

Tactics and Strategy in Monetary Policy: Benjamin Friedman’s Thinking and the Swiss National Bank*

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This paper reviews the tactics and strategy of monetary policy in Switzerland, using a selection of Benjamin Friedman’s papers to organize the discussion, and starting in the early 1970s, when his academic papers started to appear in scholarly journals. The review focuses on the SNB’s experience with monetary targets in 1975–99, the policy strategy adopted by the SNB in 2000, and the SNB’s experiences during the financial crisis that started in August 2007. On many occasions, Benjamin Friedman’s and the SNB’s thinking converged, while on others, they diverged.

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1. Introduction

Exactly forty years ago, Ben Friedman’s first article appeared with the title “Tactics and Strategy in Monetary Policy” (Friedman

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1971). Ben wrote the paper as a graduate student for the staff group of the Federal Open Market Committee's Subcommittee on the Directive, which Federal Reserve Governor Sherman J. Maisel was chairing. While Ben himself may now be dissatisfied with the paper (in fact he warned us that there might be an analytical mistake in it), the ideas in it led to his widely cited and influential 1975 paper in the *Journal of Monetary Economics* titled "Targets, Instruments, and Indicators of Monetary Policy" (Friedman 1975). Whatever its shortcomings, the 1971 paper was the first in a very long series of books, papers, discussants' comments, panel interventions at conferences, etc., that were clearly focused on the tactics and strategy of monetary policy.

His work has been widely celebrated and has led to academic prizes and other honors, and Ben has become one of the profession's most distinguished scholars of monetary policy in general and Federal Reserve policy in particular. His thinking and writing about monetary policy have been highly influential far beyond the United States. Perhaps surprisingly, this is also true for central banks known for their monetarist attitudes, including Switzerland, where the Swiss National Bank (SNB), in contrast to central banks in many other small open economies in Europe, decided to operate with a floating exchange rate after the breakdown of the Bretton Woods system.

With the exchange rate thus free to move, the SNB was able to adopt an active monetary policy strategy focused on ensuring low and stable inflation, and contributing to stabilizing the real economy. It has therefore faced the very same issues that have occupied such a prominent part of Ben's professional life. An abbreviated list of these issues, more or less in the chronological order in which they arose, includes whether (and, if so, how) to target money or to use it as an information variable, the role of credit in monetary policy, the appropriate degree of central bank transparency, the strengths and weaknesses of explicit inflation targeting (and even what, precisely, is meant by inflation targeting), the problems associated with conducting monetary policy in the age of electronic money, and the lessons to be learned from the recent financial crisis.

Reading Ben's academic work since the early 1970s on monetary policy and juxtaposing it with the monetary policy debate in

Switzerland at the same time, one is struck by the similarities of the concerns. Interestingly, while the conclusions drawn are the same in many cases, the SNB's thinking diverged from Ben's on some issues, only to line up more closely on the next question a few years later.

In this paper we review the tactics and strategy of monetary policy in Switzerland. For reasons of space, we focus on three episodes and use a selection of Ben's papers to organize the discussion. We begin in the early 1970s, when the Swiss franc was floated and Ben's work on monetary policy started to appear in scholarly journals. We attempt to point out the many cases in which Ben's and the SNB's thinking converged, but also the cases where they diverged. We emphasize that the views we attribute to Ben in this paper are all our interpretation of his work, and that there will certainly be the occasional area where we have misunderstood the thrust of his arguments. For that we can only apologize.

Ben's work is characterized by a focus on current policy issues and caution about the supposed benefits of various innovations to monetary policy. Already in his early papers, in which he expresses skepticism about the benefits of monetary targeting, which constituted the monetary policy framework of choice in the early 1970s, we observe this prudent approach of "leaning against the wind" of monetary policy "fashions."¹ We therefore start in section 2 by reviewing Ben's views about monetary targeting, before looking at the SNB's experience with monetary targets in 1975–99. In section 3 we turn to the policy strategy adopted by the SNB in 2000, in which an inflation forecast plays a crucial role. While the SNB views this framework as distinctly different from inflation targeting, we ask whether the SNB's strategy reflects some of Ben's concerns about inflation targeting and his arguments in favor of a dual mandate for monetary policy. In section 4 we review the SNB's experiences during the financial crisis that started in August 2007 and contrast them with Ben's policy conclusions. Section 5 concludes.

¹Another example, not discussed in this article, is Ben's hesitation about the "extreme information assumptions" underlying the first generation of rational expectations models.

2. Money and Monetary Targeting

2.1 Ben on Monetary Targeting

While a large part of Ben's research in the 1970s focused on the role of money in setting monetary policy, he was never a proponent of monetary targeting, in the narrow sense of seeking to achieve the monetary target period by period, since he felt that it disregards useful information.² In his 1975 paper, he writes (Friedman 1975, p. 470):

Use of a specific noninstrument variable (such as the money stock) as an intermediate target variable does not in general constitute optimal central bank operating procedure. . . . The central bank should "look at everything" in a particular way which yields the maximum useful information and should avoid relying on a particular intermediate target variable.

Similarly, in Friedman (1977b, pp. 334–35, emphasis in the original) he notes:

The intermediate-target procedure based on monetary targets exploits the information in money-stock observations with substantial inefficiency. . . . The basic implication of these analytical and empirical results is that the Federal Open Market Committee should not seek to control the money stock as an intermediate target of monetary policy.

The committee should focus not just on the money stock but . . . should seek better ways of incorporating into its analysis the near-term flow of information from financial variables . . . and from nonfinancial sources too.

Although the paper thus argues against monetary targeting, Ben concludes (p. 335):

²Ben also emphasized (Friedman 1977a) that the Federal Reserve's ability to control money growth is limited in the short run and that attempting to do so would lead to instability in money markets. That said, he argued that over longer horizons of three to six months, reasonably close monetary control may be feasible (fn. 9, p. 95). In the same papers he also argued that bank credit would make a better target than money.

Whether these conclusions constitute criticism or praise of the current short-run conduct of U.S. monetary policy is an empirical question on which this paper draws no judgment. To the extent that the Federal Open Market Committee does attempt within the short run to control the money stock closely about a predetermined growth target, this analysis indicates the direction in which to change current operating procedures. Alternatively, to the extent that the committee already pursues systematically a more flexible and comprehensive short-run operating procedure, this analysis suggests that it continue to resist the frequent urging to narrow its focus onto short-run control of the money stock.

