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JOINT ECONOMIC COMMITTEE

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LETTER OF TRANSMITTAL

December 6, 2000

To the Members of the Joint Economic Committee:

Transmitted hereby is a *Compendium of Staff Studies of Current Issues in Monetary Policy.* It is comprised of four Joint Economic Committee studies written by Robert E. Keleher, Chief Macroeconomist to the Vice Chairman.

The views expressed in this compendium are those of the author and do not necessarily represent the views of the individual Members of the Joint Economic Committee.

Sincerely,

Jim Saxton,
Vice Chairman.

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TRANSPARENCY AND U.S. DOLLAR POLICY

INTRODUCTION

This paper makes the case for a more transparent Treasury Department foreign exchange (dollar) policy. More transparent dollar policy would complement a growing consensus on the desirability for transparency in the conduct of governmental policies in general, and (international) monetary policy in particular. Convincing cases for more transparency on the part of Federal Reserve monetary policy and in IMF operations have already been made.[1]

More transparency in Treasury Department dollar policy dealings is long overdue for a number of reasons:

- It has long been recognized that Treasury dollar policy is overly secretive and non-transparent from a wide variety of perspectives.[2] Some of the rationale for secrecy in foreign exchange dealings is no longer relevant.

- There are a number of important economic benefits to improved transparency in dollar policy.

- With ever-increasing global integration and capital mobility, dollar movements become more important as a factor impacting the open macroeconomy. The foreign exchange rate has become one of the key channels in the transmission of monetary policy and therefore is increasingly integral to the transparency of overall monetary policy.

- The *1993 Government Performance and Results Act* mandates that agencies of the government clarify their objectives and explain their operations. The Treasury Department is subject to the letter and spirit of this law.

- Improved transparency complements congressional oversight. Congressional oversight of dollar policy could be enhanced with more transparent Treasury Department foreign exchange operations. Since Congress delegated authority for dollar policy to the Treasury Department, and because taxpayer funds are

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[1] See, for example, Robert Keleher, "Transparency and Federal Reserve Monetary Policy," Joint Economic Committee, November 1997, and Christopher Frenze and Robert Keleher, "IMF Financing: A Review of the Issues," Joint Economic Committee, March 1998.

[2] See, for example, Anna J. Schwartz, "From Obscurity to Notoriety: A Biography of the Exchange Stabilization Fund," *Journal of Money Credit and Banking*, Volume 29, Number 2, May 1997, pp.135-153. Even Treasury officials themselves have recognized this secrecy. See the testimony of David Mulford, "Review of Treasury Department's Conduct of International Financial Policy," Hearing before the Committee on Banking, Finance and Urban Affairs, U.S. House of Representatives, One Hundred First Congress, Second Session, August 14, 1990, p.62.

involved, Congress has a responsibility and duty to monitor such activity. Improved transparency would help in this effort to promote more accountability.

After delineating both the meaning and importance of transparency, this paper examines various aspects of Treasury international financial or dollar policy from the perspective of transparency. The case is made that there is a good deal of room for more transparent dollar policy. A number of recommendations are made to improve the transparency of such policy.

MEANING OF TRANSPARENCY

Transparency is defined in dictionaries as "easily seen through or detected; obvious, candid or open, clear; free from guile." Transparent dollar policy, therefore, is characterized by a lack of secrecy, obfuscation, or ambiguity, and should be clear, simple, and understandable to those outside the policy process including both ordinary citizens as well as legislators responsible for policy oversight.

The transparency of dollar policy, however, has multiple dimensions. Transparency is relevant for clarifying policy goals as well as identifying policy procedures undertaken to achieve stated goals. Goal clarification can be a most important component of transparent dollar policy since such clarification itself can help to ferret out or identify those procedures best suited to achieve given objectives.

Clear reporting is another important aspect of transparency that also takes on different dimensions. Prompt "real-time" reporting provides visibility of policy action at the time such policy occurs. "Ex ante" transparency occurs when policymakers announce ahead of time what action will be taken under given circumstances (i.e., policy rules are established). "Ex post" transparency explains afterward what policymakers have done.[3]

In short, prompt disclosure of policy objectives, rules, procedures and rationale used in implementing policy, as well as any progress in achieving stated objectives are all important elements of an open dollar policy. Transparent dollar policy, therefore, necessarily involves not only the clarification of dollar objectives, but also the timely and more complete disclosure of policy decisions and their underlying rationale.

NON-TRANSPARENT TREASURY DOLLAR POLICY

The dollar policy of the U.S. Treasury Department violates the above-described transparency guidelines or parameters in a variety of ways. A number of questions, uncertainties, or ambiguities remain in most areas of the Treasury's foreign exchange policy. Problems of non-transparency, for example, characterize the following aspects of dollar policy:

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[3] See Charles Enoch, "Transparency in Central Bank Operations in the Foreign Exchange Market," Paper on Policy Analysis and Assessment of the International Monetary Fund, PPAA/98/2 March 1998, p.2.

- ***Ambiguous Policy Objectives.*** One fundamentally important aspect of any transparent policy is an unambiguous, clear, and understandable statement of policy objectives. Yet Treasury's dollar policy objectives remain ambiguous, unclear, and confused, as pointed out by Bordo and Schwartz:

> The principles that guide central bank governors and finance ministers in their choice of exchange rates to support have never been explained.[4]

There are a number of reasons for this ambiguity. For example, over the years there have been significant differences of opinion as to the proper objectives of foreign exchange policy. At times, some Treasury officials have suggested that dollar policy should have trade or current account balance objectives as guidelines to policy. At other times, goals related to economic growth or inflation have found support. A most important barrier to goal transparency has been the propensity to frame foreign exchange policy goals as if they were fully independent of monetary policy. More specifically, given (revealed) preferences for both capital mobility and domestic goals for Federal Reserve monetary policy, the "trilemma" choice facing the U.S. necessarily implies that Treasury Department-influenced exchange rate objectives be subordinate to capital mobility and Federal Reserve objectives such as price stability.[5] Despite this stark reality, such a proper hierarchy of policy objectives involving both Treasury and the Federal Reserve has never been explicitly delineated since the demise of Bretton Woods. A reluctance to clarify these objectives is understandable. In part, it stems from Congress' delegation of separate foreign exchange and monetary policy powers to two distinct, powerful, and turf-conscious organizations, each with differing agendas. The reluctance also stems from the widely held expectation that reform of the international monetary system was inevitable so that any formal policy structure under one regime would have to be disassembled and constructed anew under an alternative regime.

Accordingly, Treasury officials currently go through the motion of voicing a dollar policy as if it were independent of monetary policy. Since dollar policy cannot be independent in this way, such non-transparent posturing results in unnecessary uncertainty, confusion, and market volatility.

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[4] Michael Bordo and Anna J. Schwartz, "What Has Foreign Exchange Market Intervention Since the Plaza Agreement Accomplished?", NBER Working Paper No. 3562, December 1990, p.21.

[5] The limitations that capital mobility impose on monetary policy and exchange rate management are sometimes summarized in the concept of an "inconsistent trinity" or "open-economy trilemma." As Obstfeld explains: "...a country cannot simultaneously maintain fixed exchange rates and an open capital market while pursuing a monetary policy oriented toward domestic goals. Governments may choose only two of the above. If monetary policy is geared toward domestic considerations, either capital mobility or the exchange rate target must go. If fixed exchange rates and integration into the global capital market are the primary desiderata, monetary policy must be subjected to those ends... (In practice), the greater the attention given to the exchange rate, the more constrained monetary policy is in pursuing other objectives." Maurice Obstfeld, "The Global Capital Market: Benefactor of Menace?", Journal of Economic Perspectives, volume 12, Number 4, Fall 1998, pp.14-15.

