Central de Chile Documentos de Trabajo

Central Bank of Chile Working Papers

N° 166

Junio 2002

MONETARY POLICY IMPLEMENTATION AND RESULTS IN TWENTY INFLATION-TARGETING COUNTRIES

Klaus Schmidt-Hebbel

Matías Tapia

La serie de Documentos de Trabajo en versión PDF puede obtenerse gratis en la dirección electrónica: <u>http://www.bcentral.cl/Estudios/DTBC/doctrab.htm</u>. Existe la posibilidad de solicitar una copia impresa con un costo de \$500 si es dentro de Chile y US\$12 si es para fuera de Chile. Las solicitudes se pueden hacer por fax: (56-2) 6702231 o a través de correo electrónico: <u>bcch@bcentral.cl</u>.

Working Papers in PDF format can be downloaded free of charge from: <u>http://www.bcentral.cl/Estudios/DTBC/doctrab.htm</u>. Printed versions can be ordered individually for US\$12 per copy (for orders inside Chile the charge is Ch\$500.) Orders can be placed by fax: (56-2) 6702231 or e-mail: <u>bcch@bcentral.cl</u>.



CENTRAL BANK OF CHILE

La serie Documentos de Trabajo es una publicación del Banco Central de Chile que divulga los trabajos de investigación económica realizados por profesionales de esta institución o encargados por ella a terceros. El objetivo de la serie es aportar al debate de tópicos relevantes y presentar nuevos enfoques en el análisis de los mismos. La difusión de los Documentos de Trabajo sólo intenta facilitar el intercambio de ideas y dar a conocer investigaciones, con carácter preliminar, para su discusión y comentarios.

La publicación de los Documentos de Trabajo no está sujeta a la aprobación previa de los miembros del Consejo del Banco Central de Chile. Tanto el contenido de los Documentos de Trabajo, como también los análisis y conclusiones que de ellos se deriven, son de exclusiva responsabilidad de su(s) autor(es) y no reflejan necesariamente la opinión del Banco Central de Chile o de sus Consejeros.

The Working Papers series of the Central Bank of Chile disseminates economic research conducted by Central Bank staff or third parties under the sponsorship of the Bank. The purpose of the series is to contribute to the discussion of relevant issues and develop new analytical or empirical approaches in their analysis. The only aim of the Working Papers is to disseminate preliminary research for its discussion and comments.

Publication of Working Papers is not subject to previous approval by the members of the Board of the Central Bank. The views and conclusions presented in the papers are exclusively those of the author(s) and do not necessarily reflect the position of the Central Bank of Chile or of the Board members.

Documentos de Trabajo del Banco Central de Chile Working Papers of the Central Bank of Chile Huérfanos 1175, primer piso. Teléfono: (56-2) 6702475 Fax: (56-2) 6702231

MONETARY POLICY IMPLEMENTATION AND RESULTS IN TWENTY INFLATION-TARGETING COUNTRIES

Klaus Schmidt-Hebbel Gerente de Investigación Económica Banco Central de Chile

Matías Tapia Economista Gerencia de Investigación Económica Banco Central de Chile

Resumen

La popularidad de las metas de inflación como régimen de política ha experimentado un sostenido aumento en los últimos años. Sin embargo, existe escasa información comparativa de las diferencias y similitudes en la institucionalidad y resultados de este régimen en distintos en países. Este artículo presenta los resultados de una encuesta sobre política monetaria enviada a los 20 países que en la actualidad operan con metas de inflación. Sus respuestas resaltan las características operacionales de la ejecución de la política monetaria, el proceso de toma de decisiones y la comunicación de las mismas, así como los modelos utilizados como respaldo para la elaboración de proyecciones y sustento a las decisiones. El artículo también presenta las respuestas individuales de cómo cada banco central simula el efecto dinámico sobre producto e inflación de un cambio de política.

Abstract

Inflation targeting is an increasingly popular monetary regime among industrialized and developing central banks. However, there is little cross-country comparative information about commonalties and differences in monetary policy implementation and results across inflation-targeting countries. This paper presents the results of a survey on monetary policy conducted among the world's twenty central banks that currently target inflation. Survey responses highlight operational features of monetary policy implementation, the ways monetary decisions are made and communicated to the public, and the models on which monetary policy decisions and macroeconomic forecasts are based. The paper also reports the dynamic simulation effects of monetary policy changes on output and inflation reported by individual central banks.

We thank all participating central bank staff individualized in the main text for their generous participation and comments on a preliminary version. All remaining errors are our own. Comprehensive survey responses by each central bank are electronically available in spreadsheet format on the website of the Central Bank of Chile (<u>www.bcentral.cl/Estudios/DTBC/166/166.htm</u>). E-mails: kschmidt@bcentral.cl; mtapia@bcentral.cl.

<u>1. Introduction</u>

Inflation targeting (IT) is an increasingly popular monetary regime among industrialized and developing central banks. IT started more than a decade ago with New Zealand's pioneering experience in 1989, followed closely by Chile, Canada, and other countries in the early 1990s. The popularity of IT has grown consistently, with additional central banks adopting the regime each year. Only two dropouts have been recorded to date, as a result of their membership in EMU.

As of mid 2002, twenty countries have adopted a quantitative inflation objective as their economy's nominal anchor. More importantly, they have put in place a comprehensive policy framework that is broadly consistent with either partial or fully-fledged IT, as understood by policymakers and described in the literature (e.g. Bernanke et al.).¹ The cornerstones of IT are: (i) adoption of the inflation target as the economy's only (or at least dominant) nominal anchor, (ii) operational independence in the conduct of monetary policy committed to attain the inflation target (i.e. no fiscal dominance), (iii) technical capability to forecast inflation and react accordingly, and (iv) high levels of policy transparency and accountability. In the absence of the latter features, central banks are neither able nor credible to pursue their inflation goals and hence do not belong to the group of inflation targeters.

IT goes well beyond the simple adoption of a quantitative goal for inflation. IT is an intermediate monetary arrangement in the rule-versus-discretion tradeoff – an arrangement labeled as "constrained discretion" (Bernanke et al. 1999, Svensson 1999). IT central banks set up well-defined rules and performance goals against which they are held accountable by the media, the markets, and government or parliament. However, unlike a more mechanical monetary growth rule that provides an alternative nominal anchor, IT leaves more discretionary room for the Central Bank to attain the forward-looking inflation target. In the dimension of the flexibility-credibility tradeoff, IT – when backed by appropriate policy action – strengthens policy credibility while providing flexibility for the Central Bank to pursue effective stabilization. The value of this particular combination in the credibility/flexibility tradeoff lies in the fact that IT central bankers are no "inflation nutters" (King 1997). This means that central bankers aim at both low inflation volatility and low output volatility, as evidenced by monetary policy or Taylor rules estimated for various IT countries (Taylor 1993, Loayza and Soto 2002).

¹ There is room for disagreement on the exact definition of "inflation targeting" and on the difference between partial and fully-fledged IT. For example, the Swiss National Bank explicitly indicates in its survey response that "The SNB usually does not label its monetary policy approach as inflation targeting. However, the differences are not fundamental and involve mainly questions of semantics." Disagreements also exist regarding the date of the start of IT, particularly in countries that have evolved gradually toward fullyfledged IT (e.g. Chile, Colombia, Israel, Mexico, Peru). Our sample of 20 IT countries (and the dating of the start of their IT experience) is consistent with a generous interpretation of IT and its adoption date, including cases of partial IT and gradual evolution toward full-fledged IT.

There are several cross-country studies on IT.² Some papers have analyzed the main features of inflation targeting, such as Haldane and Salmon (1995), Masson et al. (1997), Agénor (2000), Blejer et al. (2000), Fry et al. (2000), Schaechter et al. (2000), Carare et al. (2002), Sterne (2002), and Amato and Gerlach (2002). Other cross-country studies have focused on comparative macroeconomic and stabilizing performance of IT within samples of IT countries, including Schmidt-Hebbel and Werner (2002) for Brazil, Chile, and Mexico. A final set of studies has analyzed the performance of IT countries with that of control groups comprised by non-IT countries. Among the latter papers are Bernanke et al. (1999), Cecchetti and Ehrmann (2002), Corbo, Landerretche, and Schmidt-Hebbel (2002), and Mishkin and Schmidt-Hebbel (2002).

However, the devil is in the details of monetary policy design, implementation, and results. IT central banks differ widely in how they design and implement their policy goals and instruments, in how they conduct their policies, in the ways they communicate with the public, and in their policy results. Policy differences across countries tend to narrow as a result of active exchange of country experiences and policy practice among IT central banks. But central banks are still far from converging in the way they adopt IT. How far?

This question led us to send out, in early 2001, a questionnaire to central banks of 17 countries that are identified as inflation targeters in Mishkin and Schmidt-Hebbel (2002). The list included Australia, Brazil, Chile, Canada, Colombia, the Czech Republic, Israel, Korea, Mexico, New Zealand, Peru, Poland, South Africa, Sweden, Switzerland, Thailand, and the United Kingdom. By the time all the responses had been collected and an early draft had been sent to all participants, three additional central banks adopted IT: those of Hungary, Iceland, and Norway. Therefore, the latter were also included in the survey, making up a total of 20 countries, the complete population of IT central banks in mid 2002. We have been granted explicit permission by participating central banks to publish most of their responses. Exceptionally, only a few required us not to publish responses to some questions but were allowed to use them in computing representative sample statistics. This is the case of the sample information summarized in Table 5 below.

The questions that comprise the survey fall into four broad themes: (i) inflation target implementation features, (ii) simulations of dynamic effects of monetary policy on output and inflation, (iii) content and public impact of inflation reports, and (iv) conduct of monetary policy meetings and decisions.

The full completion of the questionnaires by all the participating central banks are evidence for the contribution of IT to more transparency and better accountability in the conduct of monetary policy. We would like to thank all participating central banks for their generous participation in the survey. We are particularly indebted to Malcolm Edey (Reserve Bank of Australia), Joel Bogdanski (Banco Central do Brasil), Pablo García (Banco Central de Chile), José Darío Uribe and Hernando Vargas (Banco de la República de Colombia), Ales Capek (Ceska Narodni Banka), Nigel Jenkinson (Bank of England),

² Among country studies of IT are Debelle and Wilkinson (2002) for Australia, Bogdanski et al. (2002) for Brazil, Schmidt-Hebbel and Tapia (2002 a) for Chile, Hrncir and Smidkdova (2000) for the Czech Republic, Leiderman and Bufman (2000) for Israel, and Drew (2002) for New Zealand.

Isvtan Hamecz (Magyar Nemzeti Bank), Mar Gudmundsson (Seolobanki Islands), Akiva Offenbacher (Bank of Israel), Joo-Whan Lihm (Bank of Korea), Oscar Sánchez (Banco de México), John McDermott (Reserve Bank of New Zealand), Jan F. Qvigstad (Norges Bank), Adrián Armas Rivas (Banco Central de Reserva del Perú), Pawel Durjasz (Narodowy Bank Polski), EJ van der Merwe (South African Reserve Bank), Claes Berg (Sveriges Riksbank), Mathias Zurlinden (Schweizerische Nationalbank), and Atchana Waiquamdee (Bank of Thailand).

It is our hope that the survey results summarized in this paper will prove helpful in the conduct of policy in all the participating central banks and beyond.

This paper contributes to the aforementioned literature IT by reporting first-hand evidence on the conduct of monetary policy by IT central banks. It provides more detailed and comprehensive information on inputs and output of IT than can be found in previous studies, and summarizes dynamic simulation results of monetary policy, as reported by those responsible for policy actions.

Section 2 deals with the operational definition of the inflation target: price measure, time horizon, target range, and the use of inflation forecasts as intermediate targets. Section 3 reports dynamic simulation results for the effects of a contractionary monetary policy on output and inflation. Inflation reports – their content, preparation, disclosure, and impact – and the models used by central banks for forecasting are compared in Section 4. Section 5 analyzes the conduct of monetary policy decisions and meetings. Brief final remarks close the paper.

2. Inflation Targeting Design Features and Inflation Forecasts

Figure 1 depicts IT adoption dates by twenty-two individual countries, together with initial annual inflation rates prevalent at the time each country put IT in place. Finland and Spain abandoned IT when they joined EMU. IT was first adopted by New Zealand in 1989, followed suit by Chile, Canada, and Israel. Very diverse countries joined subsequently the group of inflation targeters, comprising both industrialized and developing economies. As widely documented, industrial countries have tended to adopt IT at low initial inflation rates, while developing countries have used IT successfully in bringing down their high initial inflation rates toward low stationary levels. As documented elsewhere, IT country experiences show large diversity regarding the form of IT adoption (partial or gradualist, as compared to fully-fledged or big-bang), the speed of stabilization under IT, and their overall structural conditions. (Bernanke et al.1999, Carare et al, 2002; Amato and Gerlach, 2002). However they share the success in meeting their targets and achieving stabilization at moderate output costs (Corbo et al. 2002, Schmidt-Hebbel and Werner 2002), proof of which is that no country (other than the two subsequent EMU members) has renounced IT to date.