Ben thus makes the point that the theory and practice of monetary targeting can differ considerably. In practicing monetary targeting, central banks may use more indicators than simply the targeted aggregate and, by doing so, may have avoided some of the difficulties resulting from controlling the money stock tightly. Indeed, a second recurrent issue in the literature on monetary targeting concerns the controllability of the aggregates. In his early research, Ben argued that tight, short-run control was neither possible, desirable, nor necessary. In Friedman (1977a, p. 94), he writes:

First, the Federal Reserve cannot control the money stock very precisely, even if it singlemindedly pursues this proximate objective. Secondly, controlling the money stock as precisely as possible will lead to undesirable side effects in terms of money market instability. Thirdly, somewhat loose control over the money stock will not have major costs in terms of the ultimate macroeconomic targets of monetary policy.

These quotes suggest that already in the 1970s, Ben felt that even if it might be possible to control money aggregates sufficiently well to practice monetary targeting, such a policy would be undesirable unless central banks also used the information from other variables in setting policy.

2.2 The SNB and Monetary Targeting

Following the floating of the Swiss franc in January 1973, the SNB initially conducted policy without a nominal anchor. However,

the SNB believed that a clear nominal anchor was necessary to enhance transparency and accountability. At the end of 1974 it thus announced an intermediate monetary target.³ The shift to monetary targeting was motivated by the SNB's views about money and inflation and the desire to strengthen its anti-inflationary stance at a time—the early 1970s—when monetary targeting was seen as state of the art and appeared to offer a promising method to control inflation.⁴ During the course of the decade, the SNB expended a great deal of effort in convincing the public that price stability should serve as the main objective of monetary policy. In line with monetarists, the SNB argued that a central bank was likely to do more harm than good if it continuously shifted between objectives, instead of focusing on price stability.⁵ The SNB strongly agreed with the monetarists' claim that central banks should only pursue objectives defined in nominal terms.⁶

As the SNB gained experience with monetary targeting, it realized that many of the arguments raised by Ben (and other critics of monetarist approaches) were justified. Its monetary targeting strategy evolved accordingly over time, but the conviction that maintaining price stability in the medium term should be the main objective remained unchanged until today. We can distinguish three phases with monetary targeting.⁷

2.2.1 Phase 1: M1 as the Target and the Monetary Base as the Instrument

The SNB's first monetary targeting strategy followed the two-stage approach analyzed by Friedman (1975). In the first stage, the SNB announced an intermediate target expressed in terms of annual M1 growth for the next year. In the second stage, it controlled M1 by

³While Ben noted the policy change, it is not clear what he thought of it (Friedman 1977b, p. 301).

⁴See Rich (1987, p. 3) and Rich (2007, p. 284).

⁵In this context, the ideas of Karl Brunner were highly influential in Switzerland.

⁶This point was brought to our attention by Georg Rich.

⁷A number of authors have reviewed Swiss experiences with monetary targeting, including Baltensperger (1984, 2007), Genberg and Kohli (1997), Rich (1997, 2000, 2002, 2007), Laubach and Posen (1997), Bernanke et al. (1999), Peytrignet (1999, 2007), and Kugler and Rich (2002).

way of the monetary base, which was derived from the growth target for M1 and forecasts of the money multiplier (Rich and Schiltknecht 1980). Finally, an operational target for bank reserves was established. Neither the objective for the monetary base nor the target for bank reserves was announced. Switzerland was virtually the only industrialized country that adopted the monetarist proposition of employing the monetary base as an operational target.

Using the monetary base rather than an interest rate to steer broad money seemed natural, as Switzerland lacked a well-developed money market, making fine-tuning via money market rates impracticable. Furthermore, as a consequence of its experiences during the Bretton Woods period, the SNB had concluded that price stability could not be achieved unless the balance of payments surpluses and the resulting expansion in the monetary base were reduced. The trend growth in the monetary base had thus come to be seen as the best indicator of monetary conditions.⁸

While the SNB emphasized that steady expansion in the money supply would act as an automatic shock absorber, softening cyclical movements in output and employment by inducing stabilizing movements in interest rates, it was ready to take an active approach if necessary. Given the limited availability of data and the limited ability to forecast at the time, money was seen as the most important information variable. However, despite this position, the SNB was pragmatic and also considered other information variables. Although the SNB never stated that it would respond if a recession threatened, it pointed out that it might react to excessive exchange rate movements that threatened to do harm to the Swiss economy, as well as other major unforeseen events. Furthermore, the SNB was ready to deviate from the monetary target if a conflict arose between this target and the maintenance of price stability.⁹

Ben's many articles suggest that he would not have recommended that the SNB adopt monetary targeting. However, given the available choices, which at the time most likely included monetary targeting, a fixed exchange rate, or an "eclectic" strategy, we may now conclude that the choice of framework was appropriate for

⁸See Schiltknecht (1979, p. 170) and Rich and Schiltknecht (1980, pp. 150–52).

⁹See, for instance, Rich and Schiltknecht (1980, p. 163), Rich and Béguelin (1985, p. 84), (Rich 1997, p. 117), Rich (2000, p. 444), and Rich (2007, p. 325).

Switzerland. And given the pragmatic implementation of policy, the differences to Ben's approach were much more nuanced.

Following the adoption of monetary targeting, inflation fell quickly and reached about 1 percent in 1976.¹⁰ The SNB's anti-inflationary stance was supported by a sharp appreciation of the exchange rate in 1977–78. While this helped reduce inflation, the SNB became increasingly concerned about the consequences for economic activity and the risk of deflation. The Swiss authorities tightened various restrictions on capital inflows, but these measures had little effect on the exchange rate as long as the monetary target remained in force.¹¹

Since concerns about the exchange rate continued to grow, in late 1978 the SNB announced a temporary exchange rate target by setting a floor under the Swiss-franc price of the deutsche mark, and elected not to adopt a monetary target for 1979. To defend the objective, the SNB intervened heavily, leading to massive increases in M0 and M1. Short-term interbank rates fell to zero early in 1979. While the exchange rate depreciated markedly, the rise in inflation in the early 1980s has been attributed by many observers to the sharp rise in money growth during the brief period with an exchange rate objective. In their view, attempting to halt and reverse excessive appreciation will lead to a rise in inflation.¹²

2.2.2 Phase 2: Targeting the Monetary Base

In the spring of 1979, exchange rate pressures calmed somewhat. This process continued throughout the year and the SNB announced a new monetary target for 1980. The target was expressed in terms of the monetary base M0, rather than M1. Thus, the monetary base

¹⁰Interestingly, Rich (1997) asserts that implicit in the monetary targeting strategy was an inflation objective of about 1 percent. However, only after 1995 did the SNB explicitly spell out its definition of price stability. See Rich (2007, fn. 27).

¹¹Late in 1977, the SNB bought heavily in foreign exchange in an effort to curb the upsurge in the Swiss franc, which led to a strong increase in the monetary aggregates. In the spring of 1978, the SNB tightened monetary policy to keep money growth in line with its target. No sooner had it tightened policy than the Swiss franc resumed its upward course.