- ***Non-Transparent Treasury Foreign Exchange Intervention Policy.*** Another non-transparent dimension of Treasury dollar policy relates to foreign exchange intervention procedures or conventions of the Exchange Stabilization Fund (ESF).[6] These foreign exchange operations are non-transparent in a number of ways.

"Appropriate" intervention has not been defined.

"Appropriate" intervention, for example, has never been defined or consistently pursued during the post-1973 floating rate regime. As Broaddus and Goodfriend have argued:

> Officially, the objective of foreign exchange rate operations is to counter "disorderly market conditions," but that phrase has never been defined operationally.[7]

Because objectives have not been defined operationally, it is understandable that intervention has been inconsistently implemented and non-transparent. Nonetheless, this inconsistent intervention results in unnecessary confusion and heightens uncertainties as to when, why, or under what conditions intervention will take place.

Intervention is often secret.

Further, foreign exchange intervention itself is often secret and is sometimes referred to as "unannounced," "stealth," or "discreet" intervention. These operations are not publicly announced so traders can only guess at the size of an official action.[8] This type of intervention is non-transparent by definition. While there may be peculiar situations when secrecy may be called for, such non-transparent activity nonetheless also creates uncertainties and confusion, therefore promoting market volatility.[9,10]

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[6] The Treasury Department has authority for, and normally takes the lead on, deciding when to intervene in the foreign exchange market. While the Federal Reserve participates equally on a financial basis and implements (as an agent) Treasury Department decisions, this paper assumes that ultimate responsibility for decisions relating to foreign exchange operations rests with the Treasury.

[7] J. Alfred Broaddus Jr., and Marvin Goodfriend, "Foreign Exchange Operations and the Federal Reserve," Federal Reserve Bank of Richmond Annual Report 1995, p.12.

[8] Most intervention operations are anonymous. More specifically, as explained in Dominguez and Frankel, "There is no central trading floor and brokers are not obliged to reveal the identity of counterparties." See Kathryn M. Dominguez and Jeffrey A. Frankel, *Does Foreign Exchange Intervention Work?* Institute for International Economies, Washington, D.C., September 1993, p.60.

[9] For an enumeration of the rationale for such secrecy, see Dominguez and Frankel, pp.60-62.

[10] Dominguez showed that secret intervention by both the Federal Reserve and the Bundesbank generally increased exchange rate volatility in the 1980s. See *ibid.*, p.108 and references cited therein.

Intervention is sterilized.

Additionally, U.S. foreign exchange intervention is routinely sterilized by the Federal Reserve. This means, for example, that any money-expanding purchases of foreign exchange is offset ("sterilized") by an equivalent amount of money-contracting (dollar-denominated) security sales so that no net change in reserves, money, or short-term interest rates occurs. Thus, policy fundamentals do not change. Since sterilized intervention does not change fundamentals or the stance of policy, professional economists for the most part believe that sterilized intervention has little lasting effect on foreign exchange markets. A good deal of empirical research supports this position. In other words, sterilized intervention is not the separate policy tool that many purport it to be.

From the perspective of policy openness, therefore, sterilized intervention is certainly not transparent since it promotes the erroneous impression that intervention is an independent policy tool. It appears to identify a goal for policy that policymakers cannot genuinely achieve, thereby misleading the public. This misleading perception promotes further confusion, unnecessary uncertainties, and associated market volatility. It also can undermine the credibility of policymakers.[11]

Any "Signaling Channel" Depends on Non-Transparency.

Recent research in this area suggests that sterilized intervention may work to impact exchange rates through a "signaling" channel. This mechanism works when policymakers convey information about their future policy intentions by intervening in the foreign exchange market.

According to Dominguez and Frankel:

> Through the signaling channel, sterilized intervention can have an effect on exchange rates if it provides the market with relevant information, not known or not fully incorporated in determining the current exchange rate. This channel... relies on the existence of a difference between what is known by the (policy) authority and what is known by market participants.[12]

In short, for this mechanism to work, intervention authorities are assumed to have more (inside) information about future policy moves than the market; they have information that they have withheld from the market. This information about future policy moves is conveyed to the market via foreign exchange intervention. Such

[11] As Broaddus and Goodfriend put it, the spectacle of "failed (sterilized) foreign exchange operations are costly because they give the impression that the authorities are either unable or unwilling to achieve a prominent objective that they appear to be pursuing... Widely publicized policy failures undermine (policymakers) credibility." Broaddus and Goodfriend, *ibid.*, p.17 (parentheses added).

[12] See Dominguez and Frankel, *op. cit*, p.59 (parentheses added).

signaling, then, depends on secrecy or non-transparency on the part of the policy authority. But, as Bordo and Schwartz contend, intervention authorities "need not engage in such a devious way of informing the public of its objectives and the policies it favors to achieve them."[13] This signaling view also means that sterilized intervention is not an independent tool to control foreign exchange rates; it needs the supporting change in policy to be effective.

Non-transparency of Intervention is Revealed in Reporting Discrepancies.

The secrecy or non-transparency of U.S. intervention policy is also revealed in research that documents a significant, systematic difference between actual intervention activity and market-reported intervention activity. This difference -- which is corroborated in a number of research studies -- demonstrates that official reporting of intervention activity is non-transparent: i.e., the market is not receiving all pertinent information about intervention at the time it occurs.[14] In short, this divergence of reported versus actual intervention activity is prima facie evidence of non-transparent intervention policy. It relates not only to reporting delays and secrecy of intervention, but to the vagueness, the poor quality and substance of disclosure that often occurs.

G7 (coordinated) Intervention Activity is also Non-transparent.

Not only is U.S. foreign exchange intervention itself non-transparent, but U.S. participation in G7 or coordinated intervention activity suffers from non-transparency as well. G7 meetings are normally surrounded by an enormous amount of publicity and fanfare that serves to "heighten uncertainty whether the Federal Reserve will support sterilized operations with monetary policy action."[15] Since G7 meetings are dominated by finance ministers, however, discussions tend to be conducted as if foreign exchange intervention policy is independent of monetary policy. G7 discussions are routinely secret and G7 decisions are often informal and vague. G7 communiqués are well-known for their lack of clarity, ambiguity, and obfuscatory language: i.e., these communiqués are not transparent. All of this exacerbates confusion and uncertainty and raises further questions about the objectives of intervention policy.

- ***Ambiguous Treasury and Federal Reserve Dollar Relations.*** In addition to ambiguous policy objectives and non-transparent intervention practices, institutional relations between the Treasury and the Federal Reserve regarding foreign exchange responsibilities are unclear and contradictory in a number of ways. In short, these

[13] See Bordo and Schwartz, *op. cit*, p.21.

[14] See, for example, William P. Osterberg and Rebecca Wetmore Humes, "The Inaccuracy of Newspaper Reports of U.S. Foreign Exchange Intervention," Economic Review, Federal Reserve Bank of Cleveland, Vol. 29, No. 4, 1993, pp.25-33; and William P. Osterberg and Rebecca Wetmore Humes, "More on the Differences Between Reported and Actual U.S. Central Bank Foreign Exchange Rate Intervention," Federal Reserve Bank of Cleveland," Working Paper 9501, May 1995 and citations therein.

