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No. 5915

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INTERNATIONAL MACROECONOMICS



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Discussion Paper No. 5915
November 2006

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CEPR Discussion Paper No. 5915

November 2006

ABSTRACT

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Inflation targeting has become the monetary policy framework of the nineties. At the other extreme, several central banks have recently adopted key elements of the inflation targeter's toolkit, but at the same time they have made formal declarations that they are not inflation targeters. Such a position may appear surprising. It indirectly suggests that a renege strategy is beneficial for some. The paper considers reasons why it may be advantageous for some central banks to distinguish themselves from the inflation targeting strategy. Most importantly, we argue that explicit inflation targets can potentially undermine the goal independence of a central bank.

JEL Classification: E50, E52 and E58

Keywords: inflation targeting, medium and strong goal independence and weak

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Submitted 25 September 2006

1. Introduction

Inflation targeting has become the dominant framework for monetary policy in the nineties. The return to a 'nominal anchor with drift' represents a new way of thinking about the monetary objectives for many countries. The global acceptance of inflation targeting has come quickly after only a decade in practice. It is the declared policy of many central banks and has been actively promoted by international organizations such as the IMF and the OECD.

Despite its wide appeal, no universal definition exists. Bernanke et al. (1999) offer a broad interpretation. They characterize inflation targeting as 'constrained discretion', which combines some of the advantages traditionally ascribed to rules with those credited to discretion. A narrower interpretation advanced by Mishkin and Schmidt-Hebbel (2000) defines inflation targeting as a package of specific elements: an institutional commitment to price stability, absence of fiscal dominance, absence of other nominal anchors, policy instrument independence, policy transparency, and accountability. Kuttner and Posen (1999) provide an operational definition in terms of an inflation target over a specific timeframe, an inflation report, and the ability to react to short-term economic shocks. The IMF (2005) defines inflation targeters simply as institutions that have a formal inflation target and publish their inflation forecasts.

Even among central banks, inflation targeting does not enjoy a universal interpretation. At the one extreme, many central banks have jumped on the inflation targeting bandwagon by proclaiming adherence without the essentials. Table 1 provides a simple checklist of self-proclaimed inflation targeters. It also shows that a few do not publish inflation forecasts, the minimum requirement of an inflation targeter.¹

At the other extreme, several central banks have recently adopted key elements of the inflation targeter's toolkit, but they also have made formal declarations that they are not inflation targeters. We call these central banks the *abstainers*. Such a declaration may appear surprising at

¹ The Reserve Bank of Australia, the Bank of Chile and the Bank of Israel are examples. The Bank of Chile has recently begun to publish inflation forecasts after a decade of self proclamation of being an inflation targeter.

first. It indirectly suggests that a reneging strategy is advantageous for some central banks. While comparative studies by Almeida and Goodhart (1998), Corbo et al. (2000), Dueker and Fischer (1996, 2006), Groenewald et al. (1998), and Levin et al. (2004) do not find significant differences between inflation targeters and (successful) non inflation targeters in terms of inflation and output performance, no empirical study claims there are benefits in abstaining from inflation targets.

The objective of this paper is to consider why it may be beneficial for some central banks to distinguish themselves from an inflation targeting strategy. Our hypothesis states that the institutional setup is crucial. A particular characteristic of non-self proclaimed inflation targeters is that they operate with a high level of goal independence. Central banks value goal independence for it instills trust in the institution and allows them to operate with greater flexibility. We claim that inflation targets can potentially undermine the established goal independence of a central bank. Our argument does not contend that successful non inflation targeting central banks that enjoy a high level of goal independence dominate inflation targeters, rather more simply that goal independence can act as a substitute to inflation targeting.

The paper is organized as follows. Section 2 presents four case studies of abstainers that operate with alternative definitions of price stability rather than explicit inflation targets. Section 3 discusses different degrees of goal independence and offers an alternative classification scheme. Section 4 provides empirical support for the correlation between different levels of goal independence and alternative monetary frameworks. In particular, we find that goal independent central banks are closely identified not with inflation targeting but rather with other monetary frameworks such as monetary targeting. Section 5 offers conclusions.

2. The experiences of implicit inflation targeters: The role of definitions

The debate on implicit versus explicit targets has important implications for understanding the experiences unfolding in Japan and Europe and to a lesser extent in the United States. The Bank of Japan (BoJ), the European Central Bank (ECB), and the Swiss National Bank (SNB) have

recently declared that they are not inflation targeters. This section argues that the abstainers operate with a high level of goal independence. The recognized advantage of goal independence is that the objectives of the monetary authority are better shielded from political pressure than in the case of goal dependent central banks. This, however, comes at the expense of democratic accountability. To counter such criticism, goal independent central banks have become more transparent. This includes the need to define their long-run objectives more formally. A common preference of the abstainers is to work with definitions rather than explicit targets. Unlike inflation targets, definitions of price stability do not specify the time horizon well. A primary characteristic of definitions is their constancy over time.

The Fed's qualitative definition of price stability

The Federal Reserve has not made a public declaration that it is not an inflation targeter. Nor is it under pressure to do so. Greenspan's personal qualitative definition of price stability – based on whether or not people factor inflation into their decisions – was not challenged during his reign. Mustering political pressure to lock in the current inflation environment is difficult. The process appears to be correlated to the economic cycle. A resolution by Congressman Neal in August 1989 demonstrates the difficulties. The resolution, which asked the Federal Reserve to adopt a five-year, zero-inflation goal, showed political potential, as inflation fears were rising. The initiative, however, quickly lost momentum once inflationary pressures ebbed in 1990. The reintroduced resolution was blocked in the House Banking Subcommittee on Domestic Monetary Policy in January 1991. Against this political backdrop, public satisfaction with the Fed's performance has been high over the last decade.