IT is still a creature of many faces. Central banks follow a common general approach to monetary policy, but they show large differences in the way they design and operate IT. This fact (previously documented by Sterne 2002 and Mishkin and Schmidt-Hebbel 2002, among others) is confirmed by our survey. As discussed next, significant

cross-country differences are observed regarding the main design features of IT, including inflation target measure, range, level, and time horizon.³

Sixteen of the twenty surveyed central banks target the headline Consumer Price Index (CPI), while four countries target a core measure of the CPI. The benefits of defining the target for the broadest available consumer price measure lie in its communicational effectiveness and credibility. The headline CPI is readily available to the public and thus provides a simple, transparent, and credible measure that is critical for consumer welfare. However, the headline CPI includes components that are beyond the control of the Central Bank, including volatile food and energy prices, administratively regulated prices, indirect taxes, and mortgage costs. Four of the surveyed central banks address this problem by using a core index that excludes some or all of the latter price components. However, exclusion of expenditure categories from the target measure could affect transparency toward the public, thus affecting central bank credibility. Hence the choice between headline and core CPI indexes is driven by each central bank's perceived tradeoff between controllability and credibility.⁴

Another important design feature is the target's range. In principle, the choice between both alternatives is another expression of the credibility/flexibility tradeoff. A range provides flexibility and a certain degree of protection from price shocks that are beyond central bank control. However, a range might impair policy credibility because it could be interpreted as a weaker commitment with the mid-range point and hence could bias inflation towards the range's upper limit. Thus, tight point targets could be a good choice for countries building up their credibility and aiming at reducing private-sector inflation expectations. But their potential drawback is excessive strictness, particularly in the presence of high irreducible uncertainty in annual inflation rates (Haldane and Salmon 1995).

Table 2 reports country choices regarding inflation target width and their numerical values. We have followed central bank preferences in how they describe their inflation target width, even when the differences between categories are somewhat opaque. In particular, it is hard to establish clear differences between target points with intervals from thick points and from narrow ranges. With this difficulty in mind, we report 9 countries that

³ Another design dimension of IT is related to escape clauses, i.e., the rules that bind central bank behavior when inflation targets are missed. Our central bank survey does not cover this feature but it is well-known that most IT regimes do not have in place explicit escape clauses (Mishkin and Schmidt-Hebbel 2002). The exceptions are Canada, the Czech Republic, Israel, New Zealand, and South Africa, where the central bank governor is typically required to provide a public explanation for the deviation, specifying measures to bring inflation back to target levels.

⁴ Several arguments shape the tradeoff behind the decision to choose between headline and core indexes as the inflation target. The loss of credibility from using the core CPI is likely to be small as the excluded components are defined ex ante. An argument against the use of the core CPI is that excluded prices could represent a significant share of the basket of the average consumer, who would thus be significantly affected by the differences between target (core) and relevant (headline) inflation. Mishkin and Schmidt-Hebbel (2002) present a theoretical objection to the alleged benefit of using the core CPI: core inflation measures are effective when dealing with supply shocks, but do not isolate the target from the effects of aggregate demand shocks. In the end, however, one should consider that headline and core CPI move together in the medium term – the valid period for most policy horizons that guide monetary policy actions

define their 2002 targets as a range, 7 countries with point targets (of which 4 are precise points and 3 are points with an explicit interval), 3 countries with a thick point, and one country with a target ceiling.

Among the countries that have converged to their long-run inflation goals (and hence have in place undefined or open-period targets, as discussed below) five have target ranges in place, namely Canada, Chile, New Zealand, Switzerland, and Thailand. Australia and Iceland have thick points, Norway and Sweden have points with intervals, and the United Kingdom has precise point target in place. Among the countries that have converged to low inflation but still define annual targets, Peru has a thick point, and Israel and Korea have a target range in place. Both Korea and Israel have also defined a mid-term target point and a long-term inflation target range, respectively, that differ from their current inflation targets. Inflation target points or ranges among all the latter 13 countries that have attained low stationary inflation are set within the interval from 0 to 4%. The average inflation target center in this country sample is 2.9 % and its average range 1.5 %.

Seven countries are on their transition toward long-run stationary inflation and, therefore, have defined annual inflation targets for 2002 that are likely to be higher than future target levels. Among these, Brazil, Colombia, and Poland have precise point targets, Hungary has a point target with an interval, and the Czech Republic and South Africa have a target range. The only country with an asymmetrical inflation target is Mexico, with a point target ceiling in effect.

The predominance of symmetrical inflation targets reflects that, more often than not, the policy is focused on keeping inflation close to its current level or current downward trend, rather than on reducing inflation further or faster. This is obvious in the 13 countries that have converged to low stationary inflation, close to absolute price stability. However, even among the seven inflation targeters that are converging to low inflation, two-digit target rates (observed earlier among inflation targeters including Chile, Colombia, Israel, and Peru) are currently not observed.

Another important feature of IT is the future horizon for which the target is defined. The recent IT literature has distinguished between a control horizon and an implicit targeting horizon (the optimal policy horizon).⁵ The control horizon reflects the lag through which monetary policy affects inflation. Hence, the Central Bank is capable of bringing inflation back to its target level in the time span determined by the control horizon, in the face of an unexpected shock that pushes up the inflation forecast. Mishkin and Schmidt-Hebbel (2002) argue that lengthening the target horizon to correspond more closely to the lagged impact of monetary policy on inflation could solve some of the problems typically faced by inflation. Indeed, most countries that attain low stationary inflation rates switch from annual to longer horizons for their inflation targets.

The implicit targeting horizon is the period after which the central bank expects inflation to return to its target level after being hit by a shock, given the optimal policy

⁵ See King (1997), Batini and Nelson (1999), and Apel et al. (1999).

response determined by the central bank's reaction function. Thus, while the control horizon is derived from the characteristics of the economy's structure, the targeting horizon is endogenous to the Central Bank's preferences and objectives.

Any inflation target formally defined for a time horizon that is shorter than the control horizon is (at least partly) beyond the direct influence of monetary authorities. In this case, monetary policy would have to be tougher than it would be under a longer horizon, to compensate for its weak short-run effect.⁶ However, if a restrictive monetary policy is perceived as too costly in terms of activity, the Central Bank might decide to adopt a more gradual policy stance, allowing for inflation to approach the target level more smoothly, beyond the control horizon. But extending the policy horizon could weaken credibility, because the inflation target could lose its role as a strong signal affecting expectations.

Nine countries define their targets on an annual basis – seven as year-end and two as average calendar years targets. Most of these countries are converging toward low stationary inflation, thus requiring their targets to be defined on an annual basis. Annual targets are adopted in all countries where inflation is still around 5% (Brazil, Colombia, Poland, and South Africa). In countries that have achieved low inflation, it is possible that annual targets reflect the need for credibility. Although annual targets embody a short horizon, the latter is not necessarily shorter than the estimated control horizon. For example, in Colombia and Mexico control horizons fall largely within one year, as will be discussed below.

Adopting an annual target does not necessarily imply that the Central Bank cannot operate with a longer time horizon in mind. Hence, countries converging to low inflation often adopt multi-annual targets, which signal the Central Bank's commitment to follow a gradual path toward long-run inflation. Multi-annual targets are currently in place in Brazil, Colombia, Hungary, Israel, Poland, and Mexico.

Countries that have converged to low inflation have in place two classes of target horizons. Five countries have adopted targets for undefined or open periods (Australia, Iceland, new Zealand, Switzerland, and UK) or for rolling windows of 4 to 8 quarters (Sweden), 6 to 8 quarters (Canada and New Zealand) or 8 quarters (Chile and Norway). The time frame of these rolling windows should be close to the optimal or implicit targeting horizon defined above, and embody an upper bound of the countries' control horizon.

The final question in this section points to the use of inflation forecasts as intermediate targets. Among other features, Schaechter *et al* (2000) label "full-fledged" inflation targeting as a regime where central bankers "...essentially use an inflation target as intermediate guide to monetary policy." Since the Central Bank's reaction function is forward looking, it responds to deviations of inflation forecasts from the preannounced target level. Laxton and Scott (2001) take this feature to the limit, relabeling IT as inflation-forecast targeting.

⁶ Morandé (2002) argues that this was the case in Chile until 2000, when annual inflation targets were in place. As shown below, monetary policy is estimated to fully affect inflation only after 8 quarters.

Currently, twelve of the surveyed central banks use their inflation forecasts as intermediate targets in their monetary policy (Table 4).

Certainly, targeting inflation forecasts requires precise inflation forecasts, typically obtained through a variety of models, an issue that we address below.

3. Dynamic Simulation Effects of Monetary Policy on Output and Inflation

Central banks require a thorough understanding of the intensity and lags with which their policy instrument (typically an interest rate) impacts the economy and, in particular, the dynamics of their policy objectives. This determines inflation targeters' control horizon and the intensity and speed of their policy response to shocks.

While IT central banks' primary concern is the achievement of their inflation targets, inflation targeters are no "inflation nutters" (King 1997). Even when the inflation target is their main policy objective, IT central banks prefer gradualism in inflation reduction if aggressive policy actions are too costly in terms of output. Svensson (1999) has labeled this behavior as "flexible inflation targeting". This approach includes both inflation deviations from target levels and output deviations from full-employment levels (or output gaps) as arguments in central banks' objective function. Empirical evidence for IT and non-IT central banks shows that both arguments are included in central banks' objective functions, even though the weight attached to inflation is typically much larger (Cecchetti and Ehrmann 2002, Corbo, Landerretche and Schmidt-Hebbel 2002). For the same reason, both arguments also enter monetary policy or Taylor reaction functions, as widely documented in the empirical literature (Taylor 1993, Clarida, Gali and Gertler 2000, Taylor 1999, Loayza and Schmidt-Hebbel 2002).

Simulating the dynamic effects of monetary policy on output and inflation involves using a model that captures the interaction of monetary policy with both key variables, explicitly accounting for the transmission mechanisms of monetary policy. The requested policy simulation involves a 100 basis-point rise in the policy rate for one quarter, followed by a policy rule that reflects the Central Bank's conduct of monetary policy.

Sixteen surveyed central banks provided dynamic simulation results for a counterfactual policy exercise simulating a temporary contractionary policy, based on the use of their projection model(s). Central banks were not requested to disclose which model(s) they have applied to arrive at their results. Their individual and sample average responses were summarized into Table $5.^7$

The results should be interpreted with caution. Similarly to any quantitative simulation results, they are subject to significant degrees of uncertainty and cross-country

⁷ Of the 16 central banks that provided a quantitative response, Norway reported simulation results for a twoyear contractionary policy and 3 central banks requested their individual responses to remain undisclosed. However, they granted permission to include them in the sample statistics for the 15 countries that provided simulation results for a 1-quarter contractionary policy, reported at the bottom of Table 5. Hungary provided a qualitative response, included herein as a note in Table 5.

variation in data, macroeconomic structure, and models. This should be borne in mind when considering the large country variation reflected by the results.

We report the maximum intensity and the average time lag in the output and inflation responses to a contractionary monetary policy. The maximum output decline ranges from 0.09% of potential output (undisclosed country) to 0.50% (Iceland, Mexico, and Switzerland). On average, monetary policy impacts output with relative intensity: the 15-country sample median of the maximum output decline is 0.25%. Chile, the Czech Republic, New Zealand, Poland, South Africa, and the United Kingdom exhibit responses that are similar to both the average and the median response. The quarter at which 50% of the output effect is attained ranges from quarter 1 (Chile and Mexico) to quarter 4 (Switzerland). On average, the time lag at which monetary policy hits 0.50% of the maximum output decline is relatively brief: the sample median stands at quarter 2.2.

The maximum inflation reduction ranges from 0.04% (Poland) to 1.0% (Mexico). On average, monetary policy impacts inflation less intensely than output. The 15-country sample median of the maximum inflation reduction is 0.14%. The median response is observed in Chile, Colombia, and Switzerland.

Many channels of monetary policy transmission to inflation go through the expenditure and the output gap in most standard models. Not surprisingly, then, the response of inflation is slower than the output response. Indeed, the effect of monetary policy on inflation is delayed in all countries except Switzerland.⁸ The time lag at which 50% of the inflation effect is attained ranges from quarter 2 (Mexico and Switzerland) to quarter 8 (Australia). The median inflation response occurs after almost one year (3.5 quarters). The median lag of the inflation response is observed in Canada, the Czech Republic, Iceland, and New Zealand.

In sum, the results suggest that output effects are more intense, and take place at shorter lags, than inflation effects of monetary policy. No clear pattern of correlation between intensity and lags of effects and country development levels can be established. But, is there a relation between response lags and the time horizons of inflation targets described above? Indeed, in several countries where inflation response lags (defined as the quarter at which 50% of the total inflation effect is attained) are above 1 year, inflation targets are not defined for annual horizons but for open periods or rolling windows (Australia, Chile, and the United Kingdom).⁹ Countries that rely on annual targets typically exhibit a response lag of inflation that falls within 4 quarters.

Using country responses is straightforward to calculate simple cross-country correlation coefficients for output and inflation responses. The correlation between the size of output and inflation effects is large (0.58) and significant. This suggests that monetary

⁸A possible explanation for this result is the fast response of the exchange-rate channel in Switzerland. See Note 2 in Table 5 for details.

⁹ Poland, with an annual inflation target, estimates the impact of interest rates on inflation to occur with a 6.5 quarter lag. As inflation is still above steady-state levels (the target for 2001 was 6 to 8%), the situation is akin to Chile's, who adopted annual targets in its convergence to stationary inflation, although the estimated lag of monetary transmission was close to 2 years. A similar situation applies to Australia.

policy affects more strongly inflation when output is or has been affected more intensely. However, the simple correlation coefficient between the speeds at which output and inflation effects are observed (i.e., the correlation between the length of output and inflation response lags) is smaller (0.27) and only marginally significant. Finally, correlations between response size and speed are not significant for output, and are negative and only marginally significant for inflation.

Figures 2 to 10 show the dynamic response of output and inflation during 18 quarters and for 8 countries. The figures provide additional evidence on cross-country differences in the macroeconomic response to a temporary monetary policy contraction. Monetary policy effects are more persistent in Chile, Colombia, the Czech Republic, and Switzerland, with larger deviations in both output and inflation still present 18 quarters after the temporary policy shock.¹⁰

The data on the dynamic response can be used to calculate sacrifice ratios. We summarize monetary policy sacrifice ratios at 3 different horizons and for 8 countries (Table 6). For Australia, the sacrifice ratio is zero at a short horizon, as inflation is initially reduced without a significant decline in output. However, it rises over longer horizons, when the adverse output effects materialize. A similar qualitative result of rising sacrifice ratios is observed for Switzerland, although the size of its sacrifice ratios is much larger than Australia's.