¹²See the citations in Kugler and Rich (2002, p. 246) and Rich (2007, p. 300).

was not only an intermediate, but also an operational, target.¹³ This change reflected the SNB's concern about its ability to control M1 and, in particular, the difficulties in forecasting the multiplier in periods of sharp exchange rate fluctuations. By contrast, M0 was controlled more directly and appeared to be as closely related to the SNB's ultimate target of price stability as M1. Moreover, M0 was considered to be more stable and less sensitive to interest rates than the demand for M1.¹⁴

While the SNB intended to reduce the growth of M0 to 2 percent gradually, it shrank in both 1980 and 1981 as a result of the combination of the need to tighten monetary policy to prevent inflation from rising and the decline in money demand. From 1982 to 1986, the SNB largely achieved its targets. In 1987, it overshot the target on purpose, in response to an appreciation in the Swiss franc as well as the stock market crash. The latter event was expected to slow the global economy. Furthermore, as a consequence of the introduction of a new electronic interbank payments system and a revised minimum reserve framework, in 1988 bank demand for base money fell more sharply than the SNB had anticipated.¹⁵ These shocks rendered M0 temporarily of little value as an indicator, and the SNB relied instead on interest rates to assess monetary conditions.¹⁶ Growth in M3 and bank loans rose, but the SNB attached little weight to them since both were deemed to be unstable.¹⁷ In 1989 and 1990, the SNB again decided that money growth had to be reduced below target because of a combination of a decline in money demand and a need for tighter policy due to external developments.

These experiences reveal that the SNB, while in principle committed to an intermediate monetary target, did consider a range

¹³See Rich (1987, pp. 11–12). Kohli and Rich (1986, p. 913) note that the SNB appeared to be the only central bank in the industrialized world targeting the monetary base, which Karl Brunner and other leading monetarists had consistently advocated. Brunner (1983, pp. 53–55) argues that the SNB was the only central bank that came close to pursuing monetarist policies.

¹⁴The annual targets for the monetary base were set against a medium-run target consistent with long-run price stability.

¹⁵See Rich (2007, p. 309).

¹⁶See Peytrignet (2007, pp. 244–45).

¹⁷Peytrignet (1996) shows that the demand functions for these aggregates were indeed unstable at that time.

of other factors—including the exchange rate, stock prices, global prospects, and financial innovations—in conducting monetary policy, as Ben would have proposed. Despite this, the SNB could not prevent inflation from increasing above 6 percent in 1990. Arguably, the SNB could have achieved better performance if it had paid greater attention to credit growth, as Ben would have suggested, and to broader monetary aggregates, which appear to have been instrumental in creating the property bubble and rise in inflation that Switzerland experienced in 1990–91 (Peytrignet 2007, p. 254).

2.2.3 Phase 3: Medium-Term Targets for M0 from 1990 to the Mid-1990s

Following the repeated episodes when money growth deviated from the target, the SNB shifted to a more flexible form of monetary targeting by fixing a multi-year target in 1990.¹⁸ The intention was to allow policy to react flexibly to temporary shocks, without forgoing the monetary anchor. The target was described by means of a path extending over a five-year period, and indicated the movement in M0 that was judged to be consistent with price stability and potential real growth of 2 percent per annum.

However, while base growth was seen as informative for inflation in the medium run, it was not seen as a good predictor of short-term movements in inflation. Instead, the SNB would look at other indicators—commensurate with Ben’s thinking—and, when necessary, let money growth deviate from the target. Therefore, the SNB did not commit to let the monetary base grow steadily along the target path.

Financial innovations in the late 1980s had altered the composition of the monetary base in favor of bank notes and reduced the interest sensitivity of the demand for bank reserves, which weakened the SNB’s control over the monetary base. It now took a few months for an easing in monetary policy to affect the monetary base, once the reduction of savings deposits rates had led to an

¹⁸Apparently, the announcement of a medium-term target was also a Swiss innovation after the SNB had used a trend-growth target in its internal analysis.

expansion in the demand for bank notes (Peytrignet 1999, p. 209). Because of this lag, base money provided little information about the current stance of policy. Instead the SNB increasingly relied on short-term interest rates to assess monetary conditions (Rich 2007, pp. 317–18).

Although multi-year targeting provided more flexibility, the demand for M0 remained unstable. In 1996, a number of banks increased their deposits with the SNB, and in 1997 the demand for banknotes rose unexpectedly, which caused the monetary base to exaggerate the extent to which monetary policy was expansionary. To maintain a credible monetary target, the SNB would have been forced to choose a new target variable such as M3, which had become a reliable indicator for inflation in the longer run. The SNB decided against doing so and instead abandoned monetary targeting altogether at the end of 1999.

While the SNB remained convinced that money growth was an important long-run determinant of inflation, other factors, such as the cyclical state of the economy and the exchange rate, mattered in the short run. The monetary target was therefore no longer seen as an ideal vehicle for communicating the SNB's policy decisions (Rich 2000, pp. 465–66). Advances in computer technology, data quality, and quantity and improvements in the knowledge of the monetary transmission process facilitated the strategy change at that time.

2.3 How Near Was the SNB's Monetarist Pragmatism to Ben's Thinking?

As emphasized above and as suggested by Ben's work, the SNB allowed money growth to deviate from target when disturbances occurred. To illustrate this, we regress money growth on the target, CPI inflation, and the change in the real exchange rate against (what became) the euro area, using annual data for the period 1975–99. If the SNB did respond to the information contained in the latter variables, we would expect money growth to rise relative to target when real exchange rate appreciation put downward pressure on inflation and slowed the economy, or when inflation declined.

Table 1. Regression of Money Growth on the Target and Indicators: 1975–99 (Twenty-Three Observations)

Money Growth Target	Change in Real Effective Exchange Rate	Inflation
1.12 (3.73)	0.38 (3.60)	-1.12 (-4.60)
R-sq. = 0.71	DW = 1.91	

We obtain (disregarding an intercept; *t*-values in parentheses) the results shown in table 1.¹⁹ These results show that the SNB allowed money growth to vary relative to target in response to economic developments. Furthermore, the residuals, which capture unintended deviations of money from target, display no autocorrelation.

The SNB's conduct of policy during the monetary targeting period was in many ways compatible with Ben's recommendations. In particular, it emphasized repeatedly that it was pragmatic, contrary to the advice of monetarists.²⁰ Accordingly, the SNB's money growth target should perhaps best be thought of as a crucial indicator, despite the fact that the SNB officially often referred to it as an intermediate target (Peytrignet 1999, p. 198). The intermediate monetary targets appear to have been mainly used as a communications tool to convey to the public the SNB's commitment to price stability, rather than as an end in themselves (Bernanke et al. 1999, p. 57 and p. 66).

