CHALLENGES FOR INFLATION TARGETING

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Abstract

This paper raises a very important question for inflation targeting (IT) central banks. Given the multiple objectives, should financial stability be an implicit objective of IT? It is argued that on a theoretical basis, there is no justification to include financial stability in the policy rule of the IT framework. In fact, the objectives of IT should just be inflation control and full employment. However, financial stability must naturally remain an important objective of central banks. Apart from a well-established and coordinated system of regulation and supervision of financial institutions, rigorous prudential policy should be the first line of defence to safeguard financial stability.

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1.   The Background

In a world of flexible exchange rates, modern central banks have been tasked with multiple objectives: *inflation control*, *full employment*, and *financial stability*.   In a recent paper, Davig and Gurkaynak (2015) observe that since the global financial crisis of 2007-08 monetary policy has assumed the brunt of cyclical policymaking, and in so doing has produced social inefficiencies.

In flexible Inflation Targeting (IT) frameworks, the interest rate policy instrument is used to achieve the inflation target and the full employment objective.   In an environment of cost-push shocks, whenever fiscal policy is absolved in not meeting the full employment objective, or if the fiscal authority relies on the central bank's interest rate policy to meet the full employment objective, then the central bank may face a trade-off between the inflation target and full employment goals. The conventional wisdom is that confronting this trade-off remains the optimal policy. Davig and Gurkaynak (2015) disagree, pointing out that there are policy instruments better suited than the interest rate instrument in addressing various inefficiencies. They suggest that welfare losses from inflation are better addressed by the interest rate policy instrument in the IT framework and that the central bank should be tasked with only *inflation control* (strict IT?), leaving *full employment* and *financial stability* to be achieved by the *fiscal policy* and *regulatory authorities*, respectively.   My own thinking is that the IT policy rule should keep the traditional twin objectives of inflation control and full employment, but exclude financial stability.   Whenever there is a trade-off between the goals of price stability and full employment, I think that the objective of price stability should retain primacy in the interest rate setting by the IT central bank.   As for the third goal of financial stability, this is better addressed by macro and micro prudential policies, whether such policies are in the domain of the central bank or in another government agency.

Consider Table 1. Initial economic conditions, policies, and commentaries are summarized in nine cases.   The current situation in most IT countries is covered by cases VII and VIII. The situation in most emerging SEACEN member countries with IT framework is case VII, where inflation is below target and unemployment is above target (less than full employment).   The situation in most advanced countries (USA, Euro, and Japan) may be described by a spectrum from the two cases.   In the USA, although inflation is well below target, the unemployment situation is mixed (low unemployment, but with anemic wage growth and low labor participation rate). The fiscal authority (Congress) is paralyzed and dysfunctional, with necessary measures to achieve full employment (including higher minimum wages) in the back burner.   Thus, the Federal Reserve is felt compelled to take up the slack by not raising the Federal funds rate from the zero-lower bound, owing to incomplete recovery of the labor market.   In the euro area, where unemployment   is much higher, and inflation is well below target, the paralysis of fiscal policy may be explained by the lack of fiscal union a la the American one and the lack of the lender-of-last resort (a la Federal Reserve Bank in the USA) function of the ECB.

From the perspective of the risk management approach to monetary policy, I agree with Evans et al. (2015) that waiting for the labor market data to convincingly show fully satisfactory outcomes (including robust wage growth) is *less costly* than preempting those outcomes in a forward-looking manner and raise the Federal funds rate now before those fully satisfactory labor market data are in.

I reiterate my position in favor of the current IT framework wherein the interest rate is adjusted in response to the deviation of inflation to target and to the output or unemployment gap, with the proviso that in case of a trade-off between the inflation and full employment objective, the inflation objective is primal. In my 2012 CEMLA-SEACEN paper (see footnote on p. 1), I argued that central banks should not broaden the IT policy rule to include a financial stability indicator as target, an issue raised by BSP Governor Amando Tetangco (2010) in a recent BIS paper. Although my position is consistent with Davig and Gurkaynak (2015), I am not prepared to adopt their argument that a central bank should not aim at full employment.