While it is well recognized in the economics profession that the Fed operates with a high level of goal and instrument independence, this does not mean that the Fed has been immune from calls for greater transparency. As argued in Meyer (2001), the Fed has undertaken two changes with respect to the transparency of its instrument settings. Since February 1994, the FOMC has

been announcing its policy decisions to the public. The motivation of this new procedure was to avoid any misinterpretation of the Committee's action and its purpose. Later in May 1999, the FOMC began to announce its policy decisions and the official inter-meeting 'policy bias' immediately after its regular meetings. Fed officials noted that, because the new practice had caused unanticipated confusion among market participants, procedures were revised in January 2000. Under the new procedure, a statement regarding the Committee's sense of the 'balance of inflation risks and risks of general economic weakness' is released at the conclusion of regular meetings.

Although the debate in the U.S. concerning the merits of explicit inflation targets has intensified in recent years, the Fed has refrained from introducing such targets until now. Several FOMC members are on record as favoring explicit numeric targets and have stated their preferred measures. The group includes then Governor Ben Bernanke, President Jeffrey Lacker of the Richmond Fed, President Janet Yellen of the San Francisco Fed and President Anthony Santomero of the Philadelphia Fed.² Other FOMC participants such as Governor Donald Kohn and President William Poole of the St. Louis Fed are not in favor of declaring an explicit numeric inflation objective. Before a new recognized implicit inflation objective emerges, the Neal resolution and the discussion between Goodfriend (2005) and Kohn (2005) demonstrates that the transition from an implicit to an explicit objective is not an easy one.

The ECB's definition of price stability

The ECB defines price stability such that the year-on-year increase in the Harmonized Index of Consumer Prices for the euro area is below 2%. The ECB stresses strongly that its quantitative definition of price stability is not an inflation target (see ECB Monthly Bulletin, 1999). Issing (1999) states that the ECB does not have an operational inflation target, for it does

² Rasche and Williams (2005) discuss the differences in preferences in detail and provide quotes.

not pursue a strategy of direct inflation targeting. This position has met with criticism on the grounds that it implies a lack of accountability.

Begg et al. (1998), Buiters (1999), Favero et al. (2000), and Svensson (1999) have called on the ECB to clarify its operational inflation target. Their claim is that outcomes deviating from the inflation target can be easily explained away. The critics contend that ECB accountability is improved through the publication of its inflation forecasts. The forecasts provide information on the nature of short-term shocks and can explain deviations from the inflation target. This facilitates the communication of policy and the actions needed to ensure price stability. The forecasts and the identification of the shocks thus clarify the end target.

The accountability critique calling for greater transparency assumes that shocks are identifiable along with acceptable model-based forecasts. This is far from actual practice. Even inflation targeters acknowledge the limits of inflation forecasts. Vickers (1998), for instance, offers the outsider an insight into how the Bank of England assesses inflationary pressures. This proves to be a combination of survey data, financial markets data, confidential bank data, and model-based forecasts with fudge factors.

The ECB has heeded its critics in part by publishing inflation forecasts, which are described as projections to underscore their conditional nature. The first inflation forecasts were presented in detail in December 2000. It is most probable that the ECB will continue to follow this path of transparency. Accountability arguments based on greater transparency alone do not explain the ECB's preference for a definition over a target.

The publicized exchange between the French finance minister, Laurent Fabius, and Bundesbank representatives in July 2000 underscores, in our view, the sensitivity of goal independence in the inflation-targeting debate. Fabius proposed a plan whereby European Union Finance ministers and not the ECB should determine the inflation target. The idea behind his proposal of setting an inflation target was to make the ECB more accountable, along the lines of the Bank of England model. The question of accountability arises for the ECB president at his

regular appearances before the European Parliament, which, however, has no power to change the ECB's statutes. In contrast, when the chairman of the Federal Reserve testifies before Congress, he faces an elected institution, which could change the Fed's statutes if it so desired. Fabius' proposal was strongly criticized by Bundesbank representatives, stating that it was not in line with the treaty of Maastricht.³ The Maastricht treaty declared price stability to be the major goal of monetary policy. The Maastricht treaty, however, neither defined price stability nor attempted to tell the ECB how to achieve this. It was left to the ECB to fill the void. The ECB set itself the definition of price stability and devised a two-pillar strategy to fulfill that purpose.

BoJ's struggle with deflation and inflation targets.

Under Japan's 1998 Bank Act, the Bank of Japan (BoJ) is responsible for price stability and the sound development of the national economy. Price stability is defined vaguely as "to maintain an economic environment in which there is neither inflation nor deflation."⁴ Given this background, inflation targets have received considerable attention as a means for lifting Japan out of its deflationary quagmire.⁵ Plenty of economists – both inside and outside Japan – have made the case that the time has come for the BoJ to introduce an inflation target. The earliest and most outspoken has been Krugman (1998). He argues that the BoJ should announce an inflation target and print money until the target is met. The economy needs inflation so that real interest rates can fall to their natural level. The central bank only needs to bring about a one-time change in inflationary expectations.

The BoJ's reply is that merely printing money will not work, since bonds are close substitutes for money when interest rates are near zero. Okina (1999), defending the BoJ position,

³ See comments by Bundesbank president, Ernst Welteke in the Handelsblatt, July 16, 2000, Bundesbank vice president, Jürgen Stark in the Börsen-Zeitung, July 14, 2000 and the president of Bavaria's state central bank, Franz-Christoph Zeitler in the Sueddeutsche Zeitung, August 28, 2000.

⁴ See www.boj.or.jp/about/about_f.htm.

⁵ Other measures to combat deflation have also been proposed. They include an increase in excess reserves through normal money market operations, an increase in the purchases of government bonds, depreciating the yen through foreign exchange intervention, interest rate targeting, a tax on holding money, and a tax reduction and underwriting of government bonds.

argues that an increase in the monetary base will have no effect on demand and will not raise prices. Krugman's response is that a combined policy of ratcheting up the money base and stating a commitment to an inflation target will eventually convince the public that the BoJ is serious.