The combination of a monetarist approach with pragmatic considerations close to those proposed by Ben served the country well

¹⁹These estimates warrant four comments. First, money growth is measured by M1 in 1974–78 and by the monetary base from 1980 onwards. Second, there is no observation for 1979 since the SNB did not define a money growth target that year. Third, we drop the observation in 1988 since Rich (1997) argues that it had no operational role because the introduction that year of a new electronic interbank payments system was expected to lead to a sharp reduction in bank demand for settlement balances. Fourth, we disregard the fact that from 1990 to 1999 the target was expressed in terms of five-year averages.

²⁰See, for instance, Schiltknecht (1979, p. 167), Rich and Béguelin (1985, p. 84), Rich (1987, p. 14), and Rich (2007, p. 296).

for more than twenty years. Using monetary targeting, the SNB achieved lower inflation than virtually all other central banks. Thus, although the framework came to an end in the second half of the 1990s, it paved the way for the high credibility and reputation of the SNB.

3. The SNB's Current Framework

The monetary policy framework announced at the end of 1999, which has some features of inflation targeting (but which the SNB does not consider to be inflation targeting, as we discuss below), must not have come as a surprise to Ben.²¹ In Friedman (1984a), he studies the U.S. experience with monetary targeting from 1979 to 1982 and examines whether it provides support for a number of propositions that many associate with monetary targeting. He concludes that the evidence provides little if any support for these propositions.²² In later work (Friedman 1988b), he returns to the issue of the appropriate role of money in monetary policy and notes that, while initially the most contentious issue concerned the short-run stability of the money-income relationship, in the 1980s it became clear that even in the long run, money demand is unstable. He goes on to argue (p. 440):

Broader measures of money, or the monetary base, or measures of credit have all fluctuated in patterns bearing little visible connection to any plausible objective of monetary policy. As a result, the entire role of such quantity variables in the monetary policy process — either money or any of the others —

²¹The framework is reviewed in Jordan and Peytrignet (2007) and Jordan, Peytrignet, and Rossi (2010).

²²The propositions are that (i) the monetary aggregates move more or less together so that the question of which aggregate is targeted is not critical; (ii) there is one aggregate, at least, which approximately explains the behavior of nominal income over substantial time spans; (iii) a pre-announced slowing of money growth will lead to more rapid disinflation than predicted by historical experience; (iv) a pre-announced slowing of money growth will lead to less loss of output, employment, and income than predicted by historical experience; (v) a pre-announced slowing of money growth will lead to lower long-term interest rates than suggested by historical experience; and (vi) abandonment of monetary targeting will cause long-term interest rates to rise.

is now practically devoid of empirical support based on recent experience.

The paper ends with a reproach that, when read more than twenty years later, is striking (p. 445):²³

Perhaps the time has come for economists to turn at least some of the effort they are now spending on trying to overturn the evidence on these variables toward thinking about how best to conduct monetary policy without them.

To Ben, the U.S. evidence thus indicated that the Federal Reserve should focus on how best to conduct monetary policy without relying on formal money targets. That was precisely what the SNB did when it reconsidered its policy framework a decade later. However, in contrast to other central banks that changed their frameworks at about the same time, the SNB decided to maintain money aggregates as important information variables.²⁴

3.1 The Elements of the Strategy

While the new strategy, which represents the most important change in the SNB's thinking since the mid-1970s, introduced novel elements, it aimed at providing continuity in monetary policy and, in some respects, constituted merely a recognition of how the SNB had in fact been conducting policy. Accordingly, when announcing the framework, the SNB referred to it as its modified strategy for monetary policy (Swiss National Bank 1999). It is based on three elements.

The first component is a definition of price stability. After having operated with an implicit inflation objective of 1 percent as a part of the monetary targeting strategy, the new framework contains an explicit definition of price stability as an increase in the consumer price index of less than 2 percent per annum.

²³In a number of papers, Ben demonstrates how the information content of money for income and prices in the United States was lost and how, as a consequence, the importance which the Federal Reserve attached to money in setting monetary policy declined. See Friedman (1977b, 1984b, 1988a, 1988b, 1993, 1994, and 1996), and Friedman and Kuttner (1992).

²⁴The stability of demand for the broader aggregates was not a major issue in Switzerland in the 1990s.

The second element is a broad-based inflation forecast, spanning three years, which has been published quarterly since 2003.²⁵ The forecast, which serves as the main policy indicator, is based on a suite of models, a blend of other inputs and discretionary adjustments, and is conditional on the assumption that the level of interest rates which has been determined will remain unchanged throughout the forecasting period. Since the inflation forecasts take account of the most recent interest rate decision, they play a crucial role in communicating the probable future course of monetary policy to the public.

The third element is a target range for the three-month LIBOR, which is steered by (typically) one-week repo transactions. While the long-term monetary stance is communicated through the inflation forecast, the target range for the three-month LIBOR indicates the SNB's short-term intentions in the money market. Normally, the target range has a width of 100 basis points.²⁶ The SNB also announces which part of the target range it is aiming for.²⁷

3.2 Comparison with Inflation Targeting

The SNB's policy framework is sometimes seen as an example of inflation targeting. This strategy, which has been adopted by a range of central banks, is usually characterized by the following features: a clear price stability mandate with a numerical inflation target announced to the public, a key role for an inflation forecast as an intermediate target, the announcement of a clear horizon for achieving the inflation target, concern about the stability of the real economy, and a high level of transparency and accountability. In the literature it is common to model the central bank as minimizing

²⁵From 2000 to 2002 the inflation forecasts were computed and published only semi-annually. As a rule, the SNB's Governing Board decides on interest rates in March, June, September, and December. The quarterly assessments in June and December are followed by a press conference.

²⁶The SNB believes that a target range rather than a point target allows it to respond flexibly to money market and exchange rate shocks without signaling an immediate change in its basic policy orientation. This feature proved particularly useful during the 2007–09 crisis, as explained in section 4.1.

²⁷Rinaldo and Rossi (2010) show that not only target changes but also interviews and speeches by the SNB's Governing Board affect exchange rates, stocks, and long-term interest rates.

a quadratic loss function involving the deviation of inflation from target and the output gap.

The SNB's framework was designed after careful examination of inflation targeting, with which it shares some important elements. Price stability is plainly the main policy objective. And in conducting monetary policy, the SNB behaves in ways similar to central banks practicing inflation targeting. In particular, like these central banks, the SNB is willing to tolerate temporary deviations in the inflation rate from its price stability range if circumstances so require. This is confirmed by studies suggesting that an empirical reaction function of the generalized Taylor variety well characterizes the way it sets the interest rate (Genberg and Gerlach 2010).

