Economic Effects of Inflation Targeting

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After decades of debate, the case for inflation targeting is well established. This paper focuses on one key ingredient of the argument supporting inflation targeting: the proposition that a credible implementation of inflation targeting will calm and stabilize various financial markets, anchor the price system, and limit inflation as well as its variability and persistence. Other competing views – i.e., (a) that inflation targeting has no impact on financial markets and (b) that inflation targeting leads to asset price bubbles and hence to financial market volatility – are briefly outlined.

These alternative views are presented and briefly contrasted with existing empirical evidence. Some key findings include the following:

•There is little or no evidence that inflation targeting adversely affects financial markets.

•While not unanimous, the weight of the existing empirical evidence appears to support the view that inflation targeting matters and will work to calm and limit the variability of financial markets as well as the persistence of inflation. As the empirical literature suggests, this will likely help to foster healthier economic growth. Although some research findings are consistent with competing hypotheses, this research has a number of problems.

Since there is little evidence that inflation targeting has adverse effects on financial markets or the economy, adopting inflation targeting once price stability is attainted likely will make maintaining price stability easier. As emphasized by others, adopting inflation targeting will help future economic performance in that gains in credibility will be preserved for future Federal Reserve chairmen.

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Some Thoughts about Inflation Targeting

Introduction

The theoretical case for inflation targeting (IT) has been spelled out during the course of the last 15 years in a number of publications, including several JEC studies. The case for IT is a strong one, supported by a number of compelling arguments. According to proponents, adopting IT certainly does make a difference by improving the performance of the economy, the financial system, and the inflation rate. The arguments supporting this approach, however, will not be repeated here; these arguments have been amply described elsewhere. Instead, one component of the arguments supporting the adoption of IT will be reviewed and assessed.

In particular, IT proponents contend that its adoption will help to calm and stabilize financial markets. More precisely, the adoption of credible IT will provide an anchor to the financial system and to financial markets. In so doing, financial markets will stabilize as inflation is driven from the price system. Temporary deviation of inflation will be ignored. This credibly-reduced inflation is associated with less volatile financial markets, smaller risk premiums, and lower inflationary expectations. In this view, then, IT is associated with **more stable** financial markets.

On the other hand, some economists contend that IT is associated with asset price bubbles, and thus, asset price volatility. In particular, as credible IT works to stabilize conventional measured inflation, to reduce risk premiums, and to tame economic fluctuations, economies experience more risk taking and more risky investment. Economies will also experience increased stock price volatility and associated asset price bubbles. According to this view, there is a kind of "moral hazard" of economic policymaking: the more stable/predictable the economic environment, the more risk taking and risky investment take place. Proponents of this view point to several classic episodes in which asset price bubbles followed periods of price stability; e.g., the U.S. during the 1920s as well as more recent episodes in Japan and the U.S. In this view, then, IT is associated with more volatile asset prices and financial markets, the opposite contention of the above, more conventional view.

This paper briefly describes these alternative views, reviews relevant empirical evidence, and attempts to reconcile these seemingly conflicting positions.

An Unconventional View: Inflation Targeting (IT) and Asset Price Volatility

Recently, a few economists have broken rank with the conventional view supporting IT. These economists contend that low inflation environments tend not to be associated with asset price stability. Instead, they argue that IT or low inflation environments tend to be associated with asset price movements and bubbles (or financial fragility) and asset price volatility. Fildaro, for example, states that:

> "…The achievement of a low, stable inflation environment has not simultaneously brought about a more stable asset price environment. The record over the last decade, in fact, has raised the prospect of asset price booms and busts as a permanent feature of the monetary policy landscape." [1]

Similarly, Borio and Lowe (2002) argue that:

> "…financial imbalances can build up in a low inflation environment…while low and stable inflation promotes financial stability, it also increases the likelihood that excess demand pressures show up first in credit aggregates and asset prices, rather than in goods and services prices…We stress that financial imbalances can and do build up in periods of disinflation or in a low inflation environment," [2]