[15] See Broaddus and Goodfriend, *op. cit.*, p.12.

relations are not transparent. This raises a number of questions about a subordinate role of Federal Reserve intervention activity as well as the obscure, non-transparent (and legally questionable) way in which Treasury foreign exchange operations can be financed.

The Division of Responsibility is Unclear and Ambiguous.

As Destler and Henning indicate, the "ambiguous statutory treatment of the prerogatives and responsibilities (of the Treasury and the Federal Reserve) in exchange rate management"[16] has provided wide latitude in interpreting the practical responsibilities of these two agencies. These authors go on to argue that:

> the law defines the exchange rate authorities of the Treasury and the Federal Reserve only ambiguously... the legal basis of the division of responsibility between the Treasury and the Federal Reserve with respect to exchange rates is unusually obscure.[17]

For example, both agencies have authority to intervene in the foreign exchange market but the law is ambiguous as to whether either can block intervention by the other. In effect, the institutions have shared responsibilities worked out after years of negotiation, compromise, and practice. Both agencies generally have found it in their self-interest to cooperate. But the Treasury maintains it is the first among equals in regard to intervention and the Federal Reserve has not challenged this view.[18] Nonetheless, the division of responsibilities is characterized by a sizable degree of non-transparency.

Warehousing and SDR Monetization are not Transparent Financing Methods.

Ambiguous intervention responsibilities are not the only non-transparent element of Treasury-Federal Reserve relations. Questionable, backdoor methods of financing the Treasury's Exchange Stabilization Fund (ESF) involving the Federal Reserve also merit attention. In particular, "warehousing" is a financing method that enables the Federal Reserve to make funds available to the Treasury's ESF without congressional appropriation.[19] Many analysts view this circumvention of congressional appropriation as questionable (perhaps even illegal) and possibly working to compromise the

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[16] I.M. Destler and C. Randall Henning, Dollar Politics: Exchange Rate Policymaking in the United States, Institute for International Economics, Washington DC, 1989, (emphasis and parenthesis added).

[17] Destler and Henning, *ibid.*, p.85 (emphasis added).

[18] *Ibid.*, pp.86-88. See Destler and Henning (pp.83-90) for a discussion on this ambiguous Treasury-Federal Reserve relationship.

[19] "Warehousing" is a transaction whereby the Federal Reserve lends dollars to the ESF in exchange for the ESF's foreign currency. By "warehousing" its foreign currency at the Federal Reserve, Treasury can obtain more dollars with which to intervene on its own account.

independence of the Federal Reserve. Similar arguments apply to Federal Reserve monetization of ESF's SDR holdings, an operation that is initiated at the option of the Treasury Secretary.[20]

Criticism and skepticism concerning these methods have come from numerous sources. Several analysts contend that these methods circumvent the budgetary prerogatives of the Congress, misuse Federal Reserve off-budget status, and compromise the independence of the Federal Reserve.[21] But the skepticism has reached within the Federal Reserve System itself. One Federal Reserve Bank President, for example, argued that:

> Fed financing of foreign exchange operations... by warehousing funds for the ESF sidesteps congressional authorization and obscures the funding.[22]

Further, at an FOMC meeting in March 1990, several FOMC members challenged the legality of these methods:

> Governors Angell and John LeWare and Cleveland Federal Reserve Bank President Lee Hoskins not only voted against the warehousing and foreign currency authorizations, but they openly challenged the legal basis for these facilities... In the public FOMC record, they stated that warehousing "could be viewed as avoiding the congressional appropriations process called for under the Constitution."[23]

In sum, the non-transparent nature of Treasury and Federal Reserve relations is well-known to experts.

- ***The Overly Secretive ESF.*** Non-transparency also characterizes Treasury's ESF, the institution through which Treasury dollar policy is implemented. Treasury officials themselves have on occasion acknowledged the culture of secrecy or non-transparency shrouding the ESF. In testimony before Congress in 1990, for example, Treasury Undersecretary David Mulford stated that the creators of the ESF wanted its

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[20] Treasury's ESF can monetize its SDR holdings by issuing SDR certificates to the Federal Reserve in exchange for dollars. See Henning (1994), p.112 (footnote 101).

[21] See, for example, Schwartz, *op. cit.*, Walker F. Todd, "Disorderly Markets: The Law, History, and Economics of the Exchange Stabilization Fund and U.S. Foreign Exchange Market Intervention," Research in Financial Services Public and Private Policy, Volume 4. George Kaufman, ed. (Greenwich, CT: JAI Press, 1992) pp.111-179; and U.S. House of Representatives, Committee on Banking, Finance, and Urban Affairs, Review of Treasury Department's conduct of International Financial Policy, Hearing 14 August 1990, 101st Congress, 2nd Session (Washington, DC, GPO, 1990).

[22] See Broaddus and Goodfriend, *op. cit.*, p.18.

[23] See Henning (1994), p.296.

operations veiled "in the greatest secrecy."[24] This culture of secrecy is underscored by Schwartz:

> The (ESF) was conceived to operate in secrecy under the exclusive control of the Secretary of the Treasury, with the approval of the President, "whose decisions shall be final and not subject to review by any other officer of the United States."...The intention was to cloak foreign exchange market intervention... The secrecy promoted two objectives. One was to conceal from the public and Congress the exchange rates at which foreign currencies were bought and sold, particularly if they involved losses. A second objective was to permit the Treasury, if it so desired, to conceal information about any other operations the ESF might undertake... The ESF in its original design as a creature of the Executive Branch, immune to legislative oversight, breaches the separation of powers.[25]

Although some improvements have occurred over the years, this culture of secrecy persists. The ESF's non-transparency is embedded in its financing mechanisms, and is evident in both its "mission creep" and reporting. Since the ESF was originally set up to be self-financing, the Fund is not required to justify and explain its operations during the annual congressional appropriations process. Questions about operations, objectives, or procedures never have to be answered. Self-financing, therefore, has a very important implication: it has significantly contributed to the secrecy of the ESF.

Over the years, Treasury has managed to muster other sources of financing that have also ably served this same purpose: namely, to enable the ESF to operate in relative secrecy, without congressional oversight or scrutiny. This has been one of the key criticisms of Federal Reserve warehousing. Specifically, by removing the necessity to go before Congress for funding, warehousing contributed to the secrecy of the ESF.[26] Similar assessments of SDR monetizations by the Federal Reserve could also be made.

In addition to ESF's financing, non-transparency of the ESF is also evident in "mission creep:" its adoption of responsibilities for which it has no explicit mandate. The stated mission of the ESF, after all, was to stabilize the exchange rate of the dollar. There was no stated objective or mandate for the type of stabilization lending that has occurred over the years. In lending to various favored countries, therefore, the ESF has "assumed" a role that had no mandate."[27]

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[24] Mulford, *op. cit.*, p.62.

[25] Schwartz, *op. cit.*, pp.137-38 (emphasis added).

[26] Schwartz, for example, notes that "the concern (regarding warehousing) was that warehousing removed from Congress the appropriation power, eliminating the necessity for Treasury to turn to Congress to obtain funds it did not have to acquire foreign currency." Schwartz, *op. cit.*, p.145.