Despite these similarities, the SNB does not characterize its strategy as inflation targeting. There are at least three differences. The first is that the SNB defines price stability instead of setting a target for inflation. The SNB ended the monetary targeting period without a credibility problem. It was therefore not necessary for it to announce a "target" for inflation to underline to the public a break with an inflationary past (Rich 2000, p. 464). Since the definition of price stability is time invariant, this approach enables the SNB to emphasize that its objective is permanent and that it does not wish to change it for the sake of short-term political considerations. By contrast, countries that practice inflation targeting could in principle adjust their inflation targets from time to time. Thus, the SNB's approach represents a stronger commitment to price stability than does the usual inflation-targeting framework.²⁸

The second difference concerns the objective for inflation. While the SNB has stated that deflationary developments will be countered, its definition of price stability does not involve a floor since it does not want to give the impression that it has a point target of 1 percent. Instead, the SNB equates any positive rate of inflation below 2 percent with price stability. Thus in writing the inflation

²⁸Since it is the SNB itself that defines exactly what it means by price stability, it is impossible for the government to be swayed by political or other reasons to set an inflation target that is incompatible with price stability. In Berg's (2005, p. 23) account of eight industrialized central banks pursuing inflation targeting, six have their targets set either by the government or in consultation with it.

term of the SNB's loss function, it is incorrect to use the squared deviation of inflation from the midpoint of the range.

The third difference is that the SNB will accept temporary deviations from the price stability zone if necessary. For example, after an inflationary shock, it may exercise a degree of discretion with regard to the period within which it wishes to return to price stability. Berg (2005) surveys eight central banks in advanced economies that practice inflation targeting and shows that seven either have an explicit target horizon or present an explicit horizon when inflation has clearly deviated from the target. By contrast, the SNB has deliberately refrained from indicating a time horizon. Consequently, interest rates will not automatically be adjusted if the inflation forecast deviates from the price stability range. Aiming to restore price stability too rapidly may harm the real economy and weaken the resilience of the financial sector, and in the end endanger achievement of the ultimate policy objective. The only binding constraint for the SNB is the obligation to maintain price stability in the "medium term."

Overall, the strategy announced in 1999 combined elements of the monetary targeting framework—in particular, the focus on price stability—as its primary objective, with new conceptual and analytical elements as well as an overhaul of the implementation procedure.

3.3 What Might Ben Think?

Ben has visited the SNB a few times and discussed monetary policy issues with Governing Board members and staff. To our knowledge, he has not openly commented on the SNB's current policy strategy. However, in a number of recent papers Ben has been critical of inflation-targeting strategies, and much of this criticism would appear to apply also to the SNB's framework (Friedman 2004, 2008a, 2008b).

Ben presents a number of arguments. In Friedman (2004), he argues that there is little, if any, empirical evidence that inflation targeting improves macroeconomic performance, suggesting that the benefits of this strategy may be imaginary. More importantly, he argues that inflation targeting fails "to say anything about the goals of monetary policy other than inflation, or about the relationship between those goals and the inflation goal" (Friedman 2004, p. 132). Furthermore, "by forcing participants in the monetary policy debate to conduct the discussion in a vocabulary pertaining solely

to inflation, inflation targeting fosters over time the atrophying of concerns for real outcomes” (ibid, p. 135).

In later work, his views are somewhat more nuanced (Friedman 2008b, p. 155 and p. 158):

In principle, inflation targeting is consistent with pursuing policy objectives both for prices and real economic outcomes like employment and output. But in practice that is unlikely to be the case.

A few inflation-targeting central banks (in Norway and Sweden, for example) have made public their underlying analytical apparatus in a way that does make explicit how they take into account the real consequences of their policies. But none of the larger inflation targeters have done so, and it is unclear to what extent anyone outside these banks pays attention to such analytical formalisms.

In the same paper he calls for dual objectives in monetary policy. Since monetary policy does have both real and nominal effects, central banks should be given, or have, clear objectives for both. If this is not the case, the consequences could be dire (ibid, p. 163):

The likely damage would result in the first instance from undermining precisely those objectives that transparency about monetary policy is supposed to achieve, namely enhanced efficiency and accountability. If the relevant higher authority obfuscates what the central bank is supposed to do — more specifically, if it explicitly identifies one among a set of objectives but leaves the others implicit, or even conceals them altogether — the purported efficiency gains to private sector decision making from greater predictability of future policy actions are obviously nullified. The result is the same as when the central bank itself obfuscates its objectives, as under most forms of inflation targeting. Similarly, if the central bank’s public instruction obscures its policy actions, the purported gains to the democratic accountability of its decision making are precluded as well.

Even more important than the likelihood of problems due to obfuscation and opacity, however, is the prospect that the central bank will end up acting on the basis of its instruction and

will thereby achieve an incomplete or distorted set of policy objectives.

How does this critique pertain to the SNB's framework? Several observations are warranted. First, the SNB's strategy reflects the nature of its hierarchical mandate, which requires it to ensure price stability. While Ben has argued in favor of a dual objective, the SNB believes that its hierarchical mandate has important advantages. In particular, while the choice between a hierarchical and a dual mandate may have little impact on how central banks react to real shocks, a hierarchical mandate may better anchor inflation. One reason for that is that seeking to achieve objectives for real economic developments may induce large movements in inflation. For instance, as emphasized by Orphanides (2002), errors in measuring "full employment" in real time can lead central banks to adopt an excessively expansionary (or contractionary) stance on monetary policy and lead to undesirable swings in inflation, which may have a negative impact on the real economy. The SNB's hierarchical mandate does not require it to form a view of full employment and is therefore not susceptible to this problem.

Second, like many central banks with inflation targeting, the SNB is also concerned with real economic outcomes.²⁹ The sensitivity with respect to real outcomes had already become an important principle during the period of monetary targeting.³⁰ However,

²⁹ According to its mandate, which was specified in the new National Bank Act (NBA, art. 5 para. 1) and which is in force since May 1, 2004, the SNB shall ensure price stability. In doing so, it shall take due account of the development of the economy. Before May 2004, the SNB was instructed to "regulate the country's money circulation, to facilitate payment transactions and to pursue a credit and monetary policy serving the interests of the country as a whole." A draft of a revision of the NBA was prepared in the late 1990s, according to which price stability should be the SNB's primary objective, but it would also be required to take account of economic activity. The SNB agreed with this view, which corresponded to its practice (Klauser 2004).