Furthermore, in reviewing the economic environment of the past 30 years or so, Borio and White (2004) maintain that this environment can be characterized as improving in price stability while at the same time experiencing more financial instability. [3]

Some endorsing this alternative view include some economists sympathetic to the Austrian School and several economists affiliated with at the Bank for International Settlements (BIS).[4]

This alternative view embodies some important implications. Notably, proponents of this view contend that price stability or IT causes sharp movements in asset prices; i.e., price stability or IT is associated with asset price bubbles.

According to proponents of this view, IT central banks themselves increasingly (but unwittingly) work to create the environment conducive to the formation of asset price bubbles or instabilities. Specifically, as modern central banks learn to control inflation and tame economic fluctuation, thereby stabilizing economic activity, these economies will experience more risk taking, more innovation, more investment and sometimes stronger advances in productivity. They will experience increased stock market volatility and associated asset price bubbles. Credible IT policies, therefore, stabilize conventionally measured price indices while at the same time create new incentives to take risk.

In this view, there is a kind of "moral hazard" of economic policymaking: the more stable/predictable the economic environment, the more risk taking, investment, and

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[1] Fildaro, Andrew, "Monetary Policy and Asset Price Bubbles: Calibrating the Monetary policy trade-offs," BIS Working Paper No. 155, June (2004), p.

[2] Borio Claudio, and Philip Lowe, "Asset Prices Financial and Monetary Stability: Exploring the Nexis," BIS Working Paper No. 114, (July 2002), Abstract, p.1.

[3] Borio, Claudio and William White, "Whither Monetary and Financial Stability? The Implications of Evolving Policy Regimes," BIS Working Paper No. 147 (February 2004).

[4] These authors, include, for example, Charles Bean, Claudio Borio, Philip Lowe, William White, Andrew Filadro, Andrew Crockett, and others.

innovation take place. In sum, low inflation environments are increasingly associated with financial imbalances and asset price volatility.

The Conventional View: Inflation Targeting Calms and Stabilizes Financial Market Prices

There are several theoretical explanations of how financial markets are affected by the existing monetary regime. In particular, different explanations exist as to how movements in financial market prices are shaped by the adoption of IT and its associated consequent price stabilization. One of the direct benefits of IT, for example, is the calming, stabilizing effect it has on financial market prices and on the market price system itself. In short, IT stabilizes prices and serves as an anchor to the price system.

According to Levin et.al., for example;

> "…under an inflation-targeting regime, expectations about inflation, particularly at longer horizons, should be "anchored" by the target, and thus should be less affected by changes in actual inflation…Having inflation expectations that are well anchored – that is, unresponsive to short-run changes in inflation – is of significant benefit to a country's economy…..Keeping inflation expectations anchored helps to keep inflation itself low and stable." [5]

More specifically, as inflation rates are credibly lowered and as stable prices eventually emerge, inflation and inflationary expectations will have less of a disturbing effect on price movements. Price reactions to both economic policy announcements and economic data releases will be tempered. This reduction in inflation and inflationary expectations will lower the variability of relative and nominal prices. And this reduction of inflation and inflationary expectations will also reduce uncertainty and thereby lower risk spreads.

Furthermore, distorting interactions of inflation with the tax code will gradually be minimized. In short, the operation and working of the price system will be improved as adopting IT will reduce market volatility.

These factors will contribute to calming and stabilizing a number of important markets including the short-term money market, long-term bond market, foreign exchange market, sensitive commodity markets, as well as equity markets.
All of these improvements will work to better enable to function, improve market efficiency, and inevitably to improve economic growth and performance.