[27] Schwartz, *op. cit.*, p.135.

Not only are clearly specified objectives of such lending difficult to find, but ESF reporting of these loan transactions as well as the terms and conditions of these loans are especially non-transparent. This is evident in the case of recent Brazilian loans, but it is also evident historically. In reviewing the ESF's historical documentation of these loans, for example, Schwartz observed the "notable omission (of) any reference to the interest rate that these countries were required to pay for dollar loans."[28]

- ***Reporting Non-transparencies***

A number of informational reporting improvements have occurred over the years; transparency of dollar policy is better than was earlier the case. The ESF, for example, currently issues a number of periodic reports regarding its operations.[29] And daily Treasury intervention data are now available, albeit with a one-year lag.[30] Despite various improvements, however, reporting of U.S. dollar policy cannot be considered highly or adequately transparent.

While dollar-related reports are issued periodically, these reports can be non-transparent in a number of important ways. Reports, for example, may not provide complete, comprehensive, or pertinent information. Reports may not delineate policy objectives for intervention or for stabilization loans. They may not provide adequate "real time," "ex ante," or even " ex post" transparency.

Reports may not be timely, clearly written, or contain adequate information to be understandable to policymakers, interested parties, or ordinary citizens. In short, the issuance of periodic reports does not, in and of itself, guarantee a high or adequate degree of transparency.

There are a number of ways in which existing Treasury dollar policy reports are not as transparent as they could be. As described above, research documenting significant discrepancies between actual intervention and news reports of intervention is prima facie evidence of such non-transparency. Some general examples of existing dollar-policy reporting non-transparencies include the following:

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[28] *Ibid.*, p.147.

[29] More specifically, the following periodic reports are issued by Treasury's ESF: (1) An ESF Annual Report, which includes a statement of financial position (a balance sheet), an income statement, and a statement of cash flows. (2) A bi-annual Treasury Interim Report to the Congress on International Economic and Exchange Rate Policy. (3) A Quarterly Report on Treasury and Federal Reserve Foreign Exchange Operations. (4) A Quarterly ESF balance sheet report published in the Treasury Bulletin with a six-month lag. (5) A monthly ESF financial statement report to the congressional Banking Committees along with a monthly report on foreign exchange operations, both of which are confidential. (6) A periodic report to Congress' Foreign and International Relations Committees citing credit arrangements with foreign governments, sixty days after they occur.

[30] Dominguez and Frankel, *op. cit.*, p.71; and Ostenberg, et al. (1995), *op. cit.*, p.5.

- The objectives of intervention policy and their relation to monetary policy have never been meaningfully clarified. Similarly, the objectives of ESF lending have not been carefully explained.

- Contemporaneous intervention activity is often secret with reporting delayed for months. Intervention activity often has to be inferred from various reports issued with a significant lag.

- Treasury's "risks of financial gains or losses are often not presented explicitly, or in a timely manner, to Congress or to the public."[31] Detailed specification of realized gains and losses is often incomplete.

- G7 foreign exchange discussions often remain secret and G7 communiques are notoriously vague, imprecise, and incomplete.

- The ESF does not adequately report on a timely basis the terms and conditions of its lending. Its balance sheet could be reported much more frequently on a non-confidential basis.

While several reports related to ESF operations are issued on a regular basis, these reports could be more transparent than is currently the case. Balance sheet information, to cite one example, could be issued more frequently, say monthly, and on a timelier basis.[32] Treasury's biannual report to Congress on International Economic and Exchange Rate Policy -- mostly a narrative on economic and exchange rate developments with a lag of several months -- generally is not policy specific. A small section of U.S. exchange rate policy is vague and imprecise.[33] Objectives of exchange rate policy and foreign exchange intervention guidelines and their relation to monetary policy objectives are seldom, if ever, discussed or clarified in a meaningful way.

Similarly, quarterly reports on Treasury and Federal Reserve Foreign Exchange Operations are mostly narratives on past exchange rate developments and reserve holdings, delayed several months. Dollar policy goals, purposes, and "ex ante" perspectives (explaining intended future policy under given circumstances) are not developed or clarified. Exchange rate policy is rarely meaningfully related to monetary policy. Reports to congressional committees are often confidential and therefore not readily available to interested parties or the general public. In sum, many of these reports could be substantially more informative and transparent than is currently the case.

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[31] Todd, *op. cit.*, p.115.

[32] ESF balance sheet data are currently issued both in the ESF Annual Report and in the quarterly Treasury Bulletin, lagged six months.

[33] The lack of any substantive explanation as to the June 17, 1998 foreign exchange intervention serves as an example. See Annual Report to Congress on International Economic and Exchange Rate Policy, January 22, 1999, p.10.

BENEFITS OF TRANSPARENT POLICY

Adopting a more transparent approach to dollar policy, as suggested here, would produce a number of economic benefits. More transparency and disclosure, for example, would reduce unnecessary uncertainties and minimize risk premiums, thereby working to stabilize foreign exchange markets. Exchange rates would be less volatile and more predictable. The more accurate information available to the market, after all, the better the market performs. Economic performance improves when policymakers provide a stable, less uncertain environment. As James Meigs argued decades ago:

> Whatever U.S. policies are, disclosing them promptly and fully to the world should reduce uncertainty and should make variations in exchange rates less than it would be in the absence of such disclosure. Disclosure would at least reduce that part of the variance in exchange rates that is attributable to uncertainty about U.S.... policies...[34]

In addition to promoting this stabilizing effect, more transparency would also help ensure the accountability of policymakers and constrain their discretionary powers.

RECOMMENDED ACTION

Adopting a less secretive, more open dollar policy should include changes in several dimensions of transparency: namely, (1) establishing clear, unambiguous policy objectives, (2) promoting understandable policy procedures, (3) insisting on accurate, timely, transparent reporting, (4) advancing a more transparent ESF, and (5) establishing rigorous oversight procedures.

Specific measures to achieve such dollar policy goals include the following:

- ***Establish clear, understandable dollar policy objectives that are consistent with monetary policy goals.*** Delineate what constitute appropriate and inappropriate policy goals. Given capital mobility and price stability objectives, this implies that exchange rate objectives necessarily must be subordinate to these alternative goals.

- ***Promote clear, understandable procedures for intervention activity.*** Set up clear guidelines at to what constitutes "appropriate" intervention. Minimize (or eliminate) sterilized intervention. Should intervention be called for, employ non-sterilized intervention.

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[34] James Meigs, "The Role of Information Disclosure in International Monetary Policy," in Federal Reserve Policies and Public Disclosure, edited by Richard Erb, American Enterprise Institute, Washington DC, 1978, p.70.

- ***Require more transparent dollar policy reporting from institutions charged with foreign exchange management responsibilities.*** Improve the timeliness, frequency, accuracy, policy content, and clarity of existing reports. Publicly announce most intervention activity. Work to improve the openness of G7 reporting, minutes of G7 meetings, and G7 communiqués. Remove confidential status of Treasury's reports to Congress.

- ***Clarify dollar policy responsibilities of Treasury vis-à-vis the Federal Reserve.*** Minimize (eliminate) obscure financing schemes involving warehousing or SDR monetization by the Federal Reserve. Consider Federal Reserve assumption of intervention responsibilities.