Svensson (2000), building on Krugman's argument, states that the BoJ should announce an upward-sloping price level target path and a temporary exchange rate peg. Once the price-level target path has been reached, the BoJ may shift to an inflation target or maintain the price-level target path. If the difference between global inflation and the Japanese target is small, a fixed peg is claimed to be sufficient.

Members of the ruling party (LDP) have also been urging the BoJ to adopt an inflation target. A committee has been set up to look at whether the BoJ should consider such a policy. The BoJ has reacted not only by highlighting its aversion to inflation targets but also by giving various reasons why such targets may prove difficult, given supply side factors (technical innovation, deregulation, and intensification of global competition).

To understand the BoJ's position from an institutional perspective, Cargill (2000) offers the view based on an independence gap.⁶ Because the BoJ has only been legally independent only since April 1, 1998, an inflation target would be viewed as a restriction on its newly acclaimed goal independence. An inflation target would require a more formal definition of price stability than is contained in the Bank of Japan Act.⁷ Cargill (2000) and Ito (2004) claim that this concern to guard its newly granted goal independence limits the willingness of the BoJ to seek adequate solutions to its current problem of deflation. The BoJ may therefore be caught in an independence gap where the newly achieved legal independence provides an incentive for an overly conservative approach to preventing deflation. Such behavior, however, could in itself undermine its newly awarded independence.

⁶ See Blinder et al. (2001) for a similar discussion concerning central bank independence, the economic cycle and the unwillingness to define price stability.

⁷ Any revision of the Bank of Japan Act is recognized to be complex. Cargill (2000) argues that any outcome is a result of political maneuvering by the Ministry of Finance that has nothing to do with correcting past BoJ policy.

In a move aimed, in part, at thwarting its critics, the BoJ has decided to release forecasts of real GDP, WPI, and CPI a year into the future. The BoJ will release a range of semi-annual forecasts by Board members (min and max), extracting the extreme outliers. The BoJ wants to make clear that these are forecasts and thus distinct from targets. The Board's intention is not to open up a debate over monetary policy and inflation targeting but to improve transparency without jeopardizing its independence. The hope is that the BoJ can show the public the link between forecast and policy and thereby increase faith in BoJ policy.

The SNB's reliance on a quantitative definition of price stability

Despite obvious parallels to inflation targeting, the SNB has stated on several occasions that its strategy is not inflation targeting.⁸ Although the SNB has not been explicit about the distinction between definitions of price stability and inflation targets, it has highlighted certain features of the definition that it regards as important for achieving price stability.

The first important feature of a price stability definition is the SNB's emphasis on the medium-term horizon. A definition of price stability is valid for an extended period of time and thus represents a more reliable commitment to monetary stability than an inflation target, which can be adjusted over time in a discretionary and unpredictable way. The SNB's emphasis on the medium term signals to the public that its definition of a 2% inflation cap is valid for a considerable period of time.⁹ Although the SNB has not formally defined price stability in the past, since 1981 it has been referring to a concept of price stability that could be interpreted as being consistent with its current definition.

⁸ International organizations such as the BIS, IMF, and OECD accept and recognize the SNB's position on inflation targeting. The OECD Economic Surveys, Switzerland (2000) states, on page 49, "the concept is not labeled as inflation targeting: the SNB aims at *the maintenance of price stability in the medium run* rather than committing itself to *stabilizing inflation permanently at a specified level*". The IMF's staff report Switzerland (2000), on page 16, states "Despite similarities with inflation targeting, the new framework differs in one important respect, namely, it does not contain an institutional commitment to an inflation target as the overriding objective of monetary policy. In its 71st Annual Report, the BIS writes, on page 70, "Switzerland does not target inflation but instead uses a broad-based inflation forecasting strategy primarily focused on a numerical target for price stability".

⁹ The SNB is not specific about what the medium term means. Most references, as implied by the SNB forecast, state that it is a period longer than two years.

A permanent target is not a prevailing characteristic of inflation targeters. The Reserve Bank of Australia speaks of an inflation target that is subject to the business cycle. The Reserve Bank of New Zealand widened its target range from 0–2% to 0–3% in 1996 and narrowed the target to 1–3% in 2002. The Bank of Canada and the government first introduced a series of inflation reduction targets of 2-4% that were later lowered to 1-3%. The Bank of England was first given an inflation objective of 1–4%, whereas now it operates with a point target of 2.0%. The experiences of Mexico, Chile and Israel show that the time horizon of inflation targets in emerging markets is often valid only for one year.¹⁰ Although these modifications to the inflation targets were associated with the early years of inflation targeting and with a policy of disinflation, repeated changes to the nominal anchor may heighten uncertainty regarding the future course of monetary policy.¹¹

Even if the inflation target has not changed in some countries, the duration of the target horizon is time dependent. This arises from the observation that governments in power either set the targets single-handedly or determine them jointly with the central bank. Therefore inflation targets are not necessarily free of the uncertainties associated with political cycles.

A second difference between definitions and targets is the latter's reliance on escape clauses. The SNB acknowledges that there will be periods when the 2% level will be breached; however, it refrains from laying out a contingency strategy in the event of specific shocks. The SNB's view is that escape clauses can easily be misused as an excuse for policy mistakes, particularly when they are formulated in a general way, as they usually are, see Rich (2000). While more and more inflation targeters are downplaying their reliance on escape clauses, the SNB feels that escape clauses sacrifice the simplicity of the overall monetary policy strategy and that potential credibility gains through the pre-commitment of escape clauses are an illusion.

¹⁰ In table 2, Rasche and Williams (2005) show that many emerging market countries have changed their targets. Brazil (2003), Colombia (2004), Hungary (2005), the Czech Republic (2002), and Korea (2002) raised their annual targets, often for a single year.