[5] Jeremy Piger, "Does Inflation Targeting Make a Difference?", Monetary Trends, Federal Reserve Bank of St. Louis, April 2004, p.1. See also Levin, Andrew T., Natalucci, Fabio M. and Piger, Jeremy M., "The Macroeconomic Effects of Inflation Targeting.". Federal; Reserve Bank of St. Louis Review, July/August 2004, 86 (4).

Indirect Approaches to Stabilize Markets

There are additional indirect, but important ways in which IT can work further to calm and stabilize movements in market prices. More specifically, IT necessarily involves an increase in central bank transparency, which can work to further stabilize markets. [6] The benefits of monetary policy transparency cited in the literature include a reduction in both the level of and variability of inflation as well as output.[7]

IT, after all, involves the announcement of and explicit public identification of policy goals or policy rules. This involves providing more information to the market. Markets work better with more information; more specifically, they absorb new information and use it to form common, concentrated expectations about the future. [8] As markets begin to anticipate policy changes, the initial steps of the monetary transmission mechanism between policy action and economic activity begin to work more efficiently. [9] Policy surprises affecting markets become smaller and fewer in number. Central bank credibility begins to build and to anchor inflationary expectations, thereby helping to stabilize financial markets. As one proponent put it:

> "the strength of inflation targeting, vis-à-vis other monetary regimes lies precisely in how transparency enhances monetary credibility and anchors private expectations."[10]

In short, increased transparency changes behavior so that markets function better and in a more stable, predictable manner that works to stabilize markets.

Empirical Evidence

In sum, alternative views as to the effects IT might have on financial markets suggest that, **the adoption of IT could result in these markets becoming more volatile, less volatile, or unaffected by IT. Existing evidence sheds some light on validity of these alternative views.**

Does IT result in more Volatile Financial Markets?

Hard empirical evidence supporting the view that IT causes financial market volatility appears difficult to muster. Much of the literature sympathetic to this view is

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[6] Transparency has several dimensions. These involve explicit identification of policy objectives, issuing inflation reports, policy announcements, and testimony, i.e., providing much more information to the market. See for example, Seth B. Carpenter, "Transparency and Monetary Policy: What Does the Literature tell policymakers?" Working Paper, Board of Governors of the Federal Reserve System, April 2004. p.1.
[7] See Carpenter, op. cit., p. 1.
[8] See, for example, Gavin, William, "Inflation Targeting," Business Economics, April 2004, pp 30, 36.
[9] See, Charles Freedman, "Panel Discussion: Transparency in the Practice of Monetary Policy," Review, Federal Reserve Bank of St. Louis, July/August, 2002, p.155.
[10] Klaus Schmidt-Hebbel and Matias Tapia, "Statement" (2002), p.11)

not focused directly on such empirical evidence. Rather, it often deals with broader issues of monetary policy and the policy role played by asset price "bubbles". Borio and Lowe, for example, make such a connection:

> "While low and stable inflation promotes financial stability, it also increases the likelihood that excess demand pressures show up first in credit aggregates and asset prices, rather than in goods and services prices. Accordingly, in some situations, a monetary response to credit and asset markets may be appropriate to preserve both financial and monetary stability."[11]

But the argument that price stability or IT itself fosters asset price bubbles, asset price volatility, or financial instability has been neither adequately nor convincingly established. And the case that financial imbalances develop because of stable price environments, has not been demonstrated; it has **not** been shown that price stability causes financial instability. In short, no direct "hard core" or formal statistical or econometric evidence supports this view. Instead, anecdotal compilations of "stylized facts" are used to assess historical episodes in support of the view. Additionally, only a few episodes appear to have the characteristics (low inflation, credit growth, asset price bubbles, etc) consistent with this view. Instead of such evidence, proponents rely on assumptions relating to the credibility of policymakers, investment activity, technological advances, or productivity gains that can serve to constrain the price increases of goods and services. In sum, little **hard empirical evidence** supporting the view that price stability or IT contributes to or causes volatile financial markets exists.

Empirical Evidence: Does IT matter? Is IT unrelated to economic performance or to market volatility?