In the six other countries, sacrifice ratios diminish as horizons lengthen, reflecting the lagged response of inflation. Although sacrifice ratios for the first four quarters are relatively high in Poland, Colombia, Chile, and New Zealand, they decline strongly when the horizon is extended to two or three years. At a 12-quarter horizon, sacrifice ratios are below 1 (the cumulative inflation reduction exceeds the cumulative output decline) in Australia, Chile, the Czech Republic, and New Zealand. At quarter 12, the sacrifice ratio is between 1 and 1.5 in Poland and Colombia, while it is above 2 in Canada and Switzerland.¹¹

In sum, dynamic simulation effects of monetary policy differ significantly among countries. Important differences are observed regarding size, speed, and persistence in the response of output and inflation to a monetary shock. What lies behind country differences? The conjunction of at least three factors. First, countries differ in macroeconomic structures and institutions, including the extent of wage and price indexation, market competition and openness, development level, cyclical position, distance from stationary equilibrium conditions, and other features.

¹⁰ Note that the response of output and inflation at large lags largely reflects subsequent reactions in the monetary rate – including interest rate cuts below initial levels - that bring output beyond initial levels.

¹¹ Sacrifice ratios are not strictly comparable among countries, unless one assumes responses to be linear on interest rate shocks. Thus, Table 6 does not allow us to state that a given reduction in inflation is necessarily costlier, for example, in one country than in another. If the response of output and inflation to monetary policy is non-linear, sacrifice ratios will depend on the magnitude of the interest rate shock. A 1% inflation reduction in Australia could imply a bigger sacrifice in output than the same reduction in the Czech Republic or Chile, as the required rise in interest rates would differ in both cases.

A second explanation can be found in the policy reaction function incorporated in the model. As discussed above, changes in the policy rate after the first quarter are ruled by a policy function, typically a variation of a simple Taylor rule. The relative weight attached to output and inflation deviations, the inclusion of other variables (like the exchange rate), and the degree of inertia embedded in the function and the neutral interest rate will be relevant for the dynamics of policy rates and, through them, of inflation and output. For example, in the case of Chile, the simulated policy response critically depends on the sample period used in estimating the parameters of the simulation model. Third, models differ in their assumptions, properties, complexity and, possibly, overall quality.

The relative weight of the three latter elements in explaining cross-country differences in a simulated macro response is difficult to identify. However, a preliminary inference can be derived from a previous study. Cecchetti and Ehrmann (2002) use structural VARs to estimate impulse-response functions for some of the countries included herein. Their results allow us to "control" for the use of different models, as a common VAR is estimated for each country, at least in terms of included variables. Thus, differences in responses should be caused by structural differences across countries. Cecchetti and Ehrmann find results that, in terms of the intensity of the macroeconomic response, differ from those presented here. They also find significant differences among countries. However, the latter asymmetries do not seem to be closely related to those reported here. Australia and Canada, whose reported policy effects are similar, appear very different in Cecchetti and Ehrmann's estimations. For New Zealand, their estimated effect on inflation is relatively higher than the one reported here. Thus, some of the reported asymmetries can be attributed to differences in model specification.

4. Inflation Reports and Forecasting Models

Traditionally, monetary policy was conducted behind a veil of secrecy. The Central Bank's objectives, analyses, forecasts, policy decisions processes and even the decisions themselves remained private, as little or no information was released to the market. In relatively passive monetary regimes, such as exchange rate pegs, the need for transparency is scarce, as the peg is a signal which in itself reveals the most relevant properties of the policy stance, as well as restraining the degree of discretion available to the Central Bank. Thus, monetary policy (even if opaque) becomes predictable and easily understandable. For more active regimes, however, where monetary policy is conducted under a greater degree of flexibility, transparency becomes a relevant issue, as it alters the way monetary actions are perceived, eventually affecting their impact over the economy.

In time, central banks have taken a significant shift towards higher levels of transparency, releasing an increasing amount of information to the rest of the economy. Although the net benefits of transparency in monetary policy are still a matter of controversy¹², the case for increasing transparency seems strong, and revealed preferences suggest such is the case.

¹² See Schmidt-Hebbel and Tapia (2002b) for a survey of the literature and the distinction of different types of transparency.

Inflation targets are obviously transparent in themselves, as they explicitly indicate the monetary authority's main objective. Moreover, the strength of inflation targeting *vis a vis* other monetary regimes lies precisely in how transparency enhances monetary credibility and anchors private expectations. However, inflation targeting countries have advanced not only in terms of publicly announcing a target that is meant to be their monetary policy's main driving force. A significant amount of information, an expression of what Geraats (2000) labels as economic transparency (or knowledge transparency), has also been disclosed to the market. Increasingly, the markets are now aware of central banks' analyzes of the economies' current situation, their future prospects and their perspectives of success. The main instrument used to reveal this information has been the so-called "inflation reports", official statements in which the Central Bank provides economic information and – more importantly, as the release of economic statistics is an independent, regular process- an analysis of the economy's current situation and its future projections.

Thus, we now analyze the main characteristics of inflation reports, as well as the information contained in them are their impact on the market.

4.1 Publication of inflation reports

Figure 10 shows the evolution of inflation reports in time. All of the surveyed countries, with the sole exception of Switzerland¹³, have a regular publication that can be identified as an "inflation report". Pioneered by New Zealand in 1992, the publication rate timidly but consistently grew throughout the decade, especially since the late 1990s and in the year 2000¹⁴. Inflation reports have now become a standard among inflation targeters. Moreover, the regime is defined under the pragmatic approach adopted in this paper.

What is the frequency with which central banks release this report? Table 7 reveals that the number of reports throughout the year ranges from 2 to 4: no central bank releases its reports more frequently than every 3 months. Thus, their value, in terms of new information revealed to the market, does not lie in the economic statistics, but in the evaluation the Central Bank makes of such developments and, possibly, its perception of the future.

Economic statistics are typically released at shorter frequencies than the report (daily for stock prices, exchange rates, interest rates; monthly for CPI inflation, industrial production, unemployment). Asymmetries in their receipt are virtually non-existent between the Central Bank and the market, as both receive new releases almost simultaneously. Thus, the inflation report is not informative in that dimension.

However, important differences can exist between the Central Bank and the private sector, in the way they interpret and perceive current and past events and, especially, in their

¹³As mentioned earlier, this country does not define itself as an inflation targeter. However, Switzerland does publish a Quarterly Bulletin, which covers recent developments and prospects in economic conditions and monetary policy. In terms of this survey, and because Switzerland answered all the other questions regarding inflation reports, we treat that publication as such.

¹⁴ The number of inflation reports is obviously correlated with the appearance of new inflation targeters although not perfectly. Chile and Israel, that pioneered this regime among developing countries, setting their first inflation targets in the early 1990s, began to publish a report only in 1998 (Israel) and 2000 (Chile).

expectations about the future. There is no *ex ante* reason to assume that the Central Bank should arrive to "better" analyses or forecasts than private analysts, who manage a common set of economic information, as well as similar analytical and statistical instruments¹⁵. Nonetheless, they can arrive to different conclusions. Knowing the Central Bank's conclusions is important *per se*, as monetary actions are based upon them, and decisions are fully understandable only if their foundations are publicly available. This dimension is the inflation report's main contribution.

Regarding inflation reports, their relatively low frequency proves the fact that the analytical process is a long and complex one, as it involves the simultaneous assessment of diverse sources of economic data, economic models, econometric techniques and analytical discussions. If reports were more frequent, the "quality" of the information released by the Central Bank might be significantly diminished, making it irrelevant or too uncertain to have any effect on private expectations.

However, inflation reports disclose only incomplete information as, unlike the analytical processes and methodologies that the Central Bank uses to analyze the economy, they only reveal the Central Bank's final conclusions.

4.2 Contents of inflation reports

The specific contents of inflation reports are an indication of the degree of transparency provided by these publications. Figure 11 shows the topics covered in the reports. For most countries, a significant spectrum of issues is covered. Some of the topics are obvious: almost all central banks study the behavior of prices in depth, an unsurprising event given the fact that the economy's nominal anchor is the inflation target.

South Africa claims to cover this topic "superficially", a response that is constant for the rest of the analyzed topics. Peru, a country that announces inflation targets but does not explicitly label itself as an inflation targeter, defines the coverage given to prices in the reports as being of "moderate depth" (no topic is reported to be covered "in depth").

All central banks, except the two cases mentioned above, provide an in-depth coverage of the relatively vague concept "macroeconomic analysis" and of real activity. This does not only reflect the banks' general concern for the behavior of economic activity (besides their primary concern for inflation), but also recognizes the influence of these variables in the intertemporal path of inflation. It is interesting to notice that Brazil is the country that best approaches what one could theoretically expect of a "strict inflation targeter", as prices are the only variable that the report covers in depth.

Several other topics are covered, although their degree of importance seems to decrease, as indicated by the reduced depth of analysis. The concern for capital markets and the banking sector, besides their impact on macroeconomic developments, is justified by

¹⁵ It is true, however, that central banks devote significant resources to this task, possibly exceeding those invested by the private sector. Romer and Romer (1996) find that the Fed's inflation forecasts are superior to those made by commercial banks.

the fact that many central banks are, directly or indirectly, responsible for the sound operation of the payment and financial system. Interest on fiscal policy, labor markets and the world economy is warranted by their potential impact over inflation and output.

Structural reforms, a wider concept whose effects are probably stronger in the economy's steady state conditions than on its current evolution, are either not covered or analyzed only superficially. This possibly reflects that the Central Bank's main concern is on the fluctuations around its trend, rather than on the trend itself. Nevertheless, it is evident that identifying the trend (this is, potential output) is the only way to correctly account for fluctuations.

Almost all the banks analyze the economy's past behavior in their reports¹⁶ (Table 8). This comes as no surprise, as the inflation report gives the Central Bank the chance to highlight its achievements or justify adverse outcomes. It also describes the general setting of monetary policy's current conduction, and is the base upon which the economy will evolve in the future. Table 8 shows that central banks typically focus their attention on events occurred during the last year, as they influence the economy's current and future stance.

However, the analysis of past behavior, besides clarifying previous decisions, accounting for possible errors, or providing a pedagogical device to teach the public the Central Bank's perception of the economy, does not actually reveal previously unavailable information. The Central Bank observes the same historical information that private agents have already discussed and analyzed. Analyzing past behavior is not nearly as informative as Central Bank expectations on the economy's evolution, as these expectations shape the future conduct of monetary policy.

What do central banks do in practice? 19 out of the 20 surveyed central banks publish some type of forecast in their reports¹⁷, 13 of them being explicit, numeric forecasts (Table 8). This result is far from startling: it seems only natural that, within a framework whose strongest merits are based upon its effect on expectations, central banks try to boost their communicational effectiveness (further enhancing credibility and its effect on expectations) by explicitly accounting for their visions of the future. Even more, for countries with long targeting horizons or, more significantly, for those with rolling horizons where the target is always being defined over a future period, explicitly accounting for future inflation is a necessary condition for the target to make sense in terms of expectations formation. In the context of inflation reports, forecasts (or shifts thereof) support policy decisions, as well as providing accountability if the target is not achieved.

As for horizons, most central banks focus in the next 2 years, a horizon that is consistent with the estimated lags in monetary policy effectiveness. For countries with inflation targets defined over more than one year, such as Chile or Sweden, the forecasting horizon must be coherent to be useful in the conduct and justification of policy actions

¹⁶ South Africa does, not in the document identified as inflation report, but on the "Quarterly Bulletin".

¹⁷ With some caveats: Australia publishes "qualitative forecasts with some numeric content", while South Africa publishes "broad trends". Korea does not publish explicit numeric forecasts, but publishes fan charts, as well as explicit numeric forecasts twice a year. Poland does not publish explicit forecasts.

regarding the target. Longer horizons (New Zealand and Switzerland venture 3 years into the future), although useful, could be subject to high uncertainty, making projections less reliable, as well as lying beyond the influence of current policy decisions.

Regarding variables, Table 4 shows that almost all forecasting central banks (14 banks) forecast inflation (THE variable to be projected under inflation targeting) and GDP growth, the latter being consistent with both the aggregate demand transmission mechanism and the general concern for output. The time horizon adopted for inflation forecasts is typically consistent with the control horizon of monetary policy (one to two years), as well as with each bank's defined inflation target. Chile and Canada forecast inflation in a two-year horizon, same length in which their target horizon is defined; the Czech Republic, with annual targets, focuses on annual projections; Brazil, with multi-annual targets, also publishes two-year forecasts. Core CPI inflation, over which central banks have a greater degree of influence, and which can be used to show the public that underlying inflation is under control despite increased general inflation rates , is forecasted by 10 countries.

Some countries forecast a significant number of variables, especially the Czech Republic, New Zealand, Norway, Peru and Sweden. The construction and presentation of forecasts is also worth noting. While most countries prefer explicit, quantitative forecasts over the somehow more vague qualitative projections (probably because qualitative forecasts are less informative and prone to misinterpretation), practices differ in other areas. Almost all the countries in the sample publish numeric forecasts, usually accompanied by graphics. However, the difference between both strategies is rather ambiguous, as numeric forecasts can be derived by observing graphic projections. Most countries rely on stochastic projections, reflecting the uncertainty involved in any forecasting process. The same is suggested by the use of ranges, as countries explicitly account for the forecasts' uncertainty, as final outcomes depend on a series of stochastic events. Although this could affect the value of forecasts (the information contained in the forecast diminishes as the range widens¹⁸), it also shields the Central Bank's credibility from projections that can later be refuted by actual developments.