Thus, Davig and Gurkaynak (2015) seem to support only the strict version of IT, wherein the interest rate policy rule should respond only to the deviation of inflation from target. My position is that the flexible IT is appropriate, although many challenges facing it have to be addressed. When it comes to the objective of financial stability, I agree with Laseen, et al. (2015) that macroprudential policy, similar to a countercyclical capital requirement, is a superior policy instrument (in terms of welfare gains) in achieving financial stability. The limited purpose of my 2012 CEMLA-SEACEN paper was to examine the narrower issue raised by Governor Tetangco: whether or not the policy rule in the IT framework should include financial stability as a target variable, additional to the twin variables of deviations of inflation from target and of output from potential. One immediate difficulty in trying to address this issue and submit it to rigorous evaluation is empirical: no central bank has in fact used a policy-rate rule that included a financial stability variable as the third target, except for the Swedish central bank.[2]

Among IT central banks, whether formal or informal (an example of the former is the Bank of Canada and the latter, the U.S. Federal Reserve), those that have weathered the financial crisis have been strong and effective regulators and supervisors (such as the OSFI in Canada[3]) and those that have not, failed in their regulatory/supervisory responsibilities (such as the U.S. institutions).

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[2] "A particularly striking example of a central bank minding many competing objectives is Sweden, where monetary policy was used to counter household leveraging, which required raising interest rates at a time of inflation below target and unemployment above NAIRU (Svensson (2014)). The question is not whether fast leveraging is a policy concern–it may well be—but rather whether it should be a monetary policy concern. To the extent that higher interest rates lower debt to income ratios, which Svensson argues is not the case in Sweden, monetary policy can be used to lower leverage but is a roundabout way that creates steep trade-offs. It may be more efficient to use financial regulation to impose lower loan to value rates, for example. But if such regulation is slow to be enacted, central banks often rise to the occasion and use interest rates, perhaps because they are used to doing cyclical policy and can act fast." (Davig and Gurkaynak, 2015, p. 3).

[3] In Canada, there is only one government agency—the Office of the Superintendent of Financial Institutions (OSFI)—that regulates, examines, and supervises all banking and insurance institutions.

Table 1
Economic Conditions and Policy Matrix

	Case I	Case II	Case III	Case IV	Case V	Case VI	Case VII	Case VIII	Case IX
Economic Conditions	Inflation above target Unemployment above target	Inflation above target Unemployment at target	Inflation above target Unemployment below target	Inflation at target Unemployment above target	Inflation at target Unemployment at target	Inflation at target Unemployment below target	Inflation below target Unemployment above target	Inflation below target Unemployment at target	Inflation below target Unemployment below target
Policies	Raise interest rate, raise government spending, lower taxes	Raise interest rate	Raise interest rate	Raise spending, lower taxes	No need to change policies	Monitoring situation	Raise spending, lower taxes	No need for policy change	Monitoring situation
Comments:	Central bank focuses on raising interest rate to bring inflation to target, while government focuses on stimulative fiscal measures to reduce unemployment to target	Central bank focuses on raising interest rate to bring inflation to target, government focuses on offsetting stimulative fiscal measures to keep unemployment at target	Central bank focuses on raising interest rate to bring inflation to target, and if necessary, government focuses on offsetting stimulative fiscal measures to keep unemployment at target	Central bank forecasts the inflationary impact of stimulative fiscal policies to lower unemployment to target, and adopts offsetting interest rate increase to keep inflation at target		Central bank watches for overheating; if necessary, raise interest rates to keep inflation from rising above target	Central bank watches for overheating; if inflation reaches target and unemployment reaches target, well and good; however, when there's a trade-off, i.e., inflation exceeds target, and unemployment reaches target, central bank is advised to raise interest rates because of the primacy of inflation control. Fiscal policy focuses on keeping unemployment at target.		Central bank watches for overheating; if inflation reaches target, and unemployment rises to target, no interest rate change; however, if inflation exceeds target, even if unemployment is at target, raise interest rates to keep inflation at target. When there is a policy objective trade off, accept unemployment in favor of inflation objective. Fiscal policy is main instrument to keep unemployment from rising beyond target.