A number of studies have examined whether the adoption of IT improves economic performance (as measured by movements in inflation, output, and/or interest rates) or affects the volatility of market variables. In short, they have tested to see if IT matters.

Several researchers have addressed this question. Despite a good deal of effort, however, some of their empirical results have been mixed. As a result, this research in turn has raised a number of methodological questions. More specifically, in assessing these questions in recent years, researchers have often used a common methodology. The reason for this is that recently both IT and non-IT countries experienced improvement in economic performance as measured, for example, by inflation or the level of interest rates. Focusing on any one IT country in isolation might lead researchers to falsely conclude that IT caused the improvement. But non-IT countries may have experienced similar affects. Some researchers contend, therefore, that to test for the effects of IT, improvements in IT countries must be made relative to improvements in non-IT countries.

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[11] Borio Claudio and Philip Loew, "Asset Prices, Financial and Monetary Stability: Exploring the Nexis," BIS Working Paper No. 114, July 2002, Abstract.

Examples of research results: Implying IT doesn't matter include the following:

- Ammer and Freeman (1995) surveyed three IT countries, New Zealand, Canada, and the United Kingdom. They found that although each reached its inflation goal, bond yields suggested that long-term inflationary expectations exceeded targets as did short-term measures of inflationary expectations. This suggests that these countries did not attain the credibility necessary to properly anchor other prices and stabilize the price system. Moreover, there is no evidence that announcement of an explicit IT policy would reduce inflationary expectations. [12]

- Johnson (2002) employed data from eleven countries. He adopted a methodology which divided up his sample into inflation targeting and non-inflation targeting countries. His results are mixed. Specifically, he found that while the level of inflationary expectations falls after announcing explicit inflation targets, the variability of expected inflation does not. In describing his results, Johnson contended that "inflation targets allowed a larger disinflation with smaller forecast errors to take place in targeting countries." [13]

- Recent research by Ball and Sheridan (2003) is perhaps the most forceful example of empirical work concluding that IT does <u>not</u> matter. These authors, for example, conclude that:

> "…on average, there is <u>no</u> evidence that inflation targeting improves performance as measured by the behavior of inflation, output, or interest rates.…overall it appears that targeting does not matter. Inflation targeting has no effect on the level of long-term interest rates, contrary to what one would expect if targeting reduces inflation expectations…targeting does not affect the variability of the short-term interest rates controlled by policymakers…we find no evidence that inflation targeting improves a country's economic performance." [14]

In short, some research clearly concludes that IT does <u>not</u> matter.

<u>Some Questions and Critique:</u>

There are, however, a number of fundamental reasons why this research and its conclusions are both questionable and in conflict with the results of other research.

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[12] John Ammer and Richard T. Freeman, "Inflation Targeting in the 1990s. The Experiences of New Zealand, Canada, and the United Kingdom," <u>Journal of Economies and Business</u>, 1995, 47:165-192, pp.165,189.

[13] David R. Johnson, "The Effect of Inflation Targeting on the Behavior of Expected Inflation: Evidence from an 11 country panel," <u>Journal of Monetary Economies</u>, 49 (2002) 1521-1538, p., 1537.

[14] Ball, Laurence and Niamh Sheridan, "Does Inflation Targeting Matter?," Paper presented at NBER Inflation Targeting Conference, January 2003 (March 2003), pp. 2,3,4,29.

For example, many economists question the methodology employed in these studies. The selection and identification of "non-IT countries," for example, is one of these issues. Several economists, analysts, and even Federal Reserve officials have pointed out that a number of key countries, including the U.S., are identified as non IT countries in the studies because they do not have **explicit inflation targets**. But many of these countries consistently pursued an implicit inflation targeting strategy. **So the label may be misleading and inappropriate for several countries**. This misspecification also applies to countries pegging their currencies to a currency whose central bank is following ITs; (i.e., some countries in Europe and Asia). These observations were made by, Gertler, Mankiw, Federal Reserve officials and others.[15] These contentions draw into question the validity of the methodology and results of these empirical studies.