4.3 Preparing and distributing inflation reports

Another issue covered by the questionnaire is how the report is prepared and disclosed to the public.

Table 5 shows the production process of the inflation report. In almost all central banks, this process is specific to each version; every step is repeated each time a new report is prepared, independently of previous reports. Only three countries, namely Australia, Hungary and South Africa, define their inflation report as an "ongoing process" (Figure 12).¹⁹

¹⁸ Strictly speaking, it diminishes in terms of the variable's mean. However, a wide range can provide new information in terms of risk and volatility.

¹⁹ Hungary clarifies that "...as far as formal involvement from the Monetary Council concerns the steps are set according to a specific time frame (....) between two formal or full forecast rounds there are briefings on new information and at least a qualitative assessment of the expected direction of change of the next forecast."

The length of the process, which ranges from 2-3 weeks in Peru and New Zealand to ten weeks in Israel, Poland and Switzerland, is consistent, in many countries, with the low frequency of inflation reports and reflects the concern central banks have on its contents.

First drafts are written as early as 2 months before publication, leaving time for discussion of results and assumptions. Before publishing the report, at least seventeen central banks specifically devote time to discussing assumptions and models run. It is also interesting to look at the number of drafts, which range from just one preliminary version in Peru and Colombia to no less than seven drafts in Canada. This may reflect the differences in the inflation reports' contents, as well as heterogeneous organizational practices.

It is evident that, with the time lags and revisions of the current publication process, expecting more frequent reports would not be reasonable. In that sense, central banks face a tradeoff. With less frequent reports, projections can be carefully crafted and analyses refined through lengthy discussions. However, long intervals weaken the informational value of each publication, as the report is outdated by actual events.

Apart from the process, it is interesting to account for the resources involved in the published report. This is the operational cost of providing knowledge transparency.

The number of people working in the report varies strongly from one country to another, especially in the number of economists (i.e. technical staff) that are involved (Table 6). The results suggest that organizational practices differ significantly among countries. This explains the fact that Brazil, the Czech Republic and Sweden report 20 economists participating in this task, while Canada's report appears as being the result of the work of a single economist. These differences are obviously not due to the actual input included in the report, and are probably just the result of a different interpretation and formal assignment of practices. In some central banks, reports are the result of the combined effort of several divisions, none of which is solely devoted to this labor. In others, a specific division is exclusively focused on this task. Thus, it is not possible to compare the number of economists of different central banks.

A similar concept can be applied to the reports' estimated costs. If, as suggested by their contents and frequency, inflation reports among countries are broadly similar (or, at least, not significantly dissimilar), costs should lie within a certain range. However, this must be only true for the preparation of the report, not for its distribution or publication. Answers show that, in these issues, estimated costs vary significantly between the 15 countries that answered the question, with differences as large as 10 times (US\$4,000 vs. US\$ 43,000). Again, because differences are probably the result of different formal cost structures, no real comparisons can be made.

However, it is interesting to notice that no central bank reports an increase in costs over time and that only four of them (Norway, Poland, Sweden, and the United Kingdom²⁰) state that the number of human resources involved has increased.

²⁰ Due to the participation of the Monetary Policy Committee in the preparation of the document.

Figure 13 presents the transmission of reports to the public. The report is typically distributed free of charge (8 countries) or at a low cost to a wide array of public, private and academic institutions. This is far from surprising: central banks do not publish reports to make profits, but rather as an investment to increase their credibility and accountability before society. No central bank has any restriction on report distribution and almost all non-English speaking countries publish an English version of the document to allow its diffusion to international institutions or foreign investors.²¹

Finally, Figure 14 exhibits the channels through which the report is presented to the public. In addition to paper issues, almost all-central banks (16) place the report on the Internet. Speeches, statements and interviews are also included, probably broadening the report's audience to the general public and highlighting the issues the Central Bank considers most relevant.

4.4 Impact of inflation reports

A curious (and somehow surprising) result is reported in Table 13. Only seven of the twenty central banks estimate that central banks' forecasts have a significant impact on private expectations (this accounts for one third of the answers, as 4 of the banks in the sample did not answer or had no information on the relationship). Although only one bank (Poland) states that expectations are definitely unaffected, the remaining 6 banks recognize only a marginal effect.

Is this a paradox? Maybe, especially if the report is expected to become one of the main channels for the Central Bank to affect expectations in the context of a credible inflation targeting regime. Several explanations can be stated to explain this event.²²

However, the most likely one is that inflation reports do not contain new information *per se*. The argument runs in two directions.

First, the economic statistics and technical instruments available to the Central Bank and private analysts should be roughly similar. In that sense, it is possible that (on average) their forecasts are the same, and that the information contained in the report is not new, but rather an instrument for private analysts to confirm their own forecasts.²³

The second line of argument deals with the way the Central Bank presents forecasts to the public, besides publishing the report. As shown below, policy meetings are much more frequent than inflation reports. Policy decisions are informative in themselves, as a change in the policy stance reveals a change in the previously forecasted scenario. The signal is even clearer if a minute explaining the rationale of decisions is published. New forecasts are thus implicitly (or explicitly) revealed to the market, albeit not following the "formal" channel of the report. The next section covers these issues in depth.

²¹ With the exception of Mexico and Korea, who intended to publish an English version of the report during 2001.

²² Further discussion is presented in Schmidt-Hebbel and Tapia (2002).

²³ Central banks' forecasts have value in themselves, even if they are equal to private projections, as they are the ones the central bank will use to pursue monetary policy.

Table 13 provides evidence supporting these interpretations for the small effect of forecasts. All surveyed countries view moderate/high coverage to the reports from the media, and all of them evaluate their impact on market analysts as moderate or high. This impact has not decreased in time. Why would the private sector focus its attention in a document whose main added value lies on its forecasts, if these forecasts are not informing? The "paradox" can be solved in two ways. The first is to think that inflation reports are not valued by their forecasts, but rather by the discussion of previous events, justification for policy actions, etc. The alternative is to think, as discussed above, that the market expects (and values) central bank forecasts to validate their own forecasts, and to confirm their (correct) interpretation of recent policy decisions and statements²⁴.

4.5 Macroeconomic models used by central banks

One issue that is directly related with the generation of forecasts refers to the set of economic models in use and the degree of transparency regarding them.

The discussion about the publication of policy models highlights a broader issue, namely the ignorance regarding the "true" model of the economy. Any numerical forecast or simulation will necessarily be based upon a specific model. However, such forecasts are not only subject to the uncertainty of unexpected shocks, but also to the uncertain behavior of the selected model relative to the economy's true behavior. Consensus in macroeconomics, and particularly in monetary macroeconomics, exists only around some broad issues, and alternative, conflicting views of the economy, each leading to different policy prescriptions, are readily available to the monetary policymaker.

In that sense, it is risky for a central bank to tie itself to one specific model, and expect it to provide all the answers, both in the short and long run, for all the variables and scenarios relevant for policy administration. That leads central banks to typically rely on a set of models, differing in their assumptions and complexity, leaving it to the policymaker to ponder their suggestions to deal with short-run and long-run dilemmas. In a sense, the Central Bank "hedges" itself by placing weight on models based on alternative conceptions of the economy.

The convenience of publishing models is not obvious. Presenting all available models to the public could be confusing and non-informative, as, if a great number of models is being used, their relative weight in policy conduction, and their own specific features, are probably shifting in time. Moreover, not all models are explicit even within the Central Bank; monetary authorities can evaluate information and specify future actions relying on their "economic common sense", which is basically the model they carry inside their heads.

Thus, defining the optimal action seems difficult. Many aspects of the monetary forecasting and decision processes are simply impossible to transmit with high precision.

²⁴ A clearer way to establish if central bank forecasts do not alter private projections because they are anticipated or because they are not considered relevant would be to look at the difference between private and published forecasts over time.

However, there are no good reasons to assume that, if given access to the complete set of models, the private sector would be more confused than the Central Bank itself currently is.

Figure 15 confirms that central banks simultaneously use a significant number of models and statistical devices, and that the degree of transparency about their properties is varied. This reflects the different responses given to the above discussed dilemma between providing transparency and avoiding confusion.

Of the 19 central banks that answered this question, nine use leading indicators, which, relying more on statistics than on economic properties, allow the Central Bank to forecast the behavior of certain variables by looking at series that are released earlier or more frequently. Mainly a short-run methodology that does not really account for any particular vision on the structural determinants of the economy, it is somehow surprising that only three central banks make their indicators public. However, this possibly does not imply a severe information asymmetry, as the forecasting horizon of leading indicators is very short, and duplicating the selection of these indicators should be relatively easy for the private sector.

Different kinds of VARs, with varying levels of economic structure, are also widely used. Few of them are of public knowledge. Canada and Poland are transparent both in their leading indicators and in their VARs. Sweden is sufficiently explicit as to place its VARs directly on the Internet. The general preference for obscurity probably generates a bigger asymmetry with the private sector than in the case of leading indicators, as the construction of VARs is somehow based (albeit loosely) in a theoretical model. Thus, the private sector and the Central Bank can construct different VARs if their underlying theoretical assumptions are heterogeneous.

A wide variety of proper economic models is available, ranging from simple backward-looking deterministic ad-hoc models to more sophisticated stochastic, forwardlooking maximizing models. The same diversity applies within countries; countries like New Zealand, Norway and Sweden manage no less than three alternative models. Interestingly, at the end most countries have made public at least one of their models or statistical frameworks, with Chile and the Czech Republic among the few exceptions. Transparency, although still timid, seems to be more the rule than the anomaly.

An additional important dimension of the monetary policy framework is the decision-making procedure, and how policy decisions (and the process leading them) are communicated to the market. We cover those issues in the next section.

5. Monetary Policy Decisions and Meetings

5.1 Monetary policy meetings

Another dimension of the communication between central banks and private agents deals with the monetary policy decision-making process, and how it relates to the information contained in inflation reports. How transparent are the decisions made by our surveyed countries? In nineteen central banks, decisions are taken at formal meetings, which take place with regular frequency and under a predetermined schedule. Only Iceland responded that monetary decisions were not made at specific meetings. Typically monthly (11 countries)²⁵, policy meetings are thus much more frequent than the inflation reports, implying that relevant information is also revealed through specific decisions, and not only through the report (Table 15).

Table 16 shows that, although in some countries monetary meetings and inflation reports are planned to coincide whenever possible, in a significant number of countries (10) no coincidence is planned. Moreover, policy decisions are not based upon the inflation report's contents, as shown in Table 17 (seven countries did not consider that "the inflation report reflects policy decisions".) That answer is partially based on the time gap between both events. However, it also implies that the data released in the inflation report is not the complete set of information considered for monetary decisions. Although this is unavoidable to some extent (as the frequency of reports and meetings diverges), it suggests that the information presented in inflation reports is sometimes incomplete and does not really reflect the whole set actually considered in policy decisions.

This is confirmed by Table 17, which indicates that no less than eight countries consider inflation reports and policy meetings as independent events. If such is the case, the information disclosed by the Central Bank in the report is not correlated with policy decisions. In the extreme, the inflation report would become non-informative, as it would reveal nothing about monetary policy's true intentions or perceptions²⁶.

However, relevant information could be revealed not only on the report, but directly through the decisions themselves. As already mentioned, in all countries (except Iceland) meetings are explicitly preannounced by a public schedule, although some countries state that they have the right to meet at other dates. More important, however, is the disclosure of the meetings' results. All the countries inform the results of their decisions, within a short time interval. Nine of them do so immediately after a decision is made, while the rest wait some hours or until the next day (Table 18). Only Australia differs, with a policy of informing only policy changes. Needless to say, if meetings are prescheduled, that scheme provides the same information as if all decisions are informed²⁷.

 ²⁵ As with costs and human resources, the frequency of policy meetings reflects different organizational practices and institutional arrangements.
²⁶ This not the case, as we have already mentioned the impact of the report over the market is estimated as

²⁰ This not the case, as we have already mentioned the impact of the report over the market is estimated as high or moderate by almost all central banks.

²⁷ Unless the announcement involves not only the result, but also its justification.

However, policy decisions are only the meeting's outcome, the final result of the discussions and disagreements within it. Being transparent in the result is equivalent to providing forecasts, concealing the underlying process (the model) which led to them. The publication of records (minutes) implies revealing such process.

Theoretically, the optimality of transparency in policy meeting is unclear. Should the members of the Committee be identified individually, with their divergent positions and opinions, or should the Central Bank be seen as a united, monolithic body? Should the public be aware of the divergences and arguments that precede policy decisions, or would that raise confusion and uncertainty, affecting the outcome of those decisions?

Publishing records of the sessions seems a consistent move in the general shift towards transparency²⁸. Besides some general concern for not introducing excessive noise and uncertainty by publicly stating differing opinions, there seems to be no solid argument to be more opaque in policy decisions than in other areas of the inflation-targeting regime.

Our survey shows that transparency is not widespread in this respect. Only eight countries (Brazil, Chile, the Czech Republic, United Kingdom, Korea, Poland, South Africa and Sweden) publish their records, with lags ranging from a few days to 3 months (Chile and Korea) (Table 19). It is somehow curious that two of the countries that do not publish their models (Chile and Czech Republic) do publish their records. This suggests that the concept of "transparency" is multidimensional and wide.