¹¹ In table 2, Rasche and Williams (2005) show that of the 23 'inflation targeters' only Australia (starting date 1993), Finland (1993-1998), Iceland (2001), Norway (2001), South Africa (2003), Sweden (1995),

Looking back, Rich (2000) views previous SNB policy with an explicit escape clause as unsatisfactory. Past SNB policy, he believes, has suffered in that it allowed for deviations from monetary targets in the event of exchange rate and money demand shocks. On a few occasions, the SNB claimed it had missed its monetary targets due to excessive exchange rate shocks. In retrospect, however, these episodes reveal that the long-term focus of price stability was undermined in the name of exchange rate stability.

3. Defining goal independence in a world of price stability

This section offers an expanded view on the motives behind the declaration that certain central banks are not inflation targeters. We feel that a central bank's preference for a definition over a target is the main reason for its reneging declaration. Abstainers recognize that an inflation target could undermine their ability to set long-term objectives and this restricts their level of goal independence. To help clarify our arguments, we begin by offering an alternative definition of goal independence.

Degrees of goal independence

Debelle and Fischer (1994) extended the literature on central bank independence by emphasizing the distinction between goal and instrument independence.¹² By instrument independence they refer to the central bank's ability to set its instruments autonomously of any government interference, in order to achieve a goal. If this goal is set by the government and not by the central bank, the central bank has no goal independence according to Debelle and Fischer's terminology. Debelle and Fischer (1994) – and subsequently others e.g., de Haan et al. (1999), Mishkin and Schmidt-Hebbel (2001), and Blinder et al. (2001) – argued that central banks should have instrument independence but not goal independence. Their argument is that goal independence for a central bank contradicts democratic principles. For this reason the policy goal

Switzerland (2000), and Thailand (2000) have not changed their targets. This means 14 of 23 countries have changed their targets since the implementation of inflation targeting.

¹² See Eijffinger and de Haan (1996) and Berger et al. (2001) for surveys on central bank independence.

has to be set by the government. The central bank, however, should have instrument independence, insulating it from short-run political manipulation.

The DeBelle and Fischer (1994) argument is symmetric. On the one hand, it underscores the argument that central banks should be granted instrument independence. Historically, central banks have operated with a low level of independence. The Bank of England is often cited as an example. It enjoyed little or no independence before the introduction of its current policy of inflation targeting and has since been given instrument but not goal independence. On the other hand, the DeBelle and Fischer argument implies equally that goal independent central banks should surrender their privileges: an outcome that has yet to be observed.

We agree with DeBelle and Fischer (1994) and others that every central bank should have instrument independence. What is at issue here, however, is the degree of goal independence. In our view there is more to the goal independence debate than democratic principles. In particular, it has to do with flexibility and the long-run anchorage of monetary policy.¹³

An accountable central bank must be able to argue convincingly to the public that its policy is superior to alternative policy courses. The policy it announces cannot succeed if the monetary authority lacks credibility. A central bank with low credibility can best contribute to macroeconomic performance through a narrowly defined commitment. An inflation targeting strategy that is set by the government seeks to fulfill this function. Goal independence, on the other hand, is warranted if the central bank has already established a high level of credibility. Under such circumstances the central bank can better contribute to the overall macroeconomic performance by not committing itself to a single narrowly defined objective, such as a specific inflation or exchange rate target for a specific time horizon. A goal independent central bank may at times allow itself greater flexibility in response to shocks. The horizon over which the central bank's objective is to be fulfilled is one that involves not only preferences but also technical

¹³ In our discussion of the abstainers we assume that the inflation target and the definitions of price stability are equally well understood by the public. We abstract from incomplete information on the part of the public. Since a main advantage of definitions over targets is flexibility, we do not need to rely on the assumption that the central bank and the public have different utility functions.

judgements about the lags in monetary policy. It therefore may not be appropriate for the central bank to have its target set by the government. In such instances, the goal independent central bank still needs to be accountable in that it must explain its actions to the public. Further, the goal independent central bank must demonstrate consistently its unwillingness to sacrifice long-run macro performance for the benefit of better short-run performance.

To understand the position of the Federal Reserve and others, we need to expand the concept of goal independence. The definition should recognize that important and successful central banks today possess more independence from the government than what instrument independence suggests. At the same time, the concept needs to encompass the view that no central bank should have complete goal independence, since all central banks should be founded on a legislated mandate from a democratic institution. The mandate may not always clearly state the overriding objective of the central bank. This is generally true for those central banks whose mandate was set several decades ago. While the most recently enacted mandates allow little room for ambiguity, over the last decade price stability has come to be understood to be the primary long-run objective of monetary policy even for countries with less specific mandates.

To analyze central banks with varying degrees of goal independence, we develop the taxonomy of *weak*, *medium*, and *strong goal independence*.¹⁴ For the three definitions of goal independence, we assume that the central bank operates with a high degree of instrument independence and a mandate whereby price stability is understood to be the primary goal of monetary policy.¹⁵ In such a situation, the critical question is, who defines price stability? The government or the central bank. The outcome depends on the degree of goal independence.

Weak goal independence means that the government alone interprets what the central bank's goal should be and expresses it through a quantitative target. The central bank's main function is to achieve this target, which is defined either in terms of inflation or the exchange rate.

¹⁴ We will make reference to the static case and do not discuss in detail the dynamics of goal independence (i.e., earning or losing different degrees of goal independence).

A delicate issue under this arrangement is the target horizon and range, which indirectly determine the amount of flexibility the central bank has with respect to output considerations. The shorter is the target horizon and the narrower the target range, the lower will the central bank's degree of maneuverability be with respect to output concerns. The central bank's flexibility can be increased through changes in the nominal target. However, this undermines the anchorage of the long-run goal of price stability.

Medium goal independence is the same as weak goal independence, except that the central bank is involved in the bargaining process for setting the target. The central bank, relying on its technical expertise, is able to craft a package that yields more leeway in terms of escape clauses, policy horizon, band width, or weighting issues in the loss function. This institutional arrangement grants the central bank greater powers than those envisioned by Debelle and Fischer (1994).