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Among IT central banks, whether formal or informal (an example of the former is the Bank of Canada and the latter, the U.S. Federal Reserve), those that have weathered the financial crisis have been strong and effective regulators and supervisors (such as the OSFI in Canada[5]) and those that have not, failed in their regulatory/supervisory responsibilities (such as the U.S. institutions).

The above considerations suggest that while price stability has not guaranteed financial stability, monetary policy and prudential policy, together, have contributed to both price and financial stability. The U.S. and Canadian experiences are examples to support this observation, with opposite results on financial stability.[6]

Since there is virtually no IT central bank with a reaction function that includes house prices, credit growth, or any other financial stability indicator as target variable, to serve as a basis for policy evaluation, there have only been, so far, *theoretical* simulations of calibrated DSGE models to determine whether a broadened policy rule is welfare-enhancing in the sense of minimizing the volatilities of inflation, output, and the chosen financial stability variable.

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[5] In Canada, there is only one government agency—the Office of the Superintendent of Financial Institutions (OSFI)—that regulates, examines, and supervises all banking and insurance institutions.

[6] An example of an emerging market economy with good results is the Philippines. Both price and financial stability were maintained with a flexible IT policy framework, owing to a sustained anchoring of inflationary expectations induced by a transparent and accountable framework, and by a stringent prudential policy system in place before and during the global crisis. Much of the slowdown in economic activity following the global crisis was due to the negative spillover effects of trade and financial linkages with the advanced countries, particularly the U.S. and the euro area. Absent these global linkages, Philippine growth would not have suffered as much because there were no household debt explosions, bank foreclosures, and consequent deleveraging that were associated with lower output and higher unemployment in the advanced countries.

2.   The Debate

The theoretical results are mixed. Kannan et al. (2009) cite Cecchetti et al. (2000), who argue for a role for asset prices in monetary-policy rules, and Bernanke and Gertler (2001), who conclude the opposite (central banks should not react *directly* to asset prices). On balance, in reviewing the literature through 2009, Kannan et al. point to welfare gains in including asset prices in monetary-policy rules.

However, a study by Gelain et a.l (2012) argues that standard DSGE models with fully rational expectations could not account for the large fluctuations in house prices and household debt that were observed leading up to the 2007-2008 crisis.   In motivating their theoretical study, the authors cite Kocherlakota (2009), who pointed to preferences and technology as *un*realistic sources of disturbances in macroeconomic models, observing (rightly) that self-fulfilling beliefs about what others had done in fact led to credit market crunches or asset market bubbles.

Under fully rational expectations, Gelain et al. (2012) show that, while a direct interest rate response to house price growth produces lower volatilities for household debt and consumption, it nonetheless magnifies volatilities for inflation and output. This suggests that the effects of monetary policy critically depend on the nature of agents' expectations. They then construct a DSGE model (henceforth called Gelain model) with mixed rational and adaptive expectations on house prices. Specifically, they assume a fraction (30 percent) of households use simple moving-average forecast rules, i.e., adaptive expectations, and the other fraction (70 percent) use fully-rational expectations. Their hybrid model significantly magnifies the volatility and persistence of house prices and household debt relative to a DSGE model with all households using fully rational expectations. The Gelain model captures the idea that much of the run-up in U.S. house prices and credit during the boom years prior to the 2007-2008 crisis reflected unsophisticated new homebuyers, who employed simple, backward-looking rules about future house prices.