5.2 Monetary policy decisions and inflation reports

A final issue, which links the discussion provided in the last two sections, refers to the relationship between monetary policy authorities and the published forecasts. Monetary authorities could hint the forecast through speeches and interviews (a similar channel as the interpretation of policy decisions, and the way in which the market tries to infer the Fed's expectations through Alan Greenspan's sometimes cryptic statements). Alternatively, "technical" projections could differ from published forecasts due to the opinion of policymakers. Table 20 reports that such is the case in twelve of the surveyed countries. Three of them recognize that technical projections are only one of the elements that determine the published forecast, while ten others state that published forecasts are a balanced combination of technical projections and opinions. The effect of opinions is relevant, as they typically alter the forecast midpoint (12 countries). The way in which such intervention affects the perception of the forecasts is not clear. One could think that the market considers the forecasts less credible, as they could reflect, rather than a technical, well founded analysis, simply unfounded opinions (even "wishful thinking") by the monetary authority²⁹. However, distrusting the policymakers' ability to anticipate future developments would also suggest that the market should distrust their general aptitude to conduct monetary policy. No clear response on this issue can be taken from our survey, as

²⁸ Further discussion is presented in Schmidt-Hebbel and Tapia (2002b).

²⁹ Alternatively, the influence of policymakers' "common sense" upon the forecasts could reduce the information asymmetry between the central bank models/econometric techniques with those used by the private sector, allowing for a convergence between both projections.

there is no correlation between the degree of influence of the Central Bank's board on forecasts and the way those forecasts affect private expectations.

Table 21 presents a related issue: who is responsible for the inflation report? In other words, who is understood to be "talking through" this document? In seven central banks, the report is presented as the opinion/vision of the Board. In three central banks, technical staff is publicly responsible for the report's content. Twin responsibility or "the Central Bank as a whole" exists in eight countries, while in New Zealand and Norway the report is the governor's responsibility. It would be natural to expect some differences in the way reports are prepared under these different responsibility schemes. Countries where reports are issued as a product from the Board or governor could probably publish forecasts that are more subject to opinion/discussions than countries where the publication is an expression of "technical staff". In that sense, forecasts in those countries may be less technical and rigorous, but more revealing of the information relevant for the monetary policy decision process. However, there is no correlation among countries between responsibilities and the impact of Board opinions on finally published forecasts. Moreover, there is no association between public responsibilities for the report and the consistency between the report and final policy decisions³⁰. This suggests that the allocation of public responsibilities could just be a formal distinction with no effect on decisions or the preparation of the report.

³⁰ If the Board is responsible for the report, it is natural to expect that the report and final policy decisions will be more consistent than if the report only reflects the opinion of technical staff who does not make policy decisions.

6. Concluding Remarks

The present paper has focused on the practical implementation of inflation targeting regimes, covering three broad issues: the way inflation targets are defined, the way central banks perceive the effects of monetary policy, and the several dimensions of transparency within monetary policy regimes.

At the general level, this survey has highlighted that: (i) inflation targeting regimes differ significantly in their operational characteristics; (ii) there are huge differences in the estimated effects of monetary policy, a result which combines different structural characteristics in the economies and important asymmetries in central banks' models; (iii) the degree of transparency differs between countries and between several dimensions of transparency.

References

Agénor, P.R. (2002) "Monetary Policy Under Flexible Exchange Rates: An Introduction to Inflation Targeting." In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago: Central Bank of Chile.

Amato, J. and S. Gerlach (2002). "Inflation targeting in emerging market and transition economies: Lessons after a decade." *European Economic Review* 46 (2002): 781-90.

Apel, M. and others (1999). "Different Ways of Conducting Inflation Targeting; Theory and Practice." *Sveriges Risbank Quaterly Review* 1999 (4): 13-42.

Batini, N. and E. Nelson (1999). "Optimal Horizons for Inflation Targeting." London: Bank of England. Mimeographed.

Bernanke, B.S., T. Laubach, F. Mishkin and A. Posen (1999). *Inflation targeting: Lessons from the international experience*. Princeton: Princeton University Press.

Blejer, M., A. Ize, A. Leone, and S. Werlang (2000). *Inflation Targeting in Practice*. Washington: International Monetary Fund.

Bogdanski, J., P. Springer, I. Goldfjan, and A. Tombini (2002). "Inflation Targeting in Brazil: Shocks, Backward-Looking Prices and IMF Conditionality." In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago: Central Bank of Chile.

Carare, A., A. Schaechter, M. Stone, and M. Zelmer (2002). "Establishing Initial Conditions in Support of Inflation Targeting." Working Paper No. 02/102: International Monetary Fund.

Cecchetti, S.G. and M. Ehrmann (2002). "Does Inflation Targeting Increase Output Variability? An International Comparison of Policymakers' Preferences and Outcomes." In *Monetary Policy: Rukes and Transmission Mechanisms*, edited by N. Loayza and K. Schmidt-Hebbel. Santiago: Central Bank of Chile.

Clarida, R. and M.Gertler (1997). "How the Bundesbank Conducts Monetary Policy." In *Reducing inflation: Motivation and strategy*, edited by C. Romer and D. Romer. Chicago and London: University of Chicago Press.

Clarida, R., J. Galí and M. Gertler (2000). "Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory." *Quarterly Journal of Economics* 115(1): 147-80.

Corbo, V., O. Landerretche, and K. Schmidt-Hebbel (2002). "Does Inflation Targeting make a Difference?" In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago, Chile. Central Bank of Chile.

Debelle, G. And J. Wilkinson (2002). "Inflation Targeting and the Inflation Process: Lessons from an Open Economy." In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago, Chile. Central Bank of Chile.

Drew, A. (2002). "Lessons from Inflation Targeting in New Zealand." In In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago, Chile. Central Bank of Chile.

Fry, M.J. et al (1998). "Key Issues in the Choice of Monetary Policy." In *Monetary Frameworks in a Global Context*, edited by L. Mahadeva and G. Sterne. London: Routledge.

Haldane, A. and C. Salmon (1995). "Three Issues on Inflation Targets." In *Targeting Inflation*, edited by A. Haldane. London: Bank of England.

Hrncir, M. And K. Smikdova (2000). "Inflation Targeting in the Czech Republic." In *Monetary Frameworks in a Global Context*, edited by L. Mahadeva and G. Sterne. London: Routledge.

King, M. (1997). "The Inflation Target Five Years On." *Bank of England Quarterly Bulletin* 7 (4): 434-42.

Laxton, D. and A. Scott (2001). "On Developing a Structured Forecasting and Policy Analysis System to Support Inflation-Forecast Targeting (IFT)." Manuscript, International Monetary Fund.

Leiderman, L. and G. Bufman (2000). "Inflation Targeting under a Crawling Band Exchange Rate Regime: Lessons from Israel." In *Inflation Targeting in Practice*, edited by M. Blejer et al. Washington: International Monetary Fund.

Loayza, N. and K. Schmidt-Hebbel (2002). "Monetary Policy Functions and Transmission Mechanisms: An Overview." In *Monetary Policy: Rukes and Transmission Mechanisms*, edited by N. Loayza and K. Schmidt-Hebbel. Santiago: Central Bank of Chile

Loayza, N. and R. Soto (2002). "Inflation Targeting: An Overview." In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago: Central Bank of Chile.

Masson, P.R., M. Savastano, and S. Sharma (1997). "The Scope for Inflation Targeting in Developing Countries." Working Paper 97/130. Washington: IMF.

Mishkin, F. and K. Schmidt-Hebbel (2002). "A Decade of Inflation Targeting in the World: What do we know and what do we need to know?" In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago: Central Bank of Chile.

Morandé, F.(2002). "A Decade of Inflation Targeting in Chile: Developments, Lessons and Challenges." In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago: Central Bank of Chile.

Romer, C. and D. Romer (1996). "Federal Reserve Private Information and the Behavior of Interest Rates." National Bureau of Economic Research Working Paper 5692.

Schaechter, A., M. Stone, and M. Zelmer (2000). "Adopting Inflation Targeting: Practical Issues for Emerging Market Countries." Occasional Paper 202. International Monetary Fund.

Schmidt-Hebbel, K. and M.Tapia (2002a) "Inflation Targeting in Chile" *North American Journal of Economic and Finance* 79(2002).

Schmidt-Hebbel, K. and M. Tapia (2002b) "Monetary Policy Transparency in Inflation Targeting Economies: Evidence from 20 Countries" Manuscript, Central Bank of Chile.

Schmidt-Hebbel, K. and A. Werner (2002). "Inflation Targeting in Brazil, Chile and Mexico:Performance, Credibility, and the Exchange Rate." Forthcoming in *Economía*.

Sterne, G. (2002). "Inflation Targets in a Global Context." In *Inflation Targeting: Design, Performance, Challenges*, edited by N. Loayza and R. Soto. Santiago: Central Bank of Chile.

Svensson, L.O. (1999). "Price level Targeting vs. Inflation Targeting: A Free Lunch?" *Journal of Money, Credit and Banking* 31 (August): 277-95.

Taylor, J. (1993). "Discretion versus Policy Rules in Practice." Carnegie-Rochester Conference Series on Public Policy 39: 195-214.

Taylor, J. (1999) (editor). Monetary Policy Rules. Chicago: University of Chicago Press.



Annual Inflation at Adoption of Inflation Targeting Framework in 22 Countries (1)

Figure 1

(1) Inflation attained one quarter before adopting IT.

Source: Authors' calculations.

Table	1
-------	---

Price Measure for Inflation Target (1)

	Headline CPI	Core CPI
Australia	*	
Brazil	*	
Canada	*	
Chile	*	
Colombia	*	
Czech Republic	*	
Hungary	*	
Iceland	*	
Israel	*	
Korea		*
Mexico	*	
New Zealand	*	
Norway	*	
Peru	*	
Poland	*	
South Africa (2)		*
Sweden	*	
Switzerland	*	
Thailand		*
United Kingdom (3)		*
Total	16	4

(1) Survey question 1a. Which price index does your institution use to define the inflation target?

(2) Consumer prices in metropolitan and other urban areas excluding mortgage costs.

(3) The Bank of England classifies its RPIX index as "adjusted" inflation, rather that core CPI inflation.

Table 2

Inflation Target Range and Current Value (1)

	Thick Point	Point	Range	Ceiling
Australia	2-3%			
Brazil		3.5%		
		(2002)		
Canada			1-3%	
Chile			2-4%	
Colombia		6% (2002)		
Czech			3 to 5%	
Republic			(2002 to 2004)	
			2-4%	
			(2005)	
Hungary		3.5% +-1%		
× 1 1	2 50/	(2002)		
Iceland	2.5%			
Israel			2 to 3%	1 to 3%
			(2002)	(Long-run)
Korea		2.5%	3% +/- 1%	
	l I	(Mid-term)	(2002)	4.500/
Mexico				4.50% (2002)
New Zealand			0-3%	
Norway		2.5%+/-1%		
Peru	2.5% +/- 1% (2002)			
Poland		5% (2002)		
		4% (2003)		
South Africa			3 to 6%	
			(2002 and 2003)	
			3 to 5%	
			(2004 and 2005)	
Sweden		2%+/-1%		_
Switzerland			0 to 2%	
Thailand			0 to 3.5%	
United		2.5%		
Kingdom				
	3	7	9	1

(1) Survey question 1b: How is the target defined?

	Rolling window	Year end	Multiannual targets	Undefined or open period	Other (specify)
Australia				*	
Brazil		*			
Canada	6 to 8 quarters				5 years
Chile	8 quarters				
Colombia		*	*		
Czech R.					6-8 quarters
Hungary		*	*		
Iceland				All time	
Israel			*		
Korea					Average calendar year
Mexico		*	*		
New Zealand (2)	6 to 8 quarters			All time	
Norway	8 quarters				
Peru		*			
Poland		*	*		
South Africa			*		Average rate for 2002
Sweden	4 to 8 quarters				
Switzerland	-			*	
Thailand		*			
U. Kingdom (3)				Applies all times	
Total Targets	5	7	6	5	4

Table 3 **<u>Time Horizon of the Inflation Target (1)</u>**

Note: Double answers imply that rolling window/year end/year average targets are set in advance for upcoming years.

(1) Survey question 1c: What time horizon do you use?

(2) "The formal target specifies the target as 0 to 3% CPI inflation at an annual rate, but it does not say over what period that annual rate applies. By implication, the target applies at all times. In practice, we target the annual inflation rate 6 to 8 quarters ahead. Thus if our forecast of inflation is away from the center of the target 6 to 8 quarters ahead, the base case is that we will adjust policy." (Reserve Bank of New Zealand)

(3) "Target is confirmed annually by the Government." (Bank of England)

Table 4

Inflation Forecasts as Intermediate Targets (1)

	Yes	No
Australia	*	
Brazil	*	
Canada	*	
Chile	*	
Colombia		*
Czech Republic	*	
Hungary	*	
Iceland	*	
Israel (2)		*
Korea		*
Mexico		*
New Zealand		*
Norway (3)	*	
Peru	*	
Poland		*
South Africa		*
Sweden	*	
Switzerland	*	
Thailand	*	
United Kingdom		*
Total	12	8

(1) Survey question 2: Are inflation forecasts used as intermediate policy targets?