- ***Insist on a more transparent and reformed ESF.*** Clarify objectives for both ESF intervention and lending activities. Require more transparent ESF reporting including both monthly publication of the ESF balance sheet and public reporting of the terms and conditions of ESF lending. Require annual congressional appropriations for ESF loans in excess of $1 billion as detailed in H.R. 1540, the *ESF Transparency and Accountability Act.* Insist on an independent Federal Reserve; end SDR monetization by the Federal Reserve and consider cessation of warehousing practices by the Federal Reserve. Require congressional appropriations, should more funding of the ESF be essential.

- ***Establish rigorous oversight procedures for these reforms.*** Such oversight should not involve minute-to-minute foreign exchange management or decisionmaking but rather should establish objectives, procedures, accountability, and transparent reporting. Oversight should include thorough monitoring of the foreign exchange policies and operations of both Treasury and the Federal Reserve including intervention activities, ESF operations, Federal Reserve warehousing activities, as well as frequent and detailed testimony from Treasury and Federal Reserve officials. Oversight should include monitoring of U.S. participation in international organizations such as the G7, IMF, and others as they pertain to dollar policy and international monetary reform.

SUMMARY AND CONCLUSIONS

The case for a more transparent U.S. dollar policy is compelling. In addition to producing a number of economic benefits, a more transparent policy would complement a growing consensus on the desirability of transparency in the conduct of government policy in general and monetary policy in particular. More open disclosure in dollar policy is long overdue for a number of important reasons. Further, improved transparency would parallel Treasury's requirement to comply with the letter and spirit of the *Government Performance and Results Act,* which mandates a clarification of objectives and clear explanation of operations.

Transparency has multiple dimensions, involving not only the clarification of dollar policy objectives, but also the timely and complete disclosure of policy decisions and their underlying rationale.

Current dollar policy violates conventional transparency guidelines or parameters in a number of ways. Policy objectives are unclear, intervention policy is non-transparent from several perspectives, Treasury and Federal Reserve dollar relations are ambiguous, and ESF financing methods are obscure. Further, the ESF is overly secretive and current informational reporting is not nearly as transparent as it could be.

A number of specific recommendations for improving dollar policy transparency include the following:

- Establish clear, understandable dollar policy objectives that are consistent with monetary policy goals.
- Promote clear, understandable procedures for intervention activity.
- Require more transparent dollar policy reporting from institutions charged with foreign exchange management responsibilities.
- Clarify dollar policy responsibilities of Treasury vis-à-vis the Federal Reserve.
- Insist on a more transparent and reformed ESF.
- Establish rigorous oversight procedures for these reforms.

Dr. Robert E. Keleher
Chief Macroeconomist to the Vice Chairman

Assessing the Current Expansion

ASSESSING THE CURRENT EXPANSION

INTRODUCTION

After briefly summarizing recent macroeconomic developments as well as the salient features of the current expansion, this paper outlines the reasons for the expansion's sustainability. A key reason for this remarkable longevity relates to the pursuit of appropriate macroeconomic policy, in particular, to the maintenance or adoption of those policies promoting long-run efficiency and growth without inflation. More specifically, proper policies evolved from the gradual recognition that monetary and fiscal policies should be directed at different and independent objectives. Monetary policy should focus on achieving price stability objectives by gradually reining in aggregate demand, whereas fiscal strategies should be focused on open market, growth-promoting tax and spending-restraint policies encouraging entrepreneurial activity: i.e., policies promoting aggregate supply.

More detailed reasons for the economy's remarkable sustainability include the following:

- The many growth-enhancing effects of a gradual and credible anti-inflationary monetary policy.
- The growth-promoting effects of credible government spending restraint together with an accompanying less intrusive role of government in the economy.
- The long-term growth effects of an efficiency-promoting incentive structure embedded in the tax code, as epitomized by marginal income tax rates that remain lower than those of the 1950s, 1960s, and 1970s.
- The effects on aggregate supply and capacity of substantial investment in equipment as well as in productivity-enhancing new technologies.
- The specialization and efficiency-promoting effects of increased international integration and open markets, or globalization.

These reasons for the expansion's remarkable sustainability have common elements. In particular, they all foster economic growth while at the same time reducing pressures on price inflation; they all promote growth without inflation.

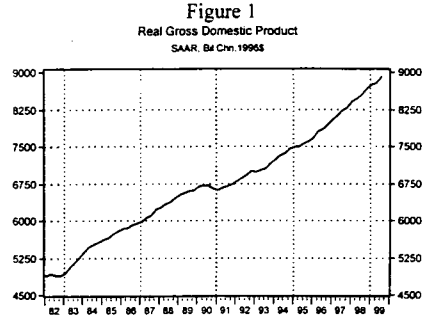
In addition to explaining the sustainability of the U.S. expansion, the paper examines an alternative "explanation." In particular, the Administration's claim that its policies of raising tax rates to reduce the budget deficit and interest rates brought about the current sustained recovery prove inadequate for a number of reasons. Raising taxes, for example, does not promote economic growth without inflation. The economic recovery began almost two years before Clinton was inaugurated and the budget deficit began falling well before Administration policies could have been implemented. The timing of interest rate movements is decidedly inconsistent with the Administration's arguments. In addition, Administration officials as well as Democratic-controlled Congressional committees are on record recognizing the contractionary nature of such

policy. Finally, the Administration provides an inaccurate explanation of the disappearance of budget deficits.

CHARACTERISTICS OF THE CURRENT EXPANSION: THE RECORD, A SUSTAINED RECOVERY

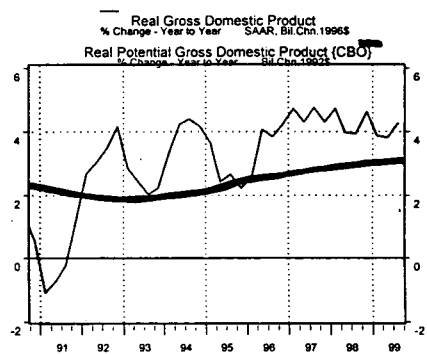
The current economic expansion is now approaching its ninth birthday and is the longest expansion on record. Furthermore, this sustained expansion is expected to continue into the foreseeable future since few obvious major cyclical imbalances are evident that have disrupted earlier recoveries.[1] Notably, this expansion followed the 1980s expansion (see Figure 1)[2], which is the second longest peacetime expansions on record (92 months). In short, the U.S. is experiencing back-to-back the first and second longest peacetime expansions in American history. And the brief. mild recession that occurred between these record-breaking expansions was exceptionally short (8 months).

Figure 1



For much of this recent expansion, GDP growth has exceeded conventional estimates of "potential" GDP growth as calculated, for example, by the Congressional Budget Office (CBO). (See Figure 2.)

Figure 2



While most private-sector GDP components have shared in this expansion's growth, a few sectors have made notable, healthy contributions. Consumption, investment spending, and exports, for example, have all been key,

[1] In particular, factors such as inventory imbalances, corporate or bank balance sheet distortions, overbuilding in the construction industry, resurgencies of inflation, or sharp interest rates increases are for the most part neither evident nor expected.

[2] The source for all graphs, unless otherwise stated, is Haver Analytics.

leading sectors for most of this expansion, generally growing at rates exceeding that of aggregate GDP. Accompanying figures show that both investment and exports have grown as a percentage of GDP. Investment in business equipment (and information processing investment) especially contributed to this advance. (See Figure 3.) Inventory investment, however, has been increasingly better managed as evidenced by significantly lower inventory/sales ratios. This development enhances the likelihood of continued economic expansion since it minimizes the likelihood of important inventory corrections.