Perhaps the most convincing debater on this issue is a policymaker—former Riksbank Deputy Governor Lars Svensson. In a critique of Woodford (2012), who uses a New Keynesian model[7] to argue for tighter monetary policy and 'leaning against the wind' to reduce the likelihood of a financial crisis, Svensson (2012a) contends that

> *"... the introduction of financial-stability instruments (macroprudential instruments) [into the Woodford model] that have a more direct effect on leverage than the policy rate allows monetary-policy and financial-stability policy to be conducted separately, with monetary policy focusing on the traditional objective of stabilizing inflation and resource allocation and financial-stability policy focusing on the objective of financial stability." (p.1) [brackets mine]*

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[7] Woodford (2012) sets up a New Keynesian model with credit frictions, a variant of the model in Cúrdia and Woodford (2009).

Cyclical capital requirements allow authorities to control leverage directly than indirectly and bluntly by the policy rate through its effects on the output gap.[8]

In a speech (Svensson, 2010) at the Reserve Bank of India's International Research Conference, "Challenges to Central Banking in the Context of Financial Crisis", Deputy Governor Svensson argued that the financial crisis that emanated from the U.S. housing market was not caused by the failure of monetary policy but rather by the failure of macroprudential policy. He concluded that

> *"…flexible inflation targeting, applied in the right way and using all the information about financial factors that is relevant for the forecast ofinflation and resource utilization at any horizon, remains the best-practice monetary policy before, during, and after the financial crisis. But a better theoretical, empirical and operational understanding of the role of financial factors in the transmission mechanism is urgently required and needs much work, work that is already underway in academia and in central banks... . (It might very) well be that financial factors are considered to have a larger role in affecting the transmission mechanism and as indicators of future inflation and resource utilization. If so, central banks would end up responding more to financial indicators, in the sense of adjusting the policy rate and policy-rate path more to a given change in a financial indicator. However, this would not mean that financial factors and indicators have become independent targets besides inflation and resource utilization in the explicit or implicit central-bank loss function. Instead, it would be a matter of responding appropriately to financial indicators in order to achieve the best possible stabilization of inflation around the inflation target and resource utilization around a normal level over time." (pp. 6-7)*

It seems clear, to me at least, that Deputy Governor Svensson holds the view that the best practice before, during, and after the crisis is the standard, flexible IT with inflation and resource utilization as the only arguments in the reaction function.

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[8] Svensson (2012b) identifies the following prudential instruments: variable minimum capital requirements: variable limits on LTV ratio; variable minimum liquidity coverage ratio; and net stable funding ratio in Basel III. Dynamic loan loss provisioning (see Jiminez et al, 2012, on the Spanish experience), limits on net open foreign exchange positions, and stringent loan to income ratios are additional instruments. Of these, the Gelain model (2012) finds that stringent loan to income ratios are most effective in dampening excessive fluctuations in the economy, and that a direct response of policy rates to house price growth or credit growth, while stabilizing some economic variables, increases the volatility of others, particularly, inflation.

3.   My Thoughts

I agree with Governor Tetangco (Tetangco, 2010) and Svensson (Svensson, 2010) that (i) IT remains the best practice now and in the future; (ii) there is room for judgment and discretion of policymakers; and (iii) we should improve our understanding of the macroeconomic effects of financial stability indicators.   From the perspective of the recent financial crisis, policymakers and academicians alike have asked the question: Should policymakers respond directly to financial stability in their interest-rate rule?

To my mind, the critical issue is whether or not the systems of regulation and supervision of financial institutions are strong, effective and well-coordinated enough to minimize the likelihood of crises, or when crises do occur, tough and effective (and nimbly used) enough to resolve the crises with minimal adverse effects on inflation and economic activity.[9]

The existence of moral hazard in an environment of poor financial oversight often leads to financial crises.[10] The normal relationship of interest rate policy and credit growth tends to be severed, even perverse. When there are lapses in regulation and supervision, an increase in interest rates to counter excessive credit growth that threatens financial stability may actually accelerate credit growth in the presence of asymmetric information, moral hazard, and deposit insurance (Stiglitz and Weiss, 1981; Mankiw, 1986; McKinnon, 1988; Villanueva, 2008).   Banks would make risky loans at higher interest rates. McKinnon (1988, p. 407) has aptly described the banks in this situation as beneficiaries of an unfair bet against the government. They keep extraordinary profits without having to pay the full cost of large losses from bad loans. The removal or a significant relaxation of prudential regulations and oversight makes it easier for banks to exploit moral hazard, and may lead to financial collapse, even in a stable macroeconomy (for instance, during the Great Moderation).