Strong goal independence means that, within the realm of its defined mandate of providing price stability, the central bank alone decides how price stability is defined and how policy should be set. Central banks in this category enjoy more flexibility in their ability to react to shocks, since the tradeoff between output stabilization and inflation is not dictated to them by means of a narrowly defined target. This enhanced flexibility allowed under strong goal independence permits a more adequate response to macroeconomic shocks.

Table 2 provides a classification of goal independence for the central banks of industrialized countries. The selection is based on Mahadeva and Sterne's (2000) survey question to central banks: "Who sets the target?"¹⁵ Based on this criterion, the majority of the central banks fall into the medium goal independence category. Only the United Kingdom and Norway represent the weak goal independence category. These central banks have little or no say in setting the target. The Fed, the BoJ, the Bundesbank, the SNB, and the Riksbank are classified within the strong goal independence category. A feature of strong goal independence is that these central

¹⁵ In our discussion, we assume that price stability should be the overriding goal of monetary policy and that this should be underpinned in a central bank's act. The argument can be extended to include other goals if these are constitutionally backed, see Meyer (2001).

¹⁶ The survey was conducted in 1998–1999 just before the ECB commenced operations.

banks, apart from the Riksbank, do not operate with an explicit inflation target or exchange rate target.¹⁷

Central banks enjoy different levels of goal independence. In our view, the DeBelle and Fischer (1994) position that weak goal independence dominates medium and strong goal independence is incorrect. Central banks that are granted strong goal independence should not necessarily be stripped of their powers if the previous inflation record is perceived to be good. We feel there is no best solution for all countries. The arrangement of weak goal independence may be good for central banks that have a poor inflation record and need to build up their reputation. Many of these are in fact the so-called inflation targeters. Other central banks instilled with a higher level of goal independence have earned the trust of the public. These central banks tend to operate with fewer constraints in terms of nominal targets.

Accountability and Transparency

Central bank accountability is a slippery concept. If we borrow the definition by de Haan et al. (1999), central bank accountability is comprised of three elements: the explicit definition and ranking of objectives of monetary policy, transparent central bank actions, and the central government bears the final responsibility for monetary policy. We argue that abstainers fulfill the first two criteria for accountability; the third characteristic does not apply to strong goal independence.

A central bank's preference for definitions over explicit targets does not compromise the objectives and rank of price stability. A definition of price stability will be in force over an extended period of time, whereas in the case of inflation targets, they can be adjusted at will and may be changed, if desired, to what appears feasible in the short-run in the light of past policy mistakes. Accountability is clearly defined in terms of the abstainer's inflation performance. This

¹⁷ The situation of the Riksbank is particular in that it announced an inflation target in 1993 before achieving goal independence in the late 1990s.

is and remains the most important criterion for accountability.

Several authors in the inflation targeting literature confuse accountability's main meaning with setting up devices that ensure that deviations from the inflation target are explained. Briault et al. (1996) rebuke the Bundesbank and the SNB for their lack of accountability because they do not have an inflation target, an official inflation report, nor any formalized procedures that explain to government why inflation has deviated from target. In their accountability index these mechanisms receive equal ranking. However, while these devices are important, they become quickly meaningless if a central bank's inflation performance is poor. A firm commitment to a definition of price stability is a more stringent yardstick for evaluating the success of monetary policy than a measure of deviations from an inflation target.

In terms of the second accountability criterion, it was argued in the previous section that the abstainers have become more transparent in recent years. Their objectives are now clearly stated. Inflation forecasts and their risks are discussed on a regular basis. Instrument settings are communicated by means of a press release. The improvement in transparency was an endogenous outcome of the current policy framework. Strong goal independence should not be understood to restrain the transparency of a central bank.

With regard to the last criterion established by de Haan et al. (1999), it is obvious that this has been formulated for a central bank with weak goal independence only. It therefore cannot be applied to a central bank with strong goal independence.¹⁸ A central bank with strong goal independence bears the full responsibility for inflation and is directly accountable for its inflation performance to society in general and to those institutions empowered to oversee it. Relevant issues here include the ability to change the central bank law, the degree of monitoring by parliament, and the question of whether past performance constitutes grounds for dismissal.

¹⁸ With respect to final responsibility for monetary policy, de Haan et al. (1999) regard the relationship with parliament, the existence of some kind of override mechanism and the dismissal procedure as being crucial. We give *responsibility for monetary policy* a different interpretation.

4. Empirical evidence

This section provides empirical evidence on the links between differing degrees of goal independence and the monetary framework. Our modeling strategy draws heavily on Gerlach (1999) and Mishkin and Schmidt-Hebbel (2001). The empirical results confirm our views on the importance of goal independence in institutional design.

A review of previous studies

Gerlach (1999) argues that inflation targeting is a substitute for central bank independence. By adopting inflation targeting and by giving the central bank a clear mandate to pursue low-inflation policies, it is easier for the central bank to resist political pressures for more expansionary policies that would lead to inflation above target. This gain would seem to be largest among central banks that have enjoyed a low level of independence.

Gerlach (1999), using probit regressions, tries to identify structural factors linked with inflation targeting. He finds that central bank independence is negatively correlated with explicit inflation targeting in a panel of 22 observations. Mishkin and Schmidt-Hebbel (2001) go one step further by separating the potential effects arising from goal and instrument independence for a panel of 27 countries. Although their binary index of goal independence does not fully capture the subtlety of our definition of goal independence, Mishkin and Schmidt-Hebbel (2001) find evidence that inflation targeting is positively correlated with instrument independence and negatively correlated with goal independence. This result is fairly robust to juxtaposing right-hand-side variables of the probit regression.

Mishkin and Schmidt-Hebbel (2001) interpret their empirical results such that inflation targeting is associated with surrendering goal independence to governments. Formally, there is no example where an official inflation targeter has volunteered to forfeit its goal independence.