Furthermore, recent IMF research surveys and delineates the many dimensions to and ways of classifying and categorizing IT. This research underscores the large number of variables that can be used to select and define IT. It is a reminder that there may be no easy, simple way of neatly identifying an IT central bank.

Because of the multi-dimensional character of IT regimes, it is difficult to clearly and neatly dichotomize existing central banks into IT and non-IT categories. Definitions of IT, for example, should be adjusted to reflect the realities of "flexible" IT. The clean dichotomization maintained by theoretical researchers may not be nearly as clean as suggested by the authors. Consequently, the empirical results may not be as clean as suggested by some of the results of these papers.

Additionally, several statistical or econometric issues and critiques were identified in much of this literature. In his comments on Ball and Sheridan, for example, Gertler notes that "existing evidence in favor of inflation targeting is open to identification problems."[16] Ball and Sheridan themselves assert that their empirical results are often not strictly comparable to the results of other studies because of unusual techniques that were employed. [17]

Empirical Evidence: IT is related to macroeconomic performance and to financial market volatility: IT does make a difference.

Despite the widespread practical support accorded IT in recent years, not much hard empirical support was found favoring IT in early, initial research.[18] As time passed and more historical data has come to the fore, however, researchers have

[15] See Gertler, Mark, "Comments on Ball and Sheridan," Prepared for the NBER Conference on Inflation Targeting, January 2003. (June 2003), pp 1,3-5; Mankiw N. Gregory, (2001), "U.S. Monetary Policy During the 1990s. NBER Working Paper No. 8471, Cambridge, Mass Sept 2003; and Marvin Goodfriend, "Inflation Targeting in the United States?," (2003) Paper prepared for the NBER Conference on Inflation Targeting, January 2003.
[16] Gertler, Mark, "Comments on Ball and Sheridan," June 2003, Paper prepared for the NBER Conference on Inflation Targeting, January 2003, p.1.
[17] Ball and Sheridan, op. cit., p.28. (The unusual technique was regression to the mean.)
[18] See Neumann and Von Hagen, p.127.

uncovered a number of important empirical regularities tending to support IT. Some of the evidence comes from single-country case studies suggesting that IT tends to stabilize markets. Other evidence is cross-section support. For example, a number of recent empirical studies examined the relationship between IT and macroeconomic performance as well as between IT and financial market behavior: i.e., these studies attempted to assess whether IT matters. While mixed, the bulk of the new evidence indicates that IT matters; IT has a positive significant impact on economic and financial market performance.

The following "bullet points" supply an abbreviated summary of the recent key empirical studies relevant to this topic:

- In a (1996) report to the FOMC, David Stockton surveyed existing literature related to price objectives for monetary policy. [19] In that survey, Stockton identified several well-known established empirical relationships pertinent to this topic. They included the following:

    - Both cross-country and time-series evidence supports the notion that inflation reduces the growth of real output (or productivity).
    - Inflation is positively related to the variability of relative prices.
    - Inflation is positively related to inflation uncertainty.
    - In general, relative price variability and inflation uncertainty adversely affect real output.

- In his recent book Inflation Targeting (2003), Truman summarizes the principal conclusions of the empirical literature on inflation targeting.[20] In particular, IT generally:

    - Has had a favorable effect on inflation, inflation variability, inflation expectations, and the persistence of inflation.
    - Has not had a negative effect on economic growth, the variability of growth, or unemployment.
    - Has had mixed effects on both the level and variability of real, nominal, short-term, and long-term interest rates.
    - Has had positive effects on exchange rate stability.
    - Has affected the reaction functions of the central banks that have adopted the framework.[21]

- For the most part, economists have established empirically a negative relationship between inflation uncertainty and real economic activity. Elder (2004), for example, relates that:

[19] David J. Stockton, "The Price Objective for Monetary Policy: An Outline of the Issues," A Report to the FOMC Board of Governors, June 1996.
[20] Edwin M. Truman, Inflation Targeting in the World Economy, Institute for International Economics, Washington, D.C. October 2003, p 72.
[21] Ibid. p 72. (The points outlined were taken from Truman, p. 72.)