For most of this expansion. exports have also made a significant contribution. For the most part, export growth has exceeded GDP growth, and thus the export sector's GDP share has steadily grown during this expansion. (See Figure 4.)

One sector that has not grown as rapidly as GDP during this expansion is federal government spending. The accompanying chart shows that federal government spending as a percentage of GDP has fallen continually during this sustained expansion. (See Figure 5.)

The Labor Market

Employment gains have also continued to mount during much of this expansion. In fact. more than 21 million jobs have been added to non-farm payrolls since the recovery began in the early 1990s.

Figure 3

Real Gross Private Domestic Investment as a percentage of Real GDP

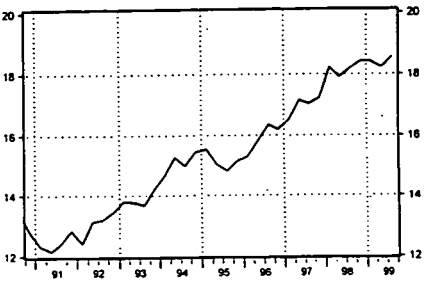


Figure 4

Real Exports as a percentage of Real GDP

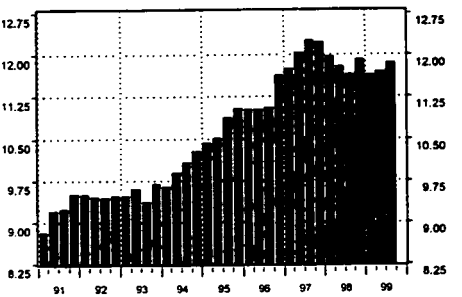
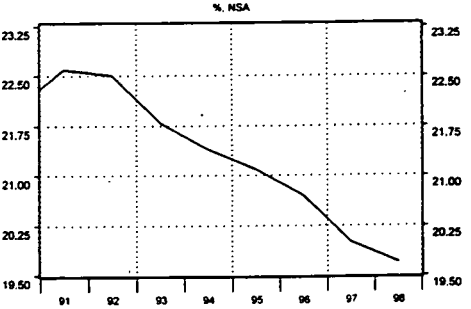


Figure 5

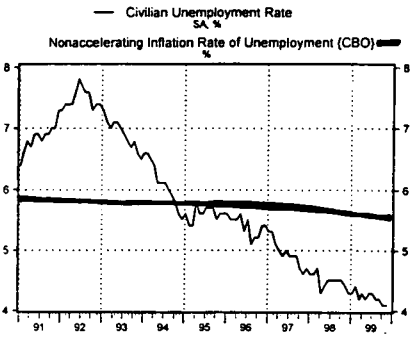
Federal Outlays as a Percentage of GDP

%, NSA



The civilian unemployment rate has fallen well below estimates of the non-accelerating inflation rate of unemployment (NAIRU) and to the lowest rates since the early 1970s. (See Figure 6.)

Figure 6

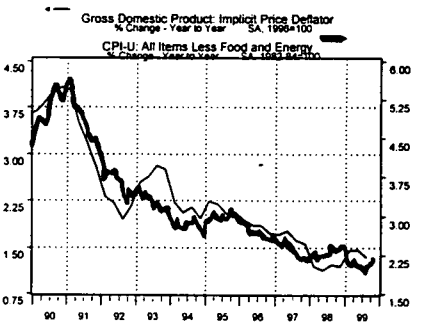


Similarly, both the employment/population ratio and the labor participation rate have increased during this expansion and remain close to their all-time highs. The high employment-to-population ratio indicates that a higher proportion of the population has jobs now than in the past. The high participation rate means that more people are participating in the labor force (i.e., either have jobs or are seeking work) now than in the past. Both measures suggest that the labor market is tight relative to historical norms. In short, then, this expansion has been characterized by significant increases in the inputs of both capital and labor.

Lower, More Stable Inflation

Another important characteristic of this expansion is the notable absence of inflationary pressures that have often plagued previous recoveries. Most broad-based measures of inflation such as GDP deflators or the core Consumer Price Index (all items less food and energy) have been remarkably well behaved. (See Figure 7.)

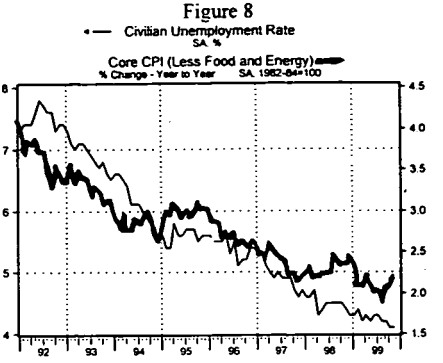
Figure 7



Similarly, wage costs remain relatively tame despite unemployment rates remaining below those levels sometimes associated with rising price and wage pressures. Furthermore, forward-looking market price indices (such as commodity price indicators), which in the past have accurately signaled rising expectations of future inflation, currently remain relatively well-behaved, although they have increased in recent months.

One of the remarkable features of this expansion, therefore, is the simultaneous achievement of low rates of inflation and unemployment together with relatively robust rates of economic growth. More generally, the U.S. has experienced the phenomena of sustained growth and lower inflation for an extended period. As Figure 8 shows, for the most part inflation and unemployment have fallen together for nearly eight years. This phenomenon was clearly not predicted by conventional (demand-side) macroeconomic models, which embody a trade-off between the rates of unemployment and inflation.

Figure 8



REASONS FOR THIS EXCELLENT PERFORMANCE

The primary reason for this excellent sustained performance relates to the operation of a number of well-established policies, which promote efficiency and growth without inflation. These policies fell into place as a result of the gradual recognition that monetary and fiscal policies should be directed at different and independent objectives; that is, monetary policy should focus on achieving price stability objectives by gradually reining in aggregate demand, whereas fiscal strategies should be focused on the longer-term benefits of open market, growth-promoting tax and spending-restraint policies encouraging entrepreneurial activity, i.e., policies promoting aggregate supply that, in fact, were in large part initiated in the 1980s. The common element of all these policies is that they foster efficiency and growth without inflation; these policies promote more growth, lower inflation, or both.

Notably, the record of sustained growth together with lower inflation registered during this expansion was not predicted by conventional Keynesian macroeconomic analysis. Such analysis, after all, downplays the capacity-enhancing and output effects that foster growth while lessening pressures on price inflation. Further, this conventional analysis also downplays the many growth-enhancing effects of price stability.

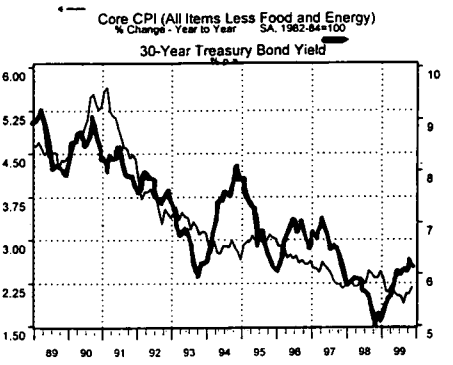
Key policies that explain the economy's excellent, sustained performance include (1) the growth-enhancing effects of a gradual and credible price stabilizing monetary policy, (2) the growth-promoting effects of credible, government spending restraint, (3) the long-term effects of an efficiency-promoting incentive structure embedded in the tax code, (4) the output effects of substantial investment in business equipment as well as in productivity-enhancing new

technologies, and (5) the efficiency-promoting effects of increased international integration, open markets, or globalization.