Rather the process has been the other way around. A handful of countries that had little or no formal independence were granted instrument independence (with no goal independence) after they made the switch to inflation targeting. The classic examples are the Reserve Bank of New Zealand and the Bank of England. These central banks had little or no formal independence before switching to inflation targeting.

New results with differing degrees of goal independence

The empirical analysis examines the statistical correlation between different degrees of goal independence and different monetary frameworks. To answer the question as to whether goal and instrument independence are associated with different monetary frameworks, we rely on the central bank survey by Mahadeva and Sterne (2000). The Mahadeva and Sterne survey asks central bankers how they define their institution in terms of the degree of goal and instrument independence (i.e., values between 0 and 100) and monetary framework (i.e., monetary targeting, inflation targeting, exchange rate targeting, or 'no defined' framework).¹⁹ The class of 'no defined' framework assumes that the central bank follows an independent monetary policy but does not fall into the inflation targeting, monetary targeting, or exchange rate targeting categories. The United States and Japan are examples of the 'no defined' framework.

It is well known that monetary regimes and the level of independence can change abruptly (i.e., as in the case of the Bank of England's switch to inflation targeting in 1993 and the introduction of instrument independence in 1997). For this reason, it is important that a cross-country analysis capture institutional characteristics and monetary framework over a narrow window in time and across as many countries as possible. The Mahadeva and Sterne survey does this in that it provides a snapshot of central bank perceptions for 92 countries in the year 1998. In

¹⁹ Information from Tables A2 and A5 were used to construct the monetary framework index and the independence indexes.

our discussion of the abstainers, it is the central bank and not the public that distances itself from inflation targeting.

Therefore, central bankers' perceptions of their institutions are critical for the empirical analysis that highlights the interaction between monetary frameworks and goal independence in the abstaining debate.²⁰

The estimated probit model is the following:

$$MON_REGIME_i = \alpha + \beta GOAL_IND_i + \lambda INSTR_IND_i \quad (1)$$

where MON_REGIME_i is a binary dummy variable defining the monetary regime (either inflation targeting, monetary targeting, 'no defined' framework, or exchange rate targeting) for country i , where i ranges from 1 to 92. $GOAL_IND_i$ is the level of goal independence ranging from 0 (no goal independence) to 100 (full goal independence), and $INSTR_IND_i$ is the level of instrument independence ranging from 0 (no instrument independence) to 100 (full instrument independence). Equation (1) is estimated as a probit model with robust heteroscedastic consistent errors. Our null hypothesis is that goal independence is negatively correlated with inflation targeting and is positively correlated with monetary targeting and the 'no defined' framework. The null hypothesis makes no claims about causality.

The evidence from the probit model corroborates the abstaining arguments of the previous section. The empirical results show that the level of goal independence is important in defining a monetary framework. In particular, higher levels of goal independence are associated with monetary targeting and the 'no defined' framework. Alternatively in the case of instrument independence, the evidence finds no correlation between monetary frameworks and the degree of instrument independence. In today's age of central banking, instrument independence is no longer

²⁰ Numerous studies, such as Mishkin (2004), Rasche and Williams (2005), and Truman (2003), provide a bona fide list of who is an inflation targeter. However, the lists in the three studies are not consistent with each other and Switzerland is included as an inflation targeter. For our purposes, the perceptions of central banks are important and a matching measure of goal independence is needed.

anything special: almost all central banks have it. Because the two variables of interest (i.e., goal and instrument independence) explain only a small portion of the regressions, the empirical results should be treated with caution.

Table 3a presents the probit estimates for the dependent variable, the inflation targeting dummy from Mahadeva and Sterne (2000): +1 if inflation targeting and 0 otherwise. The regressions show that goal independence is positively correlated with inflation targeting, but the regressor is insignificant. The results do not improve if the variable, $GOAL_IND_i$ is split between industrial and non-industrial countries. Instrument independence is insignificant in all regressions.

To test the robustness of the results in Table 3a, we replace the Mahadeva and Sterne (2000) classification of inflation targeters with an updated list from the IMF published in the World Economic Outlook (2005), see Table 4.1 on page 162. The IMF classification includes Switzerland and is stricter in number (i.e., it considers 21 rather than the 25 countries in Mahadeva and Sterne, 2000). The results are similar to the Mahadeva and Sterne classification. The only difference is that instrument independence is positive and significant for the industrial countries.

Next, Table 4 presents evidence for the monetary framework defined by monetary targeting; the dependent variable is +1 if monetary targeting and 0 otherwise. These results are consistent with our abstaining story. They show goal independence is positively correlated with monetary targeting. Goal independence is significant at the 10% level when all countries are considered and significant at the 5% level for non-industrial countries. As in the previous tables, instrument independence remains insignificant in each regression.

A further set of regressions are defined by the binary dummy variable for 'no defined' framework; i.e., +1 if the monetary framework is not defined by inflation targeting, monetary targeting, or exchange rate targeting, 0 otherwise. The results for the 'no defined' regime are given in Table 5. As for monetary targeting, there is a positive and significant correlation between 'no defined' framework and goal independence. Instrument independence is found to be insignificant.

Although exchange rate targeting is not part of our abstaining story, the probit estimates for this framework provide a check on the previous results. A high positive correlation between goal independence and exchange rate targeting would cast doubt on our abstaining story: a non independent monetary framework does not seek to defend its goal independence. The results for the exchange rate targeting regime are summarized in Table 6. The correlation between an exchange rate targeting framework and goal independence is negative in all regressions, underpinning the view that non independent monetary framework are associated with low levels of goal independence. Goal independence is significant for industrial and non-industrial countries, whereas instrument independence is not.

The empirical results corroborate the view that higher levels of goal independence are associated with non inflation targeting strategies defined by the monetary targeting framework and the 'no defined' framework. Yet for inflation targeting, we find no significant empirical correlation with goal independence. Two considerations merit comment.