(2) "Used as indicators" (Bank of Israel)

(3) "Monetary policy affects the economy with considerable and variable lags. Consequently, the Bank must be forward-looking in its interest-rate setting. Based on projections in the Inflation Report, the key rate is set with view to achieving an inflation rate of 2½ per cent two years ahead." (Norges Bank)

Table 5

	Maximum output	Quarter at which 50% of maximum	Maximum decline in	Quarter at which 50% of maximum
	decline	output effect is attained	annual inflation	inflation effect is attained
Australia	0.15%	2	0.10%	8
Canada	0.15%	2	0.06%	3
Chile	0.33%	1	0.12%	6
Colombia	0.14%	2	0.14%	5
Czech Republic	0.28%	2	0.20%	4
Iceland	0.50%	1.5	0.30%	3.5
Mexico	0.50%	1	1.00%	2
New Zealand	0.20%	2	0.10%	3
Norway (2)	0.75% to 1%	2 to 3	0.3% to 0.4%	4 to 5
Poland	0.19%	3.5	0.04%	6.5
South Africa	0.30%	3	0.20%	4 to 6
Switzerland (3)	0.50%	4	0.13%	2
United Kingdom	0.25%	2	0.30%	6
Average (4)	0.27%	2.2	0.21%	4.4
Median (4)	0.25%	2.0	0.14%	3.5
Maximum (4)	0.50%	4.0	1.00%	8.0
Minimum (4)	0.09%	1.0	0.04%	2.0
Standard Deviation (4)	0.14%	1.0	0.23%	2.2
Total Answers	16			

Dynamic Output and Inflation Effects of Monetary Policy (1)

(1) Survey question 3: Assume a monetary policy change takes place, reflected by a 100 basis-point rise othe policy interest rate for one quarter, followed by a policy rule that reflects the conduct of monetary policy by your institution. If possible, please send an EXCEL file with the impulse response of the output gap and annual inflation to this increase in the policy interest rate.

Note: Hungary responded that "In Hungary the main channel of monetary transmission is the exchange rate. Due to low indebtedness of the household sector and forex denominated indebtedness of the enterprise sector, interest rate changes have a rather weak direct effect on the aggregate demand. Consequently, adjustments to risk premium fluctuations, i.e. smoothing the exchange rate, play a key role in deciding on the interest rate policy to be pursued. The real effect of the interest rate changes depends on its permanent effect on the exchange rate. The heart of our forecast is a model of the exchange rate pass-through, estimated approximately as 20% on 1 year, and 30% on 2 years horizon."

(2) "The answers on question 3.a-d are based on a monetary policy change, reflected by a interest rate increase of 1 percentage point over two years, see Inflation Report 4/00, Reports from the Central Bank of Norway, No 6/2000, Norges Bank." (Norges Bank)

(3) "CPI-inflation is quickly reduced via the exchange rate channel. In the 5th quarter a counter effect from increasing housing rents sets in, pushing CPI-inflation almost back to the baseline values. Dampened economic activity thereafter reduces CPI- inflation by a maximum of 0.13 percentage points by the 14th quarter." (Swiss National Bank)

(4) Excluding Norway and including countries that requested not to publish their individual responses.



Figure 2

<u>Figure 3</u> Dynamic Response of Output and Inflation to Restrictive Monetary Policy in Canada



33
<u>Figure 4</u> Dynamic Response of Output and Inflation to Restrictive Monetary Policy in Chile





Figure 5

Figure 6





36

Dynamic Response of Output and Inflation to Restrictive Monetary Policy in New Zealand 0.35% -Output Growth Deviation Inflation Deviation 0.25% 0.15% 0.05% Quarters -0.05% 10 11 12 13 14 15 16 17 18 8 9 3 1 -0.15% -0.25% -0.35%

-0.45%

-0.55%

Figure 7

<u>Figure 8</u> Dynamic Response of Output and Inflation to Restrictive Monetary Policy in Poland





<u>Figure 9</u> <u>Dynamic Response of Output and Inflation to Restrictive Monetary Policy in</u>



<u>Figure 10</u> Amic Response of Output and Inflation to Restrictive Monetary Polic

Sacrifice Ratios	4 -quarters horizon	8-quarters horizon	12 -quarters horizon
Australia	0	0.4	0.9
Canada	4.4	2.6	2.2
Chile	6	1.8	0.7
Colombia	5.8	2.1	1.2
Czech Republic	2.8	1.2	0.7
New Zealand	5.9	1.7	0.9
Poland	8.4	2.7	1.5
Switzerland	0.9	2.9	2.6
Average	4.3	1.9	1.3

Implicit Sacrifice Ratios of Restrictive Monetary Policy (1)

(1) Sacrifice ratios calculated by the authors as the cumulative output loss over the cumulative reduction in inflation, for the corresponding horizons.

<u>Figure 11</u> Number of Countries that Publish Inflation Reports, 1992-2001



	Publication of inflation report	Date of first issue	Publication frequency
Australia	Yes	August 1996	Quarterly
Brazil	Yes	June 1999	Quarterly
Canada	Yes	May 1995	Semi-annually
Chile	Yes	May 2000	Every 4 months
Colombia	Yes	January 1999	Quarterly
Czech R.	Yes	April 1998	Quarterly
Hungary	Yes	1998	Quarterly
Iceland	Yes	November 1999	Quarterly
Israel	Yes	March 1998	Semi-annually
Korea	Yes	October 1998	Semi-annually
Mexico	Yes	April 2000	Quarterly
New Zealand	Yes	June 1992	Quarterly
Norway	Yes	4th quarter of 1994	Every 4 months
Peru	Yes	January 2000	Every 4 months
Poland	Yes	1995	Quarterly
South Africa	Yes	March 2000	Semi-annually
Sweden	Yes	October 1993	Quarterly
Switzerland	No	Does not apply	Does not apply
Thailand	Yes	July 2000	Quarterly
UK	Yes	February 1993	Quarterly

<u>Table 7</u> <u>Inflation Reports (1)</u>

(1) Survey question 4a: Do you currently publish an explicit inflation report? Survey question 4b: When did you start publishing this report? Survey question 4c: How often do you publish this report per year?

<u>Figure 12</u> Variables covered in Inflation Report (1)



(1) Survey question 8: Indicate the depth of coverage in which your report accords the following topics (in depth; moderate depth; superficially).

	Past behavior?	Time horizon	Projections?	Time horizon
Australia	Yes	1 to 8 quarters	Yes	4 to 6 quarters
Brazil	Yes	2 to 4 quarters	Yes	6 to 8 quarters
Canada	Yes	3 to 4 quarters	Yes	6 to 8 quarters
Chile	Yes	2 to 4 quarters	Yes	6 to 8 quarters
Colombia	Yes	Last quarter	Yes	6 to 8 quarters
Czech Republic	Yes	2 to 4 quarters	Yes	2 to 4 quarters
Hungary	Yes	Last quarter	Yes	6 to 8 quarters
Iceland	Yes	2 to 4 quarters	Yes	6 to 8 quarters
Israel	Yes	2 to 4 quarters	Yes	2 to 4 quarters
Korea	Yes	2 to 4 quarters	Yes	2 to 4 quarters
Mexico	Yes	Last quarter	No	Does not apply
New Zealand	Yes	2 to 4 quarters	Yes	3 years
Norway	Yes	4 to 6 quarters	Yes	8 to 12 quarters
Peru	Yes	2 to 4 quarters	Yes	2 to 4 quarters
Poland	Yes	1 to 4 quarters	Yes	1 to 4 quarters
South Africa (1)	No	Does not apply	Yes	6 to 8 quarters
Sweden	Yes	More than 8	Yes	8 quarters
		quarters		
Switzerland	Yes	1 to 4 quarters	Yes	2 to 4 quarters for output
				12 quarters for inflation
Thailand	Yes	Last quarter	Yes	6 to 8 quarters
U. Kingdom	Yes	1 to 8 quarters	Yes	6 to 8 quarters

Coverage of Past Performance and Projections in the Inflation Report (1)

(1) Survey question 6: Does your report analyse the economy's past behaviour? If so, over what time horizon? Survey question 7: Does your report make forecasts or projections (explicit or implicit) regarding the economy's future behaviour? If so, over what time horizon?

(2) "Factors that could affect inflation are analysed in the Quarterly Bulletin." (South African Reserve Bank)

Variable	Countries reporting	Graphic	Numeric	Quantitative	Qualitative	Stochastic	Deterministic	Point	Range
	forecasts								
	(quarters of forecast								
CDI	horizon in parenthesis)		4 . 11		A . 11		A . 11 D 11		D 11 CT 11
CPI	Australia $(6-8)$, Brazil (8) ,	Brazil, Chile,	Australia,	Brazil, Canada,	Australia	(a) Chile,	Australia, Brazil,	Australia,	Brazil, Chile,
Inflation	Canada $(6-8)$, Chile (8) ,	Hungary,	Brazil, Chile,	Chile, Colombia,		Colombia,	Peru, Switzerland	Canada,	Czech R.,
	Colombia (8), Czech R. (4) ,	Iceland,	Colombia,	Czech R.,		Czech R.,		Colombia,	Hungary,
	Hungary $(6-8)$, Iceland (8) ,	Norway, Peru,	Czech R.,	Hungary,		Hungary,		Hungary,	Iceland, Korea,
	Korea, New Zealand $(4-16)$,	Sweden,	Iceland,	Iceland, Korea,		Iceland;		Iceland,	Norway, Peru,
	Norway $(8-12)$, Peru (4) ,	Switzerland,	Korea, New	New Zealand,		New 7 1 1		New	Sweden,
	Sweden (8), Switz. (12) ,	Inailand	Zealand,	Norway, Peru,		Zealand,		Zealand,	Inailand
	Thailand (8)		Norway,	Sweden, Switz.,		Norway,		Norway,	
			Felu, Swadan	Thananu		Sweden,		Felu, Swadan	
			Sweden			Thanand		Sweden, Switzerland	
Core CPI	Canada (3-5), Chile (8),	Chile, England,	Canada,	Canada, Chile,	-	(a) Chile,	Hungary	Canada,	Chile, Korea,
Inflation	Czech R. (4), Hungary (6-8),	Korea, Norway,	Chile, Czech	Czech R.,		Czech R.,		Hungary	Norway,
	Korea, Norway (8), Sweden	Sweden,	R., Hungary,	Hungary, Korea		Norway,		Norway,	Sweden,
	(8), Thailand (8-12), UK (8)	Thailand, UK	Norway,	Norway,		Sweden,		Sweden	Thailand, UK
			Sweden, UK	Sweden,		Thailand,			
				Thailand, UK		UK			
GDP	Brazil (8), Canada (7), Chile	(ii) Brazil,	Chile,	Brazil, Canada,	Colombia	(a) Brazil,	Colombia,	(b) Norway,	Brazil, Canada,
Court	(8), Colombia (8), Hungary	Chile, Norway,	Canada,	Chile, Hungary,		Chile,	Hungary, Peru,	Peru,	Chile, Hungary,
Growin	(6-8), Norway (8), Peru (4),	Peru, Sweden,	Hungary,	Norway, Peru,		Norway,	Switzerland	Sweden,	Norway,
	Sweden (8), Switzerland (4),	Switzerland,	Norway,	Sweden, Switz.,		Sweden,		Switzerland	Thailand, UK
	Thailand (8), UK (8)	Thailand, UK	Sweden, UK	Thailand, UK		Thailand,			
						UK			
Other	Canada: US Real GDP Grow	th							
variables	Czech R.: Producer, agricultu	ral, food and adm	inistered price	es, ULC, wages, co	nsumption of	households,	gross fixed capital	formation, G	DP, M2, credit
variabics	issue and fiscal stance (public	c budget deficit/G	DP, debt/GDF	?).					
	Hungary: Wages, Current Account								
	New Zealand: Wages, Import	ts, Exports, Mone	tary Condition	s, etc (c)					
	Norway: Private Consumption	on, Public Consum	ption, Gross I	nvestment, Export	s, Imports, Ba	alance of Pay	ments, Fiscal Policy	1	
	Peru: Sectorial GDP, Domestic Demand, Trade Balance, Exports, External Accounts, Fiscal Policy								
	Sweden: Employment, Unemployment, Wages, Productivity, and International Developments.								

<u>Table 9</u> Forecasts of Variables reported in Inflation Report

Mexico, Poland and South Africa do not publish forecasts.

(1) Survey question 11: If you use explicit forecasts for your report, which variables are covered? (List the variables, indicating if the forecast is :quantitative/qualitative; graphic/numeric; stochastic/deterministic; point/range and the forecasting horizon).

(a) Canada and Korea provided no response to this partial question.

(b) Colombia provided no response to this partial question.

(c) "Due to the high number of variables that we forecast I have decided to attach the document 'Ten Years at a glance'. It is a data sheet of summary statistics given in each of the Bank's *Monetary Policy Statements*. The data is in these tables are occasionally shown as graphs, dependent on whether or not they are relevant to the themes and inflation stories that are being told in the *MPS*" (Reserve Bank of New Zealand).

Preparation of Inflation Report (1)

	Average	Maximum	Minimum
Discussion of	5	10	2
assumptions		(Switzerland)	(Brazil and Peru)
(weeks before			
publication)			
Discussion of model	4	9	1
runs		(Switzerland)	(Brazil)
(weeks before			
publication)			
First draft	4	9	1
(weeks before		(Poland)	(Peru)
publication)			
Discussion of draft by	3	7.5	0
board		(Poland)	(Brazil)
(weeks before			
publication)			
Review of model runs	2	4	1
(weeks before		(Poland)	(Brazil, Colombia, Czech R, Iceland,
publication)			Mexico, Thailand, and UK)
Number of drafts	3	7	1
		(Canada)	(Colombia)
Length of whole	6	10	2
process		(Switzerland)	(Peru)
(weeks)			

(1) Survey question 17: How is the process of preparing and reviewing the inflation report structured? How many drafts does the report go through? How long does the entire process of preparing and publishing the report take?

Figure 13 Preparation of Inflation Report (1)



(1) Survey question 17d: Is this process specific to a given time period or ongoing throughout the year?