"Our main empirical result is that uncertainty about inflation has significantly reduced real economic activity over the post-1982 period… Our findings suggest that …macroeconomic policies that reduce volatility in the inflation process are likely to contribute to greater overall growth."[22]

- In a early study, Ammer and Freeman (AF) (1995) examined three IT countries. This study provided mixed results for IT. On the one hand, inflation did not exceed the targets and this result occurred without sharp increases in short-term rates. These researchers found that "inflation fell by more than was predicted by the models in the early 1990s, an indication of the effect of the new regime."[23] However, "longer term interest rates suggest that none of these countries rapidly achieved complete long-term credibility for their announced long-run inflation intentions." [24]

- Some of the earlier (pre-2000) literature was summarized by Neuman and von Hagen (NvH) and included the following observations:

  - Some authors find that "IT might …serve to lock in gains from disinflation rather than to facilitate disinflation." [25] After introducing IT, inflation and interest rates remained below values predicted by existing models.
  - Other authors found that the "volatility of official central bank interest rates…declined substantially after the introduction of IT."[26]

- Neumann and von Hagen (NvH) (2002) reviewed earlier studies of inflation targeting episodes. They presented "evidence on the performance of IT central banks." [27] In particular, NvH showed that "… IT has reduced short-term variability in central bank interest rates and in headline inflation…"[28] (The NvH paper) "suggests that IT has indeed changed central bank behavior…" (NvH) "looked at different types of evidence in order to validate" (the claim that inflation targeting) "is a superior concept for monetary policy." "Taken together, the evidence confirms that IT matters. Adopting this policy has permitted IT countries to reduce inflation to low levels and to curb the volatility of inflation and interest rates…." .[29] In discussing this paper,

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[22] John Elder, "Another Perspective on the Effects of Inflation Uncertainty"
[23] Neumann and von Hagen, op.cit., p.128.
[24] John Ammer and Richard T. Freeman, "Inflation Targeting in the 1990s: The Experiences of New Zealand, Canada, and the United Kingdon," Journal of Economics and Business, 1995; 47: 165-192, p. 189.
[25] Neumann and von Hagen, op.cit., p.128.
[26] Ibid., p.129.
[27] Manfred J.M. Neumann and Jurgen Von Hagen, "Does Inflation Targeting Matter?", Federal Reserve Bank of St. Louis, Review, July/August 2002, p. 130.
[28] Ibid, p.127.
[29] Ibid, pp. 128, 144 (parenthesis added)

Mishkin reminds us that NvH "produce several pieces of evidence quite favorable to inflation targeting."[30]

- Johnson (2002) shows that inflation "targets reduced the level of expected inflation in targeting countries"[31] … "The evidence is very strong that the period after the announcement of inflation targets is associated with a large reduction in the level of expected inflation…that (significant) reduction took place in all 5 countries with inflation targets. This is an important success of inflation targets."… "inflation targets allowed a larger disinflation with smaller forecast errors to take place in targeting countries." [32] In sum, inflation targeting presumably favorably affected the bond and other markets by influencing inflationary expectations and reducing uncertainty premiums.