- **The growth-enhancing effects of a gradual, credible price-stabilizing monetary policy.**

A key ingredient of recent Federal Reserve monetary policy has been a persistent emphasis on price stability as a key policy objective. Federal Reserve officials have embraced this objective in the form of policy statements as well as in policy action. As a result, Federal Reserve inflation-fighting credibility has become established and most broad-based measures of inflation have generally continued to moderate during this expansion. Indeed, the sustained downtrend in inflation has brought some broad-based inflation measures to their lowest rates in decades with few signs of any meaningful resurgence.

Figure 9



This credible, sustained reduction in inflation has important growth-promoting implications related to the durability of the expansion. In particular, lower inflation:

(1) Lowers interest rates: This credible, sustained reduction in inflation has gradually lowered expectations of future inflation. Accordingly, the inflation expectation component of interest rates dissipated from the structure of both short- and long-term interest rates; interest rates are lower as a result. Figure 9 depicts the relationship between inflation and long-term interest rates.

(2) Stabilizes financial markets and interest sensitive sectors: As inflation diminishes, the variability of inflation is reduced. Lower inflation is associated with lower volatility of inflation. Accordingly, financial markets have less tendency to over- or undershoot their fundamental values. This lower volatility has the effect of reducing uncertainty premiums of interest rates; financial markets tend to become more stable and predictable. In short, lower inflation stabilizes financial markets.

As a result, market participants tend to become more confident and more willing to invest, take risk, and innovate. Businesses are able to better plan, coordinate, and control inventories, thereby improving efficiency. Furthermore, this enhanced financial stability

works to stabilize various interest-rate sensitive sectors of the economy and, therefore, the macroeconomy as well.

(3) Enhances the workings of the price system: Lower inflation is associated with lower (relative) price dispersion. Lower inflation lowers the variability between individual prices or reduces the noise and distortions in the price system. As a result, the price system can better serve its information and allocative functions. Consequently, the economy operates more efficiently and, therefore, grows faster.

(4) Acts like a tax cut: Lower inflation is analogous to a tax cut in several important ways. Lower inflation removes distortions in the price system and also minimizes those interactions of inflation with existing non-indexed portions of the tax code that effectively result in higher taxation.[3]

In short, credible disinflation and price stability work to lower interest rates, stabilize financial markets and interest-sensitive sectors of the economy, promote efficient operation of the price system, and effectively lower taxation. All of these effects contribute to promoting the sustainability of the expansion.

- **The growth-enhancing effects of government spending restraint.**

Another key policy, which helps to explain the economy's excellent sustained performance, relates to the long-term growth-promoting effects of government spending restraint. Empirical evidence suggests that beyond some point, an increasing share of government spending has a negative effect on economic growth.[4] As government expands and increasingly provides goods and services that the private sector is better suited to supply, inefficiencies and diminishing returns mount. The disincentives of financing such increased spending mount and growth inevitably suffers.

Government spending as a share of GDP, however, has actually declined during much of this expansion, and is smaller in the U.S. than in many other countries. This smaller share of government enables more economic resources to be allocated and utilized more efficiently and productively in the private sector, allowing more growth to occur without upward pressures on price inflation. Congressional efforts to restrain government spending have aided significantly on this score.

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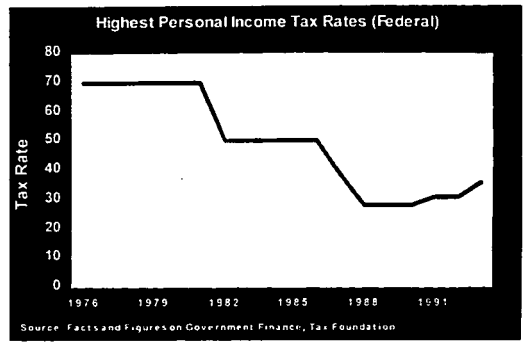
[3] Remaining portions of the tax code that are not indexed, for example, include capital gains taxation, estate taxation, and forms of corporate taxation.

[4] See, for example, James Gwartney, Robert Lawson, and Randall Holcombe, "The Size and Functions of Government and Economic Growth," Joint Economic Committee, April 1998.

- **The long-term effects of an efficiency-promoting incentive structure embedded in the tax code.**

Tax policy is also central to any explanation of this long-term, record-setting, back-to-back expansion and sustained growth of recent years. In particular, the substantial marginal income tax rate reductions in the 1980s embedded into the tax code an incentive structure that has encouraged and fostered steady and long-run improvements in work effort, investment, innovation, and entrepreneurial activity that recent years have witnessed. Because such tax cuts encourage the supply of labor and capital as well as innovation and entrepreneurial activity, they impact aggregate supply and increases in the capacity of the economy to grow: i.e., such tax cuts foster economic growth. While some backsliding has occurred with the rate increases in some brackets in 1990 and 1993, most marginal rates still remain lower than comparable rates which existed in the 1950s, 1960s, and 1970s. (See Figure 10.) Thus, these lower rates continue to provide the basis for an efficiency-promoting incentive structure conducive to the increased innovation, entrepreneurship, labor supply, and investment observed during this expansion. Since this structure fosters aggregate supply and capacity, all other things equal, it also helps to lessen pressure on price inflation and thus helps to explain the recent phenomenon of sustained economic growth without inflation.

Figure 10



- **The effects on aggregate supply of substantial investment in business equipment and productivity-enhancing new technologies.**

Another key event that necessarily plays a prominent role in any explanation of the sustained, low inflation expansion is the substantial increase in technological innovation and in the resultant investment boom that has occurred in recent years. Investment clearly has been a leading sector in this expansion and has grown substantially as a percentage of GDP. Such investment has not only grown substantially faster than GDP but has added significantly to business capacity. Computer equipment and software are major components of this advance. Since such investment increases capacity and therefore bolsters aggregate supply as well as aggregate demand, it helps to explain the observed sustained economic growth without inflation. Some of the impetus for such strong investment, of course, was provided by tax cuts as well as the technological advances of recent years.

This rapid investment and technological improvement have been associated with greater-than-expected productivity gains in recent years. These gains have allowed sizable wage increases to occur without inflation consequences, providing further support to this explanation of the sustained, low inflation expansion.

- **The efficiency and growth-promoting effects of increased international integration, open markets, and globalization.**

A final policy dimension helping to explain the economy's excellent sustained, low inflation performance relates to the efficiency or growth-promoting effects of increased international integration (globalization) and open markets. Pro-trade policy initiatives working to lower tariff (tax) barriers -- dating at least from the early 1980s -- have worked to encourage growth in both exports and imports. The U.S. economy, for example, has become increasingly open as measured by the fraction of GDP accounted for by the sum of what is exported and imported. Moreover, export growth has generally exceeded GDP growth in most years of the current expansion; for the most part, exports have been a leading sector in the expansion.

These trends have enabled the U.S. economy to take advantage of larger markets and to become more specialized and therefore more efficient, productive, and competitive than earlier was the case. In short, these trends enable the economy to produce more goods with the same or less input at the same or lower prices: i.e., to grow faster while promoting competition and lower prices.