³⁰ Although the SNB shared the monetarists' skepticism about its abilities to fine-tune the business cycle, it did not ignore output growth and employment (Rich and Béguelin 1985, p. 86, and Rich 1987, p. 11). However, in the run-up to the new NBA, a political dispute arose and minority motions were submitted to Parliament with the aim of having price stability and balanced economic development recognized as equal priorities. The aim was a desire to curb "monetarist" policies that some considered to be responsible for the weak economy of the 1990s (Kuhn 2007).

it stands in sharp contrast to the situation at the beginning of monetary targeting, when the SNB was not even prepared to talk about a hierarchy of objectives. How does the SNB take real outcomes into consideration? The inflation forecast is the main policy indicator, as was money growth during the monetary targets period. It does not elicit automatic policy adjustments even if inflation is forecast to fall outside the price stability range. As noted by Jordan, Peytrignet, and Rossi (2010), the SNB has used its room for maneuver to conduct short-term expansionary policy and has not focused one-sidedly on the long-term consequences for price stability. In addition, most rate cuts have been made at unscheduled assessments, where the effects on asset markets are particularly strong (Rinaldo and Rossi 2010).

Third, as noted above, in contrast to central banks using inflation targeting, the SNB does not have a “target” for inflation. Instead, it has stated that price stability is its most important policy objective, and it has given this a numerical definition. The SNB has not defined an inflation target because it is not convinced that it could fine-tune inflation to reach a precise numerical value within the price stability range. This is also why the SNB has not specified how fast it would return inflation to the price stability range if a deviation occurred. Another reason why the SNB chose not to set a target for inflation was because of its experiences during the monetary targeting period, when it proved difficult to explain to the general public why occasional deviations from target were natural and why they did not warrant immediate offsetting policy action. As a consequence, the SNB avoids using the term “target” for objectives that it seeks to reach only in the medium term. As a consequence of the decision not to fine-tune inflation, its scope for discretion in reestablishing price stability, and the similar scope for discretion in its reaction to the conditional inflation forecasts, the SNB retains flexibility which allows it to make a contribution to stabilizing output.

While the SNB has been less explicit than central banks with inflation targeting about the weight it attaches to inflation, it has done so precisely because it shares some of Ben’s concerns about inflation targeting. In one important respect, though, the SNB does not share Ben’s view. The SNB has not made explicit the weight it attaches to real economic developments since there are a number of plausible measures—including real GDP growth, the output gap,

employment levels, unemployment levels, and various measures of capacity utilization—that could be used. These measures move in conflicting ways on occasion and are subject to shocks that cannot be controlled by monetary policy, such as movements in potential GDP, the size and participation rate of the labor force, investment decisions, and the rate of depreciation of the capital stock, that also are difficult to observe in real time.

Overall, the combination of old and new elements in its monetary policy strategy has been successful. Despite major shocks, inflation and output have been more stable under the current framework than previously.

4. Monetary Policy and the Crisis

In this part of the paper, we look at the SNB's experiences since the start of the financial crisis in 2007. We first provide a brief overview of the SNB's behavior during the crisis and then we ask what lessons it has drawn from it. We juxtapose these lessons with those drawn by Ben in a recent paper (Friedman 2010).

4.1 The SNB's Experiences during the Global Financial Crisis

Like many other central banks, the SNB faced severe market turmoil during the crisis and responded with strong policy measures to prevent a deflation scenario. While it is too early for a broad assessment of SNB policy over the last few years, it is already clear that price stability has been preserved so far without incurring high output costs. Moreover, the strategy has proved flexible enough to be used in the crisis and has enabled the SNB to closely control its term reference rate.

Five phases of the recent crisis in Switzerland can be distinguished, each of which called for reactions by the SNB.

At the beginning of the first phase in August 2007, the SNB was among the first central banks to inject additional liquidity to accommodate a large increase in bank demand for liquidity. Since the Swiss economy was performing well and in view of the fact that inflation rose above 2 percent in 2008, triggering risks for price stability in the medium term, the SNB judged monetary conditions to

be roughly appropriate and left the target range for the three-month LIBOR unchanged between September 2007 and September 2008.

The additional factor explaining why the SNB did not reduce interest rates is related to the way in which it implements monetary policy. The SNB steers a three-month rate by changing short-term repo rates. Targeting the three-month LIBOR worked like an “automatic monetary stabilizer,” since movements in the risk premiums were compensated by changes in the one-week repo rate. Thus, the SNB’s operational procedures enabled it to offset the tensions in the money market without changing the policy rate, and to shield the domestic economy from the surge in the level and volatility of money market risk premiums.

In this first phase, the SNB also took measures motivated by considerations of financial stability. To this end, a foreign exchange swap facility with the U.S. Federal Reserve was concluded in December 2007 to enable the SNB to provide counterparties with U.S. dollars. The size of the swap agreement was increased repeatedly and reintroduced after a brief suspension in May 2010.

In the second phase, in the autumn of 2008, the deterioration in the world economy increasingly affected the Swiss economy and, together with falling oil prices and the appreciation of the exchange rate, increased the risk of deflation. The failure of Lehman Brothers in September further intensified the turmoil in international financial markets. European banks were facing increasing difficulties in refinancing themselves in Swiss francs, and this resulted in a significant rise in the LIBOR. Consequently, from October onwards, the SNB engaged in EUR/CHF swaps with domestic and foreign counterparties, the European Central Bank (ECB), and the central banks of Poland and Hungary. These funding facilities, through which the SNB provided Swiss franc funding to banks outside its spheres of influence, successfully reduced the LIBOR (Jordan, Ranaldo, and Söderlind 2009). The foreign exchange swap operations were discontinued in January 2010.³¹

In this period, the SNB took three monetary policy decisions on dates that lay between its regular, scheduled monetary policy

³¹Until October 2008, excess liquidity was absorbed by means of repo transactions. From then onwards, the SNB also issued its own interest-bearing debt certificates (SNB bills) for this purpose.

assessments. These led to a major relaxation in the money market. In October 2008, the SNB relaxed monetary policy by 50 basis points in coordination with several other central banks. In early November, following a dramatic worsening in the international economic outlook, the SNB lowered the LIBOR target range by another 50 basis points and, later that month, lowered the target range by a further 100 basis points to 0.5–1.5 percent.³²

Since the risk of deflation remained, the LIBOR target range was cut by an additional 50 basis points to 0.0–1.0 percent in December. In order to reach the desired LIBOR of 0.5 percent, the SNB cut the one-week repo rate to 0.05 percent—the lowest rate since this instrument was introduced in 1998—and offered unlimited liquidity at this level.

In the third phase, in the spring of 2009, the crisis deepened and the appreciation of the Swiss franc further heightened the risk of deflation. In response, the SNB took several new measures in March. It substantially increased the supply of liquidity and lowered the target range for the LIBOR to 0.0–0.75 percent, aiming for a level of around 0.25 percent. It also engaged in long-term repos and purchased private-sector Swiss franc bonds and foreign currency, the latter in order to prevent the Swiss franc from appreciating further against the euro. These measures caused the LIBOR to decline gradually to the desired level of 0.25 percent.

