable difference between recognizing cost shocks as inflationary and a cost-push approach to inflation. In the post-Keynesian view, any increase in production costs leads to a higher price level, not just occasional shocks.
6. In Canada, for instance, a country in which inflation targeting is considered to be successful, it cannot be claimed that the central bank is fully independent of government. The same can be said for the central bank of Australia. The Bank of England is a further example of partial (that is, instrument only) independence.
7. One could argue that there is a connection between central bank policy and inflation, but this is an indirect connection (see Rochon 1999). As interest rates affect income distribution, effective demand, growth, and unemployment, this could have an impact on wages, which could tame inflationary pressures in case of a restrictive central bank policy.
8. As Smithin pointed out in personal correspondence, the concept of sacrifice ratios seems to concede the argument to NCM and other mainstream proponents that the trade-off between inflation and unemployment is only effective in the short run. In fact, this trade-off does not seem to be a mere short-run phenomenon in the real world. Be that as it may, sacrifice ratios provide us with a proxy to grasp the real impact of fighting inflation, albeit in the short run, and represent a useful statistic to consider.
9. Although we had some data on the wage share in a number of Latin American countries (computed from the Economic Commission for Latin America and the Caribbean's *Statistical Yearbook for Latin America and the Caribbean*, 2004), we were strongly advised not to use these data, as they seem to be unreliable. We would like to thank Roberto Frenkel for this advice.

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