How about the behavior of the banks' borrowers? When moral hazard is present and bank supervision is loose, some borrowers tend to increase distress borrowing at higher interest rates in order to roll over maturing debt. Deposit insurance creates expectations among banks and their borrowers that higher interest rates will hold for only a short period, or the government will bail out everyone (Diaz-Alejandro, 1985). The result is a perverse situation in which a sharp increase in interest rates may actually cause credit demand to be inelastic, with an increasing number of bank borrowers unable to service debt obligations and therefore forced to capitalize interest at higher rates.   As this process continues, many bank borrowers exhaust their capacity to borrow and nonperforming loans carried by banks begin to grow rapidly.   Excessive risk-taking, unchecked by weak and uncoordinated government regulation and   supervision, is   undertaken by banks in   the expectation that

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[9] A stringent, coordinated regulatory/supervisory structure would prevent financial institutions from concentrating loans on a specific sector (e.g., housing), or on a few large borrowers, or exploiting moral hazard (Villanueva, 2008). The recently passed Dodd-Frank legislation signed into law by President Barack Obama, when fully and vigorously implemented, is aimed to do just that.

[10] This and the next two paragraphs are extracted from Ch. 1, *Strategies for Financial Reforms*, reprinted in Villanueva (2008). This chapter, co-authored with Abbas Mirakhor, was originally published in1990 by the International Monetary Fund (IMF Staff Papers, Vol. 37, pp. 509-536).

failure poses no problem because the government would bail them out, while success would mean substantial profits to their shareholders.[11]

If prudential policy is stringent and effective (no lapses, even temporarily), an increase in policy rates will have the normal contractionary effect on bank credit. Owing to imperfect information, banks ration credit and will not raise loan rates beyond a certain level. When faced with excess demand for loans, the optimal response for a properly regulated and supervised bank (with adequate provisions for loan losses) is to limit loans and to charge borrowers a less than market-clearing interest rate to maximize expected bank profits, net of defaults. The reason is that raising the interest rate beyond this equilibrium credit-rationing level lowers the bank's overall return by triggering adverse selection and adverse incentive effects.[12]

In an open economy, another reason why banks may not raise loan rates when the policy-rate is increased is the availability of abundant foreign capital carrying lower interest rates (Jain-Chandra and Unsal, 2012).

Dell'Ariccia et al. (2012), in a most recent IMF study of credit booms over the period 1960-2010 in 170 countries, conclude:

> *"First, while monetary policy tightening seems the natural response to rapid credit growth, we find only weak empirical evidence that it contains booms and their fallout on the economy. This may be partly the result of a statistical bias. But there are several 'legitimate' factors that limit the use and effectiveness of monetary policy in dealing with credit booms, especially in small open economies. In contrast, there ismore consistent evidence that macroprudential policy is up to this task, although it is more exposed to circumvention." (p. 27)*

Among the factors that limit the use and effectiveness of monetary policy in dealing with credit booms, these IMF economists observe:

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[11] As documented by Corbo and de Melo (1985), the experiences of Chile, Argentina, and Uruguay during the early 1980s covered a period characterized by rising interest rates in the context of financial liberalization, high inflation, and relaxation of financial supervision over the banking system. Additionally, there was virtually free deposit insurance, explicit or implicit, which distorted financial behavior of banks and firms. The interaction of loose banking supervision and rising inflation intensified moral hazard in the banking system. Rising real interest rates to counter inflationary trends increased uncertainty about future costs of funds; that is, increased variability of interest rates. Banks raised lending rates to higher and riskier levels in the expectation that deposit insurance would (and did) cover unusual losses.