<u>Table 11</u>

<u>Number of Economists and Board Members involved in Preparation of the Inflation</u> Report (on equivalent full-year basis) (1)

	Economists	Monetary policy	Has the number of staff grown in time?
Australia	6		No there have been no significant shances
Australia	0	0	No, there have been no significant changes.
Brazil	20	2	No, there have been no significant changes.
Canada	1	0.5	No, there have been no significant changes.
Chile	4	1	No, there have been no significant changes.
Colombia	4		No, there have been no significant changes.
Czech R.	20	1	No, there have been no significant changes.
Hungary	6	0.33	No, there have been no significant changes.
Iceland	1	0.25	No, there have been no significant changes.
Israel	No response	No response	No response
Korea	7	6	No, there have been no significant changes.
Mexico	5	5	No, there have been no significant changes.
New Zealand	5		No, there have been no significant changes.
Norway	7	0.2	Yes, from 4 to 7
Peru	8	1	No, there have been no significant changes.
Poland	11	10	Yes, from 8 to 14 total staff
South Africa	2	1	Only one report at the time of the
			questionnaire
Sweden	20	1	Yes (no number provided)
Switzerland	3		No, there have been no significant changes.
Thailand	6	9	No, there have been no significant changes.
United	4	9	Yes, in terms of the MPC; no, in case of
Kingdom			administrative staff

(1) Survey question 22: How many people work (on a full-year basis) on the report? Has the number of staff dedicated to this report grown over time?

Publication Costs of the Inflation Report (in current US\$) (1)

	Publication costs (US\$)	
Australia	Internal information	
Brazil	20,000	
Canada	14,000 (2,500 per update)	
Chile	25,000	
Colombia	4,500	
Czech Republic	NA	
Hungary	600	
Iceland	40,000 to 45,000	
Israel	5,000	
Korea	12,240	
Mexico	4,000	
New Zealand	4,000	
Norway	17,000	
Peru	950	
Poland	12,000	
South Africa	"Not available yet"	
Sweden	No response	
Switzerland	Internal information	
UK	35,000	

(1) Survey question 22c: Which are the publication costs for one issue of the inflation report? (Only design, printing and distribution; do not consider staff and overhead costs; specific budget or range in US\$).

<u>Figure 14</u> <u>**Distribution of the Inflation Report (1)**</u>



(1) Survey question 20d: Is the report distributed free of charge?

<u>Figure 15</u> <u>Public Presentation of the Inflation Report (1)</u>



(1) Survey question 21: Besides publishing and distribution, how is the report presented to the public? (Please mark all that apply)

	Does the report influence private	
	expectations?	
Australia	Yes	
Brazil	Yes, significantly	
Canada	No response	
Chile	Yes, but not significantly	
Colombia	Yes, but not significantly	
Czech Republic	Yes, significantly	
Hungary	Yes, significantly	
Iceland	Yes, but not significantly	
Israel	No response	
Korea	Yes, significantly	
Mexico	Yes, but not significantly	
New Zealand	Yes, but not significantly	
Norway	Yes, significantly	
Peru	Yes, significantly	
Poland	No response	
South Africa	"Will only be known later"	
Sweden	Yes, but not significantly	
Switzerland	No response	
United Kingdom	"Answer unclear, depends on circumstances"	

Influence of the Report on Private Expectations (1)

(1) Survey question 23d: Are private expectations/projections significantly influenced by the central bank projections published in the inflation report?

	Press coverage	Impact on market analysts	Has the impact declined?
Australia	High	High	No, impact has risen
Brazil	High	High	No, impact has risen
Canada	High	High	No, it has not changed
	_		significantly
Chile	High	High	No, it has not changed
			significantly
Colombia	Moderate	Moderate	No, it has not changed
			significantly
Czech R.	Moderate	Moderate	No, it has not changed
			significantly
Hungary	High	High	No, impact has risen
Iceland	High	High	No, impact has risen
Israel	High	Moderate	No, impact has risen
Korea	Moderate	Moderate	No, it has not changed
			significantly
Mexico	High	High	No, it has not changed
			significantly
N. Zealand	High	High	No, it has not changed
			significantly
Norway	High	High	No, impact has risen
Peru	Moderate	Moderate	No, it has not changed
			significantly
Poland	Moderate	High	No, it has not changed
			significantly
S. Africa	"Will only be known later"	"Will only be known later"	"Will only be known
			later"
Sweden	High	High	No, it has not changed
			significantly
Switzerland	Moderate	Moderate	No, it has not changed
			significantly
U. Kingdom	High	High	No, impact has risen

Press Coverage and Market Impact of the Inflation Report (1)

(1) Survey question 23a: What impact has the inflation report had on the private sector: press coverage? Survey question 23b: What impact has the inflation report had on the private sector: market analysts? Survey question 23c: Has the impact declined over time?



<u>Figure 16</u> <u>Classes of Economic Models used by Central Banks (1)</u>

(1) Survey question 12: What model(s) do you use? Are they public?

Table 15

Monetary Policy Decisions and Frequency of Policy Meetings (1)

	Monetary policy decisions taken at policy meetings?	Frequency of monetary policy meetings
Australia	Yes	Monthly
Brazil	Yes	Monthly
Chile	Yes	Monthly
Colombia	Yes	Monthly
Czech Republic	Yes	Monthly
Hungary	Yes	Monthly
Iceland	No	Does not apply
Israel	Yes	Monthly
Korea	Yes	Monthly
Mexico	Yes	Daily
New Zealand	Yes	Weekly/8 times per year
Norway	Yes	6 weeks
Peru	Yes	Monthly
Poland	Yes	Monthly
South Africa	Yes	4 times per year
Sweden	Yes	8 times per year
Switzerland (2)	Yes	Quarterly
Thailand	Yes	6 weeks
United Kingdom	Yes	Monthly

(1) Survey question 13a: Are monetary policy decisions taken at particular monetary policy meetings? Survey question 13b: If so, how often does the Board of Governors (or Monetary Policy Board, Committee) hold a monetary policy meeting?

(2) "In Switzerland the Governing board decides in the quarterly meeting on an interest rate target range. This range is relatively wide (1 percentage point). The same governing board has normal weekly meetings where - among other items - the economic situation is briefly discussed and monetary policy actions can be decided if necessary (changes in the point or the sector that is targeted inside the range; even changes in the interest rate target range itself)." (Swiss National Bank)

Coincidence between Monetary Policy Meetings and

Publication of Inflation Reports (1)

	Is there coincidence between policy	If not, which is the time gap between
	meetings and publication?	them?
Australia	Yes	1 week
Brazil	No	1.5 weeks
Canada	Yes, sometimes during the year	1 week (for 4 out of 8 policy meetings)
Chile	Yes, always	Does not apply
Colombia	No	2 weeks
Czech Republic	Yes, sometimes during the year	No response
Hungary	Yes, always	Does not apply
Iceland	Does not apply	Does not apply
Israel	No	No response
Korea	No	No consistent gap
Mexico	Yes, always	Does not apply
New Zealand	Yes, always	Does not apply
Norway	Yes, always	No response
Peru	No	0-3 weeks
Poland	No	4 weeks
South Africa	No	No consistent gap
Sweden	Yes, sometimes during the year	No response
Switzerland	No	4 weeks
Thailand	Yes, sometimes during the year	No response
United Kingdom	No	1 week

(1) Survey question 14 a: Are policy meetings and the publication of inflation reports planned to coincide? Survey question 14b: If they do not coincide, which is the time gap between them?

<u>Table 17</u>

Inflation Reports and Policy Decisions (1)

	Are policy decisions derived from the inflation report?					
Australia	Yes, the inflation report reflects policy decisions.					
Brazil	Yes, the inflation report reflects policy decisions.					
Canada	Yes, the inflation report reflects policy decisions.					
Chile	Yes, the inflation report reflects policy decisions.					
Colombia	Yes, the inflation report reflects policy decisions.					
Czech Republic	Not necessarily, the inflation report is only one of the elements					
	considered when reaching decisions.					
Hungary	Yes, the inflation report reflects policy decisions.					
Iceland	Does not apply					
Israel	No					
Korea	Not necessarily, the inflation report is only one of the elements					
	considered when reaching decisions.					
Mexico	Yes, the inflation report reflects policy decisions.					
New Zealand	Yes, the inflation report reflects policy decisions.					
Norway	Not necessarily, the inflation report is only one of the elements					
	considered when reaching decisions.					
Peru	Yes, the inflation report reflects policy decisions.					
Poland	Not necessarily, the inflation report is only one of the elements					
	considered when reaching decisions.					
South Africa	Not necessarily, the inflation report is only one of the elements					
	considered when reaching decisions.					
Sweden	Yes, the inflation report reflects policy decisions.					
Switzerland	Not necessarily, the inflation report is only one of the elements					
<u> </u>	considered when reaching decisions.					
Thailand	Yes, the inflation report reflects policy decisions.					
UK	Yes, the inflation report reflects policy decisions.					
Total						
Yes	12 countries					
Not necessarily	ly 6 countries					
No	1 country					

(1) Survey question 14c: Are policy decisions necessarily derived from the inflation report?

	The inflation report must be consistent with what is decided in the	They are independent events
A / 1*	poncy meeting	Ψ
Australia		*
Brazil	*	
Canada	*	
Chile	*	
Colombia	*	
Czech Republic		*
Hungary	*	
Iceland	Does not apply	
Israel		*
Korea		*
Mexico	*	
New Zealand	*	
Norway	*	
Peru		*
Poland		*
South Africa		*
Sweden		*
Switzerland	*	
Thailand	*	
United Kingdom	*	
Total	11	8

Consistency between Inflation Report and Policy Decisions (1)

(1) Survey question 15: Could a conflict arise between the timing of a policy meeting and the publication of an inflation report?

Publication of Monetary Policy Decisions (1)

	Are monetary policy decisions publicly announced – and when after				
	policy meetings? (2)				
Australia	Yes, next day if there is a policy change				
Brazil	Yes, immediately after				
Chile	Yes, immediately after				
Colombia	Yes, immediately after				
Czech Republic	Yes, immediately after				
Hungary	Yes, 4 PM same day				
Iceland	Does not apply				
Israel	Yes, immediately after				
Korea	Yes, immediately after				
Mexico	Yes				
New Zealand	Yes				
Norway	Yes, 1.5 hours after				
Peru	Yes, immediately after				
Poland	Yes, 2 hours after				
South Africa	Yes, 2 hours after				
Sweden	Yes, next day				
Switzerland	Yes, immediately after				
Thailand	Yes, 3 hours after				
United Kingdom	Yes, immediately after				

(1) Survey question 13f: Is there a public announcement of the result of the meeting? How long after?

	Are the minutes of monetary policy meetings mad public - and when after policy meetings?					
Australia	No.					
Brazil	Yes, 8 days after.					
Chile	Yes, 12 weeks after.					
Colombia	No					
Czech Republic	Yes, 11 days after.					
Hungary	No					
Iceland	Does not apply					
Israel	No					
Korea	Yes, 3 months after.					
Mexico	No					
New Zealand	No					
Norway	No					
Peru	No					
Poland	Yes, 6 weeks after.					
South Africa	Yes					
Sweden	Yes, 2 weeks after.					
Switzerland	No					
Thailand	No					
United Kingdom	Yes, 2 weeks after.					
Totals						
Yes	8 countries					
No	11 countries					

Publication of Monetary Policy Minutes (1)

(1) Survey question 13g: Are the records of meetings released to the press? When?

	Do the viewpoints of the board alter technical projections?	Affects midpoints or ranges?
Australia	No numerical projections published	Does not apply
Brazil	Moderately: published projections combine technical	Midpoints
	projections and board member viewpoints	
Canada	Moderately: published projections combine technical	No response
	projections and board member viewpoints	
Chile	Moderately: published projections combine technical	Midpoints
	projections and board member viewpoints	
Colombia	Not significantly: published projections are largely similar to	Midpoints
	technical projections	
Czech	Moderately: published projections combine technical	Midpoints
Republic	projections and board member viewpoints	
Hungary	Moderately: published projections combine technical	Both
	projections and board member viewpoints	
Iceland	Not significantly: published projections are largely similar to	Midpoints
	technical projections	
Israel	No response	No response
Korea	Moderately: published projections combine technical	Both
	projections and board member viewpoints	
Mexico	Very significantly: technical projections are just a starting point	Neither
New	Moderately: published projections combine technical	Both
Zealand	projections and board member viewpoints	
Norway	Moderately: published projections combine technical	Both
	projections and board member viewpoints	
Peru	Not significantly: published projections are largely similar to	Ranges
	technical projections	-
Poland	Not significantly: published projections are largely similar to	Both
	technical projections	
South Africa	Moderately: published projections combine technical	Ranges
	projections and board member viewpoints	
Sweden	Moderately: published projections combine technical	Both
	projections and board member viewpoints	
Switzerland	Not significantly: published projections are largely similar to	No response
	technical projections	
UK	Very significantly: technical projections are just a starting point	Both

<u>Table 21</u>

Discussion of Projections in the Inflation Report (1)

(1) Survey question 18: How much do monetary policy board discussions and viewpoints affect or alter projections prepared by technical staff?

Survey question 19: Do monetary policy discussions primarily affect midpoints or ranges (confidence intervals) of technical projections?

	Public Responsibility for IR			
Australia	Central Bank as a whole			
Brazil	Technical staff			
Canada	Central Bank Board of Governors			
Chile	Central Bank Board of Governors			
Colombia	Technical staff			
Czech Republic	Central Bank as a whole			
Hungary	Joint responsibility of Board and staff			
Iceland	Central Bank as a whole			
Israel	Joint responsibility of Board and staff			
Korea	Central Bank Board of Governors			
Mexico	Central Bank as a whole			
New Zealand	Central Bank Governor			
Norway	Central Bank Governor			
Peru	Central Bank as a whole			
Poland	Monetary Policy Council			
South Africa	Technical staff			
Sweden	Executive Board			
Switzerland	Joint responsibility of Board and staff			
Thailand	Monetary Policy Board			
UK	Monetary Policy Committee			
Total				
Central bank as a whole	5 countries			
Board of Governors 7 countries				
Central Bank Governor	2 countries			
Technical staff 3 countries				
Joint responsibility	bility 3 countries			

<u>Table 21</u> <u>Public Responsibility for Inflation Report (1)</u>

(1) Survey question 16: Who is publicly responsible for the inflation report?