- Levin, Natalucci and Piger (LNP) (2004) find "evidence that IT plays a significant role in anchoring long-term inflationary expectations and in reducing the…persistence of inflation" [33] The evidence suggests that IT practitioners can more readily delink their inflationary expectations from realized inflation.[34] In short, IT plays a significant role in anchoring long-term inflation expectations and long-term interest rates themselves.. [35]

    - LNP find that "inflation targeting affects the public's expectations about inflation"… "under an inflation targeting regime, expectations about inflation, particularly at longer horizons, should be 'anchored' by the target, and thus should be less affected by changes in actual inflation." "Keeping inflation expectations anchored helps to keep inflation itself low and stable."[36]
    - In commenting on this paper, Uhlig (2004)… "concludes that these figures seem to suggest that an environment of low and stable inflation helps to reduce output volatility and support economic activity."[37]

- Recent empirical research at the Federal Reserve by Gurkaynak, Sack and Swanson (GSS) (2003) shows that the Fed could boost the economy by being more transparent about its long-term inflation objectives. [38] GSS "show that

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[30] Frederick Mishkin, "Commentary," FRB St. Louis Review, July/August, 2002, p.144.
[31] David R. Johnson, "The Effect of Inflation Targeting on the Behavior of Expected Inflation: Evidence from an 11 country panel"
[32] Journal of Monetary Economics 49 (202), p. 1522. ibid, pp/1537. (parenthesis added).
[33] Andrew T. Levin, Fabio M. Natalucci, and Jeremy M. Pager, "The Macroeconomic Effects of Inflation Targeting," Federal Reserve Bank of St. Louis, Jan. 23, 2004. Abstract.
[34] Op.cit., Abstract
[35] Op. cit., p.2
[36] Jeremy Piger, "Does Inflation Targeting Make a Difference?" Monetary Trends, April, 2004
[37] Jeremy M. Piger and Daniel L. Thornton, "Editor's Introduction," Federal Reserve of St. Louis Review, July/August 2004, Volume 86, Number 4, p.5.
[38] See Refet S. Gurkaynak, Brian Sack, and Eric Swanson, "The Excess Sensitivity of Long-Term Interest Rates, Evidence and Implications for Macroeconomic Models," Finance and Economic Discussion Series, Federal Reserve Board, November 17, 2003; William Gavin, "Inflation Targeting, Why It Works and How to Make it Work Better," Business Economics, Vol XXXIX April, 2004, p. 32.

the long-term interest rates (of non-IT countries) react excessively to macroeconomic data releases and to news about monetary policy. This over-reaction is caused by changes in the market's long-term inflation expectations." [39]

IT, however, works to anchor (or prevent excess volatility in) long-term market's. Consequently, in IT countries (like the UK), markets do not overreact or display over-sensitivity. The empirical results of the paper suggest "that the central bank can help stabilize long-term forward rates and inflation expectations by credibly committing to an explicit inflation target."[40] Commitment to an explicit target will help stabilize both long rates and inflation expectations.

- Other research conducted at the Federal Reserve also relates to this evidence. Carpenter (2004), for example, surveyed empirical studies of transparency. [41] The summarized results are mixed, but suggest there is evidence of a relationship between IT and both transparency and lower inflation. Moreover, it is emphasized by several authors that there is no evidence that IT causes any harm. Swanson (2004) showed that increased central bank transparency acts to reduce financial market surprises and uncertainties. This suggests that IT – which is tantamount to increased transparency of policy goals – may aid in reducing financial market volatility and stabilizing financial markets. [42]

- Several studies establish that additional central bank transparency in the form of announced inflation target, works to lower inflation and stabilizes output. Recently Fatas, Mihov, and Rose (FMR), for example, found "that both having and hitting quantitative targets (like IT) for monetary policy is systematically and robustly associated with lower inflation…Successfully achieving a quantitative monetary goal (like ITs) is also associated with less volatile output." [43] These authors find that "… countries with transparent targets for monetary policy achieve lower inflation." [44] They found "that having a quantitative de jure target for the monetary authority tends to lower inflation and smooth business cycles; hitting that target de facto has further positive effects. These effects are economically large, typically statistically significant and reasonably insensitive to perturbations in (their) econometric methodology."[45]