First, it is possible that the dynamics of goal independence may change the observed correlations in Tables 3 to 6. The relationship between inflation targeting and goal independence is still in its infancy. Some inflation targeters, after a successful performance with low inflation, have been granted greater levels of goal independence. Sweden is a country that has taken this route. If further countries follow this pattern, it is possible that a positive relation between goal independence and inflation targeting will arise. A further consideration is that many inflation targeters, particularly in the developing countries, rely on the exchange rate channel. Either explicit targets for the exchange rate are set or the exchange rate is pegged in order to obtain the desired level of inflation. The heavy reliance on the exchange rate reduces the case for goal independence.

5. Concluding remarks

Central banks devote considerable resources to convince the general public, international organizations, and academic economists as to how they perceive themselves. Recently, several important central banks have declared that they are not inflation targeters, despite displaying close parallels to such a policy strategy. We have labeled these central banks abstainers. The fact that certain central banks – the abstainers – declare they are not inflation targeters implies that they have a vested interest in pursuing a separating strategy. Our primary intention is to explain the abstainers' reaction to inflation targeting and to emphasize the importance of and the need to maintain strong goal independence for their policy framework. This view challenges the position of DeBelle and Fischer (1994) and others, who claim that instrument independence combined with a low level of goal independence (i.e., weak goal independence in our terminology) offers the best institutional arrangement for the conduct of monetary policy.

A particular characteristic of the abstainers is that they operate with a high level of goal independence. Central banks value goal independence for it allows them to respond with greater flexibility to macroeconomic shocks. Yet even the most independent central banks recognize that goal independence needs to be continuously safeguarded through good inflation performance. Otherwise, the government may impose stringent targets, and the central bank risks the loss of its autonomy.

The recent emergence of inflation targeting has put pressure on the non targeters to adopt specific features of inflation targeters. Even the most goal independent central banks have responded to calls for greater transparency. The abstainers, however, have not followed the targeters by setting a specific inflation target, rather their preference is to work with a definition of price stability. While this may make little difference from the point of view of inflation targeters, non-official inflation targeters have a vested interest in guarding their goal independence. This is warranted if the performance of these central banks is good and if they enjoy a high level of reputation.

Acknowledgements

A previous version of the paper circulated under the title “Abstaining from Inflation Targets: Understanding the Importance of Strong Goal Independence.” In revising this paper, we have benefited from comments from the editor Jakob de Haan and two anonymous referees. The authors would also like to thank Niklaus Blattner, Michael Dueker, Bruno Gehrig, Stefan Gerlach, Frederic Mishkin, Michel Peytrignet, Samuel Reynard, Georg Rich, Jean-Pierre Roth, Enzo Rossi, Lars Svensson, and Mathias Zurlinden for helpful remarks on an earlier version.

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**Table 1: Toolkit approach to inflation targeting:
Goal independence and official inflation targeters**

| Central bank | Official inflation targeter | Inflation forecast published | Voting patterns published/minutes | Policy decisions discussed in publications |
|--------------------------------|-----------------------------|------------------------------|-----------------------------------|--|
| <i>Exchange rate floaters</i> | | | | |
| Bank of England | Yes | Yes | Yes | Yes |
| RB of New Zealand | Yes | Yes | No | Yes |
| Reserve Bank of Australia | Yes | No | No | Yes |
| Riksbank | Yes | Yes | Yes | Yes |
| Bank of Canada | Yes | Yes | No | Yes |
| Bank of Chile | Yes | No | No | Yes |
| Bank of Israel | Yes | No | No | Yes |
| | | | | |
| Federal Reserve | No | Yes | Yes | Yes |
| ECB/Bundesbank | No | Yes | No | Yes |
| Bank of Japan | No | Yes | Yes | Yes |
| Swiss National Bank | No | Yes | No | Yes |
| | | | | |
| <i>Exchange rate targeters</i> | | | | |
| Norges Bank | No | Yes | No | Yes |
| Bank of Iceland | No | No | No | Yes |
| Danish National Bank | No | No | No | Yes |

Notes: Information from Mahadeva and Sterne (2000).

Table 2: Classification of goal independence before 1999

| | Weak goal independence | Medium goal independence | Strong goal independence | Inflation or exchange rate target | Average inflation 1970-1999 |
|----------------|------------------------|--------------------------|--------------------------|-----------------------------------|-----------------------------|
| United States | | | √ | No | 5.2 |
| Japan | | | √ | No | 4.2 |
| Germany | | | √ | No | 3.4 |
| France | | √ | | Yes | 6.1 |
| Italy | | √ | | No | 9.2 |
| United Kingdom | √ | | | Yes | 7.9 |
| Canada | | √ | | Yes | 5.4 |
| Austria | | √ | | Yes | 4.1 |
| Belgium | | √ | | Yes | 4.7 |
| Denmark | | √ | | Yes | 6.1 |
| Finland | | √ | | Yes | 6.5 |
| Greece | | √ | | Yes | 14.3 |
| Ireland | | √ | | Yes | 8.3 |
| Netherlands | | √ | | Yes | 4.1 |
| Norway | √ | | | Yes | 6.4 |
| Portugal | √ | | | Yes | 14.0 |
| Spain | | √ | | Yes | 9.6 |
| Sweden | | | √ | Yes | 6.6 |
| Switzerland | | | √ | No | 3.5 |
| Australia | | √ | | Yes | 6.9 |
| New Zealand | | √ | | Yes | 8.5 |

Notes: Information from Mahadeva and Sterne (2000).