In the fourth phase, which began in late 2009, the SNB felt that the risk of deflation had receded. It therefore announced that only excessive appreciation of the Swiss franc would be prevented and began a gradual exit from its unconventional monetary policy tools. However, the European sovereign debt crisis in the spring of 2010 led

³²The SNB cut interest rates somewhat earlier than the Bank of Japan and the central banks of Sweden, Norway, and Denmark (the latter three and the ECB even lifted rates for a while in 2008) but later than the Federal Reserve and the Bank of England, whose rate reductions had already started in September and December 2007. However, the SNB cut its one-week repo rate right at the beginning of the financial crisis, bringing it down by almost 50 basis points by September 2008. What is remarkable about the timing and size of the SNB's rate adjustments is that Swiss GDP growth had been clearly higher than in the United States, the United Kingdom, the euro area, and Japan since 2007. Jordan, Peytrignet, and Rossi (2010) attribute this behavior to the SNB's risk-management approach to monetary policy, which was aimed at limiting tail risk.

to substantial upward pressure on the Swiss franc, again triggering the risk of deflation. The SNB therefore intervened in the foreign exchange market at unprecedented levels, putting downward pressure on the three-month LIBOR, which fell below 0.10 percent in June.

In the fifth phase, from the middle of 2010 onwards, the recovery of the Swiss and global economy meant that the risk of deflation in Switzerland had largely disappeared. The SNB therefore considered that an appreciation of the Swiss franc was no longer such a threat to price stability and discontinued its foreign exchange market interventions.

4.2 Ben's Lessons on the Crisis and the SNB Experience

What lessons should central banks draw from the current financial crisis? Ben draws nine lessons for monetary policy (Friedman 2010, pp. 3–4). We consider five of them that are particularly relevant for Switzerland, from the perspective of the SNB's experience.³³

- (i) For purposes of how monetary policy influences nonfinancial economic activity, what principally matters is not money but credit: its volume, its price, and its availability.

Ben has over the years written a number of papers on the relative usefulness of monetary and credit aggregates for monetary policy, and, at the risk of some oversimplification, has argued that credit is no less informative than money in ordinary times. It is therefore not surprising that he has focused on their relative importance during the crisis.³⁴

However, the SNB believes that money is still informative, although credit has become increasingly important—in particular,

³³The other important conclusions from Ben's paper are that additional financial regulation is necessary, that bank deposit and credit activities should be separated from inherently risk-oriented trading activities, that governments need greater authority to resolve the failure of financial institutions, and that, for lender-of-last-resort policy, it is desirable to distinguish between financial losses that reflect a genuine loss of wealth to the economy and those that merely represent one side of a zero-sum bet.

³⁴See Friedman (1977a, 1981, 1982, 1984b, 1988a, 1988b, 1993, and 1994).

during the recent crisis. As the financial crisis evolved, the SNB realized that its information on credit markets was not sufficient to ensure monetary and financial stability. To broaden its information base and thereby allow it to take timely countermeasures, the SNB introduced a quarterly lending survey and, in early 2010, conducted a special survey on mortgage lending activity.

The second lesson Ben draws concerns the implementation of monetary policy:

- (ii) In light of how most central banks now set interest rates, central banks in effect have not one policy instrument but two; over time horizons long enough to matter for monetary policy, the quantity of central bank liabilities can be varied more or less independently.

The third lesson he draws concerns the composition of central bank balance sheets:

- (iii) The composition of central bank assets also matters; central bank securities holdings, in large volume, affect market interest rate relationships.

Ben notes (Friedman 2010, p. 15) that central banks have two instruments: the short-term interest rate and the quantity of central bank liabilities. Under normal market conditions, the SNB controls one-week repo rates and the quantity allotted in daily repo auctions in order to steer the three-month LIBOR, and they can thus be considered a single instrument.³⁵ However, when the one-week repo rate reached the zero lower bound in December 2008, the SNB adopted unconventional measures. To this end, it first substantially expanded its balance sheet (quantitative easing, QE), which tripled by May 2010. Second, it changed the composition of central bank assets (credit easing, CE). Both measures were aimed at affecting relative

³⁵Jordan, Ranaldo, and Söderlind (2009) show empirically that in normal times, repo operations exert the greatest effect on the LIBOR. In periods of distress, unexpected changes in the official target range for the LIBOR, together with greater liquidity provision in repo operations, produce the intended effects on the LIBOR. Importantly, regardless of the regime, a larger allotment of liquidity in the morning, when a monetary policy decision is made, leads to a decrease in the LIBOR. The latter suggests that the quantity of SNB liabilities *may not* move freely without affecting the LIBOR.

prices of financial assets, either indirectly through QE or directly through CE.³⁶

Given the importance of the exchange rate for the economy and size of the market, the SNB relied mostly on foreign exchange purchases as its most effective QE/CE instrument, after the appreciation of the Swiss franc against the euro tightened monetary conditions excessively. However, the resulting high level of foreign exchange reserves has increased both currency risk and the risk of a concentration of debtors in a few major countries. It is too early for an evaluation of the impact of the foreign exchange interventions. On the one hand, they helped achieve the short-term goal of regaining control of monetary conditions in a critical situation. Overall, Switzerland mastered the recent crisis better than other countries. On the other hand, the appreciation of the Swiss franc and its volatility increased once the interventions ended in June 2010. Only the future will tell if the large-scale foreign exchange interventions can be considered successful. The challenge will be to sterilize excess liquidity in good time, over the medium term.

As Ben notes (Friedman 2010, p. 17), once a central bank has also a quantity-based instrument with which it affects the financial market, its counterpart represents a further degree of freedom. And as Friedman and Kuttner (2010, p. 58) highlight:

If the assets that the central bank purchases as the counterpart to its creating additional reserves provide liquidity to key nonbank markets that have become impaired . . . or otherwise transfer to the central bank credit risk that the private sector is willing to bear only at an increasing price with increasing quantity . . . , then those purchases may also help advance the objectives of monetary policy even without any movement in the policy interest rate.

In its choice of assets and diversification, the SNB is more constrained than central banks in larger and less open economies. The volume of QE/CE measures, in the form of private bond purchases, was much smaller than foreign exchange interventions because of the thinness of the Swiss capital market. Nevertheless, bond purchases

³⁶QE and CE were already mentioned as an important transmission mechanism by the monetarists.

seem to have had positive effects. Bank lending resumed after growth rates fell continuously throughout 2008, as did credit-risk premiums, and the evidence suggests that firms' refinancing improved in general.³⁷

The composition of the balance sheet is always a choice variable, irrespective of whether the policy interest rate is at zero or not. In principle, the SNB could—as suggested by Ben—use the short-term interest rate as well as the size and the composition of its balance sheet as instruments. However, a caveat is in order. The tripling in the size of the balance sheet was mainly the result of massive QE/CE at a time when the short-term interest rate had fallen to zero. Whether changes on the asset side of the balance sheet will have the intended effects on the exchange rate or credit spreads once interest rates have risen to more normal levels depends on market frictions and the size of market operations involved.