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[39] See Gavin, op cit, pp. 32, 36 (parenthesis added)
[40] GSS, op.cit. p.28.
[41] Seth Carpenter, "Transparency and Monetary Policy: What Does the Academic Literature Tell Policymakers?, "Working Paper, Board of Governors of the Federal Reserve System, April 2004, pp 11-13.
[42] Eric T. Swanson, "Federal Reserve Transparency and Financial Market Forecasts of Short-Term Interest Rates," Working Paper, Board of Governors of the Federal Reserve System, February 9, 2004.
[43] Antonio Fatas, Ilian Mihov, and Andrew K. Rose, "Quantitative Goals for Monetary Policy," NBER Working Paper No. W 10846, October 2004, Abstract (parenthesis added.)
[44] Ibid, p.1
[45] Ibid. p.21. (parenthesis added)

- Siklos (2004) found that "inflation-targeting countries have been able to reduce the nominal interest rate to a greater extent than have non-inflation targeting countries….It is also found that central banks with the clearest policy objectives have a relatively lower nominal interest rates." [46]

This abbreviated review of some of the recent literature suggests that overall, there is a good deal of evidence supporting the case for IT. This review suggests that inflation targeting does matter. More specifically, credible commitment to an explicit IT likely will work to help lower and stabilize the level and variability of inflation. This result occurs in part because of the reduction and stabilization of inflationary expectations. Hence, it will likely lower both the level and variability of the long bond rate. IT will anchor the price system and help to stabilize short-term interest rates, long-term interest rates, the foreign exchange and stock markets. Some research suggests IT also helps to dampen the business cycle and stabilize movements in output. Additionally there is a body of evidence indicating that transparency helps to stabilize markets and fosters central bank credibility.

Summary and Conclusions

After decades of debate, the case for inflation targeting is well established. This paper focuses on one key ingredient of the argument supporting inflation targeting. Namely, it examines the proposition that a credible implementation of inflation targeting will calm and stabilize various financial markets, anchor the price system, and limit inflation as well as its variability and persistence. Other competing views – i.e., (a) that inflation targeting has no impact on financial markets and (b) that Inflation Targeting leads to asset price bubbles and hence to financial market volatility – are briefly outlined.

These alternative views are presented and briefly contrasted with existing empirical evidence. Some key findings include the following:

- There is little or no evidence that inflation targeting has adverse effects on financial markets.

- Research finding that inflation targeting does not matter has problems, in part related to the selection and definition of inflation targeting countries.

- The weight of the existing empirical evidence appears to support the case for inflation targeting; i.e. overall, it supports the view that inflation targeting matters and will work
  to calm and limit the variability of financial markets as well as the persistence of inflation. It will serve to anchor the price system. As the empirical literature suggests, this will likely foster healthier economic growth.

[46] Pierre L. Siklos, "Central Bank Behavior, The Institutional Framework, and Policy Regimes: Inflation Versus Non-Inflation Targeting Countries," Contemporary Economic Policy, vol 22, no. 3, July 2004, 331-343, pp 331, 332.

There is little evidence that inflation targeting has adverse effects on or hurts financial markets or the economy. [47] Accordingly, adopting inflation targeting once price stability is attained likely will make it easier to maintain. [48] As emphasized by Gertler, "the case made for adopting formal targets in the U.S. is not that this system would have improved past performance, but rather that it would help future performance by preserving gains in credibility for Greenspan's successor."[49]

[47] Ball and Sheridan, op.cit., p. 29.
[48] See Anthony M. Santomero, "Monetary Policy and Inflation Targeting in the United States," Business Review, Federal Reserve Bank of Philadelphia, Fourth Quarter 2004, p.1.
[49] Mark Gertler, "Comments on Ball and Sheridan." A Paper presented to the NBER conference on Inflation Targeting, January 2003, p.5. The point was also made by Ball and Sheridan, op. cit., p. 30