[12] The adverse selection effect is triggered when credit-worthy borrowers are discouraged from borrowing. The adverse incentive effect refers to the situation where there are borrowers that would choose projects with higher default probabilities, because riskier projects carry higher expected returns. There would always be an interest rate for the bank beyond which its expected return declines. Although at this rate, there may be an excess demand for credit, a profit-maximizing bank would generally not raise the interest rate to eliminate it (Stiglitz and Weiss, 1981; similar results are reported by Mankiw, 1986).

"...monetary tightening may fail to stop a boom and instead contribute to the risks associated with credit expansion. For instance, higher cost for loans denominated in domestic currency may encourage borrowers and lenders to substitute them with foreign-currency loans. Alternatively, to make loans more affordable, shorter-term rates, teaser contracts, and interest-only loans may come to dominate new loan originations. This is especially relevant when there are explicit or implicit government guarantees that protect the banking system, or when there are widespread expectations of public bailouts should the currency depreciate sharply." (p.20).

The above observations follow from the presence of imperfect information, moral hazard, and lapses in financial regulation and oversight that I discussed in this paper.[13]

4.   Conclusion

I conclude that a *theoretical* justification for the conjecture that a higher policy rate would have a significant financial stability effect is uncertain, depending on the nature of agents' price expectations. And, as the most recent IMF study (Dell'Ariccia et al., 2012) shows, there is no robust empirical justification for such a conjecture. On this basis, until such time when research on this issue provides a definitive resolution, the policy rule in the IT framework should not include financial stability as target variable.[14] However, financial stability must remain a very important central bank objective. There is an ongoing active research agenda aimed at a better understanding of the effects of financial stability on inflation and output (including on potential output), so that the policy rate can respond

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[13] Consider the following mental experiment. Suppose we broaden the policy rule to include some measure of financial stability (measured by credit growth, real estate price growth, interest rate spread, or any other) as the third target variable. We consider two countries A and B with IT central banks and similar economic and financial structures, employing the broadened reaction function. Country A has an effective and tough regulatory/supervisory structure, while B does not. Both A and B are satisfied with current price stability and resource utilization, but express some concern about financial instability--steady increases in housing price and credit growth. To counter this, A and B are debating whether monetary policy should be tightened by raising the short-term interest rate. Banks in A are mandated to raise capital owing to stringent capital requirements. Either they slow real estate loans or raise additional capital, or both. In this case, there is no need to change interest rates, and reacting directly to potential financial instability is neither necessary nor desirable. In country B, where there are lapses in already weak regulation/supervision, banks exploit the existence of moral hazard, and expect government bailouts. The central bank in B decides to raise the policy rate. Banks react to higher funding costs by raising lending rates. Risk-averse individuals in non-housing sectors are discouraged from borrowing, with adverse impact on non-housing output and employment. Risk takers in the housing sector would snap up additional high-risk, high-return construction and mortgage loans, in the expectation of continued growth in house prices (higher values of the collateral). Banks and borrowers alike continue the housing credit binge, until the bubble bursts. A broadened reaction function results in greater welfare loss—deflation-asset price collapse-recession.

[14] As in the case of excessive movements in the exchange rate (ER), IT central banks dampen ER fluctuations to stabilize output and inflation via foreign exchange intervention. ER is not a separate target in the policy rule. Similarly, IT central banks counter potential financial instability to minimize adverse effects on inflation and output via stringent prudential policy. Financial stability is not a separate target in the policy rule.

appropriately to any changes in financial stability. Tough and effective prudential policy and its nimble use should be the first line of defense against any signs of financial instability, regardless of where the responsibility for such policy resides.[15] However, because prudential policy is open to circumvention and arbitrage, regulators and supervisors have to be vigilant, creative, and nimble in applying prudential policy as well as to coordinate it across national borders.

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[15] Carl E. Walsh, in *The Future of InflationTargeting* (2011), states, "… the first best policy involves establishing an adequate system of financial market regulation." (p. 25).11

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