Appendix 1

Original Questionnaire

QUESTIONNAIRE ON MONETARY POLICY AND INFLATION REPORTS

IN INFLATION-TARGETING COUNTRIES / REGIONS

Economic Research Unit Central Bank of Chile <u>February 2001</u>

This questionnaire has been prepared with the aim of collecting and processing comparative international information on key features of the conduct of monetary policy and the production of an inflation or monetary policy report (henceforth called inflation report) in countries or regions that currently use inflation targets. The questionnaire has been prepared by the Economic Research Unit of the Central Bank of Chile and has been sent to 17 Central Banks. The questionnaire should be completed by the head of the technical unit in charge of the conduct of monetary policy and the inflation report, possibly in close consultation with a member of the monetary policy board.

Return of the completed questionnaire is kindly requested until **March 12, 2001**. Preliminary results of the survey will be shared with all participating central banks after an initial evaluation (April 15, 2001). A first draft of the complete report on the survey will be shared with all participating central banks in June 2001.

Thank you very much.

A. Name and Position of Questionnaire Respondent

B. Inflation Targets and the Conduct of Monetary Policy

1. a. Which price index does your institution use to define the inflation target?

Headline CPI

___Core CPI

____Other Index (please indicate)

b. How is the target defined?

Thick Point Target _____(please specify current target; for instance 3%)
Point Target ______(please specify current target; for instance, +/- 3)
Range Target ______(please specify current target; for instance 2-4%)
Ceiling Target ______(please specify current target; for instance max. 4%)
c. What time horizon do you use?
Rolling window, length (quarters) ______
Calendar year end (december to december)
Legislative period
Multi-targets for future periods
Undefined or open period
Other (please indicate)

2. Are inflation forecasts used as intermediate policy targets?

___Yes ___No

3. Monetary policy lags and magnitudes

Assume a monetary policy change takes place, reflected by a 100 basis-point rise of the policy interest rate for one quarter, followed by a policy rule that reflects the conduct of monetary policy by your institution. If possible, please send an EXCEL file with the impulse response of the **output gap** and **annual inflation** to this increase in the policy interest rate.

Independently of the above, please respond:

a. What is the maximum output loss? (as percentage of trend GDP)

b. After how many quarters do you normally expect 50% of this effect to take place? _____(quarters)

c. What is the maximum fall in annual inflation? (as percentage, annualized)

d. After how many quarters do you normally expect 50% of this effect take place? _____(quarters)

C. Scope and Contents of the Inflation Report

4. a. Do you currently publish an explicit inflation report? (If yes, go on to 5b.; if not, please carry on to 6)

b. When did you start publishing this report? _____(date)

c. How often do you publish this report per year?

Monthly Bimonthly Quarterly Semi-annually Annually Occasionally Other (please specify)

- 5. (*Only if you do not publish an inflation report. If so, this the end of the questionnaire*) Do you plan to publish a report in the future?
- ____Yes, the first one will appear on _____(date)
- Yes, but we do not have a specific date yet
- Probably
- _____We have not considered the possibility
- No (if so, please explain why not)

6. a. Does your report analyze the economy's past behavior?

___Yes ___No

b. If so, over what time horizon?

__The last quarter

- ____The last 2-4 quarters
- ____The last 4-6 quarters
- ____The last 6-8 quarters
- ____More than the past 8 quarters (if so, please specify your time frame)

7. a. Does your report make forecasts or projections (explicit or implicit) regarding the economy's future behavior?

___Yes __No

b. If so, over what time horizon?

____1 quarter

2-4 quarters 4-6 quarters

6-8 quarters More than 8 quarters (if so, please specify)

8. Indicate the depth of coverage in which your report accords the following topics: (1: in depth; 2 moderate depth; 3 superficially)

Macro Analysis	1	2	3	Not Covered
Real activity	1	2	_3	Not Covered
Prices	1	2	_3	Not Covered
Banking sector/capital markets	1	2	_3	Not Covered
Fiscal policy	1	2	3	Not Covered
External accounts	1	2	_3	Not Covered
World economy	_1	2	_3	Not Covered
Labor markets	1	2	3	Not Covered
Structural reforms	1	2	3	Not Covered
Other areas (specify)				
	1	2	3	
	1	2	3	

9. Please provide an outline of your report's contents, indicating sections.

10. a. How long is your report?_____(number of pages)

b. Which of the following elements are included?

Tables

_____Figures (graphs, charts)

Boxes (sidebars)

Appendices

____References

____Equations

11. If you use explicit forecasts for your report, which variables are covered? (List the variables, indicating if the forecast is:

- quantitative/qualitative; graphic/numeric; stochastic/deterministic; point/range and the forecasting horizon).

Variable	0	Graphic	Numeric	Quantitative	Qualitative	Stochastic	Deterministic	Point	Range	Forecasting Horizon (number of quarters)

12. What model(s) do you use? Are they public? databases available on the Internet?	Are they	available i	n the Internet?	Are your
odel		Public?	Model	Data bases available

Model	Public? (Yes/No)	Model available on the Internet? (yes/no)	Data bases available on the Internet? (yes/no)
Leading Indicators			
VARs			
Structural			
Non-structural			
Identified			
One-equation model for inflation			
Flow-of Funds (IMF-type) model			
Small ad-hoc monetary model			
(i.e. including IS, prices, UIP, interest yield curve)			1
Forward-looking and stochastic			
Forward-looking and deterministic			
Backward-looking and stochastic			
Backward-looking and deterministic			
Structural optimizing rational-expectations model (fwd			
looking)			
Stochastic			
Deterministic			
Others (indicate below)			
D. Monetary Policy Meetings and Inflation Report Preparation³¹

13. a. Are monetary policy decisions taken at particular monetary policy meetings?

Yes No

_

b. If so, how often does the Board of Governors (or Monetary Policy Board, Committee) hold a monetary policy meeting?

Monthly
Bi-Monthly
Quarterly
Semi-Annually
Occasionally
Other (indicate)
c. How long do these meetings last on average?(hours)
d. Are meetings publicly announced in advance?
Yes
No
e. If so, how many months in advance? (months)
f. Is there a public announcement of the result of the meeting? How long after?
Yes, after.
g. Are the records of meetings released to the press? When?
Yes, after.
No.
14. a. Are policy meetings and the publication of inflation reports planned to coincide?
Yes, always.
Yes, sometimes during the year.
No.
b. If they do not coincide, which is the time gap between them? weeks.

c. Are policy decisions necessarily derived from the inflation report?

____Yes, the inflation report reflects policy decisions.

__Not necessarily, the inflation report is only one of the elements considered when reaching decisions.

³¹ All these questions refer to the Board or Council that is responsible for monetary policy decisions at your central bank.

15. Could a conflict arise between the timing of a policy meeting and the publication of an inflation report?

Yes, the inflation report must be consistent with what is decided in the policy meeting. No, they are independent events.

16. Who is publicly responsible for the inflation report?

____ Central Bank Board of Governors, the Monetary Policy Board, Committee, etc. (please specify official body responsible)

_____Technical staff

____Joint responsibility of board and staff

____The central bank as a whole

____Other (indicate)

17. a. How is the process of preparing and reviewing the inflation report structured? (check the steps that apply) (weeks before publication)

Schedule of preparation of inflation report:

Discussion of assumptions	(weeks before)
Discussion of model runs for different scenarios	<u>(weeks before)</u>
First draft prepared by technical staff (or board members)	<u> (</u> weeks before)
Discussion of first draft by monetary policy board	<u>(weeks before)</u>
Review of model runs, scenarios and projections,	
and discussion of revised draft (s)	(weeks before)

b. How many drafts does the report go through? ____(number)

c. How long does the entire process of preparing and publishing the report take?____(weeks)

d. Is this process specific to a given time period or ongoing throughout the year?

___Specific time frame (process starts again with each report) ___Ongoing

18. How much do monetary policy board discussions and viewpoints affect or alter projections prepared by technical staff?

- Very significantly: technical projections are only a starting point and published projections reflect board member viewpoints that often differ significantly from initial technical projections
- ____Moderately: published projections combine technical projections and board member viewpoints
- ____Not significantly: published projections are largely similar to technical projections

19. Do monetary policy discussions primarily affect midpoints or ranges (confidence intervals) of technical projections?

Mid-points
Ranges (confidence intervals)
Both
Neither

E. Publication and Costs of the Inflation Report

20. a. Does your report appear as a published document?

___Yes ___No

b. If so, how many copies do you print? _____(number of copies)

c. Who is the report distributed to? (please mark all that apply)

Central Bank staff	
News media	
Market analysts	
Business Community	
Government staff	
Academics	
Distributed upon request	
Others (please specify)	

d. Is the report distributed free of charge?

Yes, but only for the above. To others it costs ___ (indicate unit price in US\$) ____No, it costs____ (indicate unit price in US\$)

e. Are there any limitations on report distribution?

___Yes ____(indicate) ___No

f. Is the report published in more than one language?

____Yes ____No

21. Besides publishing and distribution, how is the report presented to the public? (please mark all that apply)

____Statement issued to the media

Press conference

Individual media interviews with board members

____Official presentations by board members

____Official presentations by technical staff

____Published on central bank web page

____Other (please specify)

22. The costs of producing an inflation report

a. How many people work (on a full-year basis) on the report?

economists	(indicate number)
managers	(indicate number)
monetary policy board members	(indicate number)
administrative staff	(indicate number)

b. Has the number of staff dedicated to this report grown over time?

Yes, significantly (**indicate by how many**) from_____ to____ total staff _____No, there have been no significant changes.

_____No, it has declined significantly (**indicate by how many**) from____ to____

- c. How much does production of one issue of the inflation report cost the central bank? (including human resources, publication costs, etc) (specific budget or range in US\$)
- d. Has this figure grown in time?

____Yes, significantly (indicate by how much) from_____ to_____

- ____No, there have been no significant changes.
- ____No, it has decreased significantly (indicate by how much) from_____ to_____

23. What impact has the inflation report had on the private sector?

- a. Press coverage
- ____High ____Moderate Low
- b. Market analysts

___High ___Moderate ___Low

c. Has the impact declined over time?

Yes

- ____No, it has not changed significantly
- ____No, impact has risen
- d. Are private expectations/projections significantly influenced by the central bank projections published in the IR?
- Yes, significantly
- <u>Yes</u>, but not significantly
- No

Documentos de Trabajo Banco Central de Chile

Working Papers Central Bank of Chile

NÚMEROS ANTERIORES

PAST ISSUES

La serie de Documentos de Trabajo en versión PDF puede obtenerse gratis en la dirección electrónica: <u>http://www.bcentral.cl/Estudios/DTBC/doctrab.htm</u>. Existe la posibilidad de solicitar una copia impresa con un costo de \$500 si es dentro de Chile y US\$12 si es para fuera de Chile. Las solicitudes se pueden hacer por fax: (56-2) 6702231 o a través de correo electrónico: <u>bcch@bcentral.cl</u>.

Working Papers in PDF format can be downloaded free of charge from: <u>http://www.bcentral.cl/Estudios/DTBC/doctrab.htm</u>. Printed versions can be ordered individually for US\$12 per copy (for orders inside Chile the charge is Ch\$500.) Orders can be placed by fax: (56-2) 6702231 or e-mail: <u>bcch@bcentral.cl</u>.

DTBC-165	Junio 2002
Estimating Gaps and Trends for the Chilean Economy	
Gabriela Contreras M. y Pablo García S.	
DTBC-164	Junio 2002
It's Not Factor Accumulation: Stylized Facts and Growth Models William Easterly y Ross Levine	
DTBC-163	Junio 2002
Macroeconomic Management in Emerging Economies and the International Financial Architecture	
José De Gregorio	
DTBC-162	Junio 2002
Two-Part Tariff Competition with Switching Costs	
Solange Berstein	
DTBC-161	Junio 2002
Saving and Life Insurance Holdings at	
Boston University – A Unique Case Study	
B. D. Bernheim, Solange Berstein, Jagadeesh Gokhale y L. J. Kotlikoff	
DTBC-160	Junio 2002
The Federal Design of a Central Bank in a Monetary Union:	
The Case of the European System of Central Banks	
Sylvester C.W. Eijffinger	

DTBC-159 Testing Real Business Cycles Models in an Emerging Economy Raphael Bergoeing y Raimundo Soto	Junio 2002
DTBC-158 Funciones Agregadas de Inversión para la Economía Chilena Héctor Felipe Bravo y Jorge Enrique Restrepo	Junio 2002
DTBC-157 Finance and Growth: New Evidence and Policy Analyses for Chile Ross Levine y María Carkovic	Mayo 2002
DTBC-156 The Effects of Business Cycles on Growth Antonio Fatás	Mayo 2002
DTBC-155 Trends, Cycles and Convergence Andrew Harvey	Mayo 2002
DTBC-154 Coping with Chile's External Vulnerability: A Financial Problem Ricardo J. Caballero	Mayo 2002
DTBC-153 Real Exchange Rates in the Long and Short Run: A Panel Co-Integration Approach César A. Calderón	Abril 2002
DTBC-152 Exchange Rate Policy in Chile: From the Band to Floating and Beyond Felipe G. Morandé y Matías Tapia	Abril 2002
DTBC-151 Chile's Trade Policy: An Assessment Maurice Schiff	Abril 2002
DTBC-150 Competencia y Resultados Educativos: Teoría y Evidencia para Chile Francisco A. Gallego	Abril 2002