A further caveat is that, in our view, it is appropriate, over time, to bring the size of the balance sheet closer to its pre-crisis level. The longer the central bank's balance sheet, the greater the financial risk and thus also the greater the risk to its reputation and independence. Any extension in the balance sheet should therefore be saved for situations when conventional monetary policy is no longer feasible. In the long run, the SNB may therefore sell foreign exchange reserves in order to shorten its balance sheet.

In the short term, by contrast, as long as the balance sheet has not yet been shortened to normal levels, the SNB must operate with an elongated balance sheet and increase interest rates by changing the composition of the liability side of its balance sheet through the issuance of SNB bills, thus reducing banks' reserves. At the same time, the asset side of the balance sheet could in principle be changed if required. However, the SNB is unlikely to use this as a regular monetary policy instrument.

A further lesson Ben draws is that despite their efforts, central banks have not yet found an effective way to boost the economy and bank lending:

³⁷The improvement of the Swiss franc bond market was also partly due to declining risk premiums worldwide. The bond position was closed during 2010.

(iv) By contrast, policymakers have not yet figured out what instruments are effective for restoring the vitality of bank lending markets once lenders have become severely impaired.

During the 2007–09 crisis, Switzerland saw the sharpest decline in GDP since 1975. However, the drop in 2009 was around 2 percent and Switzerland was one of the first OECD countries to emerge from recession. By the third quarter of 2010, GDP had reached the same level as before the crisis.

What are possible explanations for this good performance? This may be explained by the fact that interbank and mortgage credit flows remained uninterrupted during the crisis. One reason for this is that the real estate market was more or less unaffected by the turmoil. Another reason is the countermeasures taken by the SNB after loan activity slowed. By steering the three-month LIBOR, the SNB offset the rise in risk premiums during the financial crisis and, given the importance of the LIBOR for loan pricing, directly influenced credit conditions. In addition, a series of large-scale measures appear to have supported bank funding and bank lending. Beginning in August 2007, the SNB provided very large amounts of liquidity to the banking sector, and the unprecedented interest rate cuts in autumn 2008 raised the demand for housing and revitalized the mortgage market. The extension of the maturities of repo transactions at very low interest rates also helped stabilize the LIBOR at the intended level.

Another successful measure was the SNB's initiative to promote "Pfandbriefe" (Swiss covered bonds) as collateral for interbank credit, with the aim of resolving a mismatch on the interbank market which threatened to restrict lending by the big banks. While the big banks suffered from the freezing of the interbank market, other banks were overfunded. The procedure allowed the big banks to obtain funds against the pledge of mortgages, which remained on their books. Overall, the SNB's measures to avoid a credit crunch at a time when lenders had become impaired had the intended effect, and have in fact contributed to the rise in lending and an increase in real estate prices to such an extent that these have now become a source of concern, given their link to financial stability.

Thus, the financial crisis has revealed a new and unpleasant asymmetry. When the zero lower bound is binding, the SNB can

make use of both the length of its balance sheet and the composition of its assets. By contrast, when policy tightening is desired, only the interest rate is probably available as an effective instrument. An even more uncomfortable situation arises when some markets are booming but the interest rate cannot be lifted because of exchange rate considerations. In such situations, to be able to act, the SNB needs macroprudential tools, which the new National Bank Act of 2004 disposed of at a time when market instruments were believed to be efficient in all circumstances.

The crisis has also highlighted the importance of a sound financial system for the transmission mechanism of monetary policy. Furthermore, it has exposed the limits of monetary policy in dealing with the problems of banks and shown that price and output stability is no guarantee of financial stability if adequate banking regulation is lacking. This is related to the next of Ben's conclusions, which is of immense importance for the SNB:

- (v) The classical rule for lender-of-last resort policy — rescue illiquid firms but not insolvent ones — is not longer useful. In a financial crisis the distinction between illiquidity and insolvency has become largely non-operational.

As Ben suggests, the Swiss case shows that it is virtually impossible to distinguish between illiquidity and insolvency of banks, and banks may therefore have to be recapitalized even if they are still solvent from a regulatory point of view—in particular, if their financial positions are opaque. An additional problem in Switzerland is the systemic importance of the two largest banks. The financial crisis has made it clear that the “too-big-to-fail” problem must be addressed in order to increase the room for maneuver in a crisis. This issue arose after the failure of Lehman Brothers, when UBS experienced large losses. Since the government could not accept the collapse of a major bank, a special-purpose vehicle was set up to permit an orderly liquidation of the troubled assets held by UBS. The government subsequently appointed a Commission of Experts to propose measures to limit the “too-big-to-fail” risks posed by the largest banks. The Commission's proposal is designed to prevent the state from being forced to bail out a systemically important bank. At the heart of its recommendations lie intensified capital requirements backed up

by new capital instruments (contingent convertible capital instruments, or CoCos), as well as measures to ensure the maintenance of essential services in payment transactions, the deposit business and lending business, in the event of a crisis. These measures are supplemented by liquidity requirements and limits on interconnectedness and cluster risks in the financial sector.³⁸

5. Conclusions

We end where we started. Ben, in his first article, concludes that (Friedman 1971):

The monetary policy decision process should contain two phases — strategy and tactics. The former involves quarterly decisions outlining a plan for monetary policy over the several following quarters. The latter involves shorter-run technical decisions concerning implementing the first quarter of the strategy and deal with the question of how best to adjust for apparent deviations of the monetary policy instruments from their planned targets.

In this paper we have reviewed the strategy and tactics of Swiss monetary policy in the intervening four decades. Some of the developments that we have considered—including the use, throughout this period, of money as one information variable among many, and the decision not to adopt explicit inflation targeting—would presumably have been supported by Ben, while others—such as the adoption of monetary targeting, the maintenance of this regime for a quarter century, and the absence of a dual objective for policy in the 1999 revision of the framework—might not have been favored by him.

Or perhaps they would have been. Ben's many contributions to the analysis of monetary policy are characterized by his recognition of the many constraints—historical and institutional—that central banks operate under. They are also marked by pragmatism, as is

³⁸The requirements apply to the two big banks designated as systemically important, and go further than the requirements of Basel III and the recommendations of the Financial Stability Board. The Commission's proposals are currently being debated in Parliament.

appropriate in a field where it is always difficult to know whether recent theory will endure or whether it might not soon be rejected by further developments. That is surely one reason why Ben's work has been so influential in and outside of central banking circles.

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