Table 3a: Probit regressions for inflation targeting regime (Mahadeva and Sterne classifications)

| | | | | | |
|-----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>CONSTANT</i> | -1.0537** (0.0338) | -1.1833** (0.5091) | -1.2453** (0.5392) | -1.0645** (0.3403) | -1.1652** (0.5083) |
| <i>GOAL_IND</i> | 0.0012 (0.0051) | | 0.0011 (0.0051) | | |
| <i>GOAL_IND</i> (industrial) | | | | 0.0032 (0.0067) | |
| <i>GOAL_IND</i> (non industrial) | | | | 0.0008 (0.0052) | |
| <i>INSTR_IND</i> | | 0.0024 (0.0058) | 0.0024 (0.0059) | | |
| <i>INSTR_IND</i> (industrial) | | | | | 0.0048 (0.0062) |
| <i>INSTR_IND</i> (non industrial) | | | | | 0.0012 (0.0060) |
| R2-pseudo | 0.001 | 0.002 | 0.003 | 0.003 | 0.011 |
| DOF | 90 | 90 | 89 | 89 | 89 |
| Cases correct | 77 | 77 | 77 | 77 | 77 |

Notes: *GOAL_IND* is the level of goal independence and *INSTR_IND* is the level instrument independence. * and ** denotes significance at the 10 and 5 percent level. DOF denotes degrees of freedom. Robust standard errors are given in brackets.

Table 3b: Probit regressions for inflation targeting regime (IMF classifications)

| | | | | | |
|-----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>CONSTANT</i> | -0.8868** (0.3271) | -1.5789** (0.5011) | -1.5673** (0.5833) | -0.9083** (0.3317) | -1.5722** (0.4922) |
| <i>GOAL_IND</i> | 0.0005 (0.0050) | | -0.0002 (0.0050) | | |
| <i>GOAL_IND</i> (industrial) | | | | 0.0067 (0.0066) | |
| <i>GOAL_IND</i> (non industrial) | | | | 0.0012 (0.0054) | |
| <i>INSTR_IND</i> | | 0.0085 (0.0054) | 0.0085 (0.0055) | | |
| <i>INSTR_IND</i> (industrial) | | | | | 0.0123** (0.0057) |
| <i>INSTR_IND</i> (non industrial) | | | | | 0.0067 (0.0058) |
| R2-pseudo | 0.024 | 0.024 | 0.023 | 0.025 | 0.049 |
| DOF | 90 | 90 | 89 | 89 | 89 |
| Cases correct | 74 | 74 | 74 | 74 | 74 |

Notes: *GOAL_IND* is the level of goal independence and *INSTR_IND* is the level of instrument independence. * and ** denotes significance at the 10 and 5 percent level. DOF denotes degrees of freedom. Robust standard errors are given in brackets.

Table 4: Probit regressions for monetary targeting regime

| | | | | | |
|-----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| constant | -0.9333** (0.3026) | -0.7942** (0.3888) | -1.2235** (0.0036) | -0.9114** (0.0028) | -0.8324** (0.3847) |
| target | 0.0080* (0.0044) | | 0.0078* (0.0045) | | |
| target (industrial) | | | | 0.0028 (0.0065) | |
| target (non industrial) | | | | 0.0090** (0.0045) | |
| instrument | | 0.0042 (0.0044) | 0.0036 (0.0045) | | |
| instrument (industrial) | | | | | 0.0000 (0.0054) |
| instrument (non industrial) | | | | | 0.0061 (0.0045) |
| R2-pseudo | 0.036 | 0.008 | 0.042 | 0.052 | 0.037 |
| DOF | 90 | 90 | 89 | 89 | 89 |
| Cases correct | 62 | 62 | 62 | 62 | 62 |

Notes: *GOAL_IND* is the level of goal independence and *INSTR_IND* is the level of instrument independence. * and ** denotes significance at the 10 and 5 percent level. DOF denotes degrees of freedom. Robust standard errors are given in brackets.

Table 5: Probit regressions for "no defined" regime

| | | | | | |
|-----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| constant | -1.7085** (0.3457) | -1.0341** (0.4881) | -1.7251** (0.5320) | -1.7096** (0.3495) | -1.0381** (0.4883) |
| target | 0.0114** (0.0047) | | 0.0114** (0.0047) | | |
| target (industrial) | | | | 0.0116* (0.0070) | |
| target (non industrial) | | | | 0.0114** (0.0047) | |
| instrument | | 0.0006 (0.0057) | 0.0002 (0.0057) | | |
| instrument (industrial) | | | | | 0.0001 (0.0064) |
| instrument (non industrial) | | | | | 0.0009 (0.0009) |
| R2-pseudo | 0.049 | 0.000 | 0.049 | 0.049 | 0.000 |
| DOF | 90 | 90 | 89 | 89 | 89 |
| Cases correct | 77 | 77 | 77 | 77 | 77 |

Notes: *GOAL_IND* is the level of goal independence and *INSTR_IND* is the level of instrument independence. * and ** denotes significance at the 10 and 5 percent level. DOF denotes degrees of freedom. Robust standard errors are given in brackets.

Table 6: Probit regressions for exchange rate targeting regime

| | | | | | |
|-----------------------------|-----------------------|---------------------|-----------------------|-----------------------|---------------------|
| constant | 0.4056 (0.2859) | 0.0610 (0.0386) | 0.7161* (0.4296) | 0.3836 (0.2843) | 0.0824 (0.3856) |
| target | -0.0132** (0.0046) | | -0.0130** (0.0045) | | |
| target (industrial) | | | | -0.0094* (0.0054) | |
| target (non industrial) | | | | -0.0138** (0.0049) | |
| instrument | | -0.0049 (0.0045) | -0.0040 (0.0044) | | |
| instrument (industrial) | | | | | 0.0020 (0.0050) |
| instrument (non industrial) | | | | | -0.0063 (0.0047) |
| R2-pseudo | 0.095 | 0.013 | 0.103 | 0.103 | 0.029 |
| DOF | 90 | 90 | 89 | 89 | 89 |
| Cases correct | 62 | 62 | 62 | 62 | 62 |

Notes: *GOAL_IND* is the level of goal independence and *INSTR_IND* is the level of instrument independence. * and ** denotes significance at the 10 and 5 percent level. DOF denotes degrees of freedom. Robust standard errors are given in brackets.