The explanations presented here help to explain how the economy has persistently grown at a healthy pace without higher inflation. These explanations have a common element: they all indicate how aggregate supply or efficiency can be promoted so as to foster growth without inflation.

Invalid Explanations of this Sustained Performance

The Clinton Administration has argued that economic policies it sponsored in large part "explain" the robust economic performance witnessed in recent years. The *1999 Economic Report of the President*, for example, argues that the recent economic successes "are the result of an economic strategy that we have pursued since 1993... Our new economic strategy was rooted first and foremost in fiscal discipline ...the market responded by lowering long-term interest rates."[5] The centerpiece of the Administration's 1993 "fiscal discipline" was increased tax rates. These tax increases, or tight fiscal policy, purportedly reduced the budget deficit, and from a Keynesian perspective, lowered aggregate demand by draining spending power. This restrictive (lower budget deficit) policy, in turn, lowered interest rates, thereby eventually stimulating the

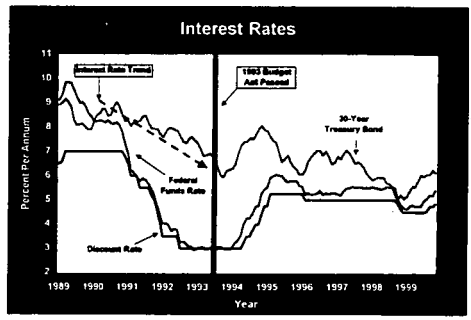
[5] *1999 Economic Report of the President*, U.S. GPO, Washington DC, 1999, p.3.

economy.[6] Some argue that this new "tight" fiscal policy was consciously accompanied by an "easy" monetary policy. This explanation has been often repeated by Administration officials in testimony, speeches, or press interviews.

There are a number of problems with this explanation. Some key inconsistencies of the explanation, for example, include the following:

- The timing of interest rate movements is decidedly inconsistent with the Administration's explanation. According to the Clinton Administration, the passage of the Budget Act in 1993 was followed by a decline in interest rates. Yet movements in both short-term and long-term interest rates contradict the Administration explanation. First, for example, both long-term and short-term interest rates fell for several years prior to the enactment of the *1993 Budget Act* (see figure 11).[7] Clearly, these interest rate declines had nothing to do with Clinton Administration fiscal policy. Second, both short-term and long-term interest rates substantially increased rather than decreased after the *1993 Budget Act* was passed. Thus, the Budget Act did not cause a fall in interest rates as claimed by the President or other Clinton Administration officials. Moreover, the substantial increase in short-term interest rates after the Budget Act was enacted demonstrates that the Federal Reserve did not adopt an easier policy at that time. Additionally, both short- and long-term interest rates for the most part remained above summer 1993 interest rate levels for years after the Act's passage. In

Figure 11



[6] In the words of the President's *Economic Report*, "The market responded (to the Administration's policy) by lowering long-term interest rates. Lower interest rates in turn helped more people buy homes and borrow for college..." ibid, p.3 (parenthesis added).

[7] Since the *Budget Act of 1993* passed Congress by the narrowest of margins, explanations of interest rate movements prior to enactment that rely on expectations of future passage make little sense.

sum, interest rate movements clearly are inconsistent with the Administration's oft-voiced explanation.[8]

- The factors underlying the Administration's explanation do not foster economic growth without inflation. Logical explanations as to why economic growth has persisted for years without inflation increasing in a meaningful way presumably should be based on forces promoting aggregate supply or increased efficiency that do not foster inflation. The explanations presented earlier in this paper have this element in common. The Administration's explanation, however, does not; raising tax rates promotes neither economic growth nor lessened pressures on price increases.

- The current expansion was not initiated by Clinton Administration policy. The economic expansion began in early 1991, almost two years before Clinton's inauguration. Clearly, the expansion itself was not initiated by any policy action of the Clinton Administration.

- The federal budget deficit actually began contracting well before Clinton Administration policies were implemented. Actual budget deficit figures indicate that the budget deficit began declining in a significant way after FY 1992 (i.e., by the start of FY 1993 in October 1992). In particular, the budget deficit fell from $290 billion in FY 1992 to $255 billion in FY 1993, a drop of $35 billion. Since Clinton Administration budget policies were not implemented until (at the earliest) the fall of 1993, they could not have materially impacted budget numbers until FY 1994. Thus, budget deficit declines experienced during this expansion could not have been initiated by the Clinton Administration.

- The Clinton Administration's own economic projections at the time were not consistent with its after-the-fact (ex-post) explanation. Shortly after the enactment of the tax increase in August of 1993, for example, the Administration revised its own growth assumptions downward for 1993 and 1994. This downward adjustment was in accord with the period's contemporary conventional wisdom about the economic effects of the Clinton plan. According to the Democratic majority of the Joint Economic Committee at the time, the Clinton plan "will continue to exert downward pressure on economic activity through the next five years."[9] Furthermore, Administration budget forecasts have consistently understated the economy's performance in recent years, suggesting

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[8] Notably, the empirical relationship between interest rates and budget deficits is neither strong nor particularly reliable. During periods of the 1980s, for example, budget deficits widened while interest rates fell. During other periods during the same decade, deficits narrowed as interest rates fell. For a survey of the budget deficit interest rate relationship, see George Iden and John Sturrock, "Deficits and Interest Rates: Theoretical Issues and Empirical Evidence," Staff Working Papers, Congressional Budget Office, January 1989.

[9] See *1993 Joint Economic Report* (Washington, DC, Government Printing Office, 1996) p.10. Also see Christopher Frenze, "Whither the Budget Deficit?," Joint Economic Committee Study, July 1996, p.2.

that even Clinton Administration officials did not believe the Clinton policy was stimulative.

- The Clinton Administration's explanation of the recovery ignores the growth-enhancing effects of a gradualist, price-stabilizing monetary policy. As described above, such monetary policy, by gradually lowering inflation, contributed significantly to the sustainability of the expansion in a number of ways. Many of these beneficial effects are unrecognized by the Administration. Since monetary policy, not fiscal policy, dominates movements in aggregate demand, it cannot be ignored in interpretations of this period's macroeconomic performance.[10]

- The Clinton Administration provides an inaccurate explanation of the disappearance of budget deficits. The Administration's explanation -- that tax rate increases worked to erase the deficit -- ignored the well-documented fact that budget deficits are importantly endogenous (or largely determined by economic factors). In fact, the significant deficit reduction witnessed in recent years is in large part the result of the strong economic expansion together with other economically driven factors such as low interest rates and sizable capital gain realizations.[11] As the economy expands, tax revenue from income, payroll, and other revenue sources increase whereas several forms of government spending (e.g. welfare payments, unemployment insurance) decrease, causing the budget deficit to shrink. In short, the reduced deficit is importantly the result of these economically driven factors rather than the cause of them. This has been documented during the current expansion by studies including, for example, Frenze.[12]

  Data from CBO also support this contention although they may understate the positive fiscal impact of the expansion.[13] In particular, about two-thirds of the fall in the budget deficit projected by CBO over this expansion is accounted for by economic and technical factors rather than legislative changes.[14] To be more specific, in 1993 CBO projected the FY 1998 baseline deficit would be $357 billion. The actual 1998 "deficit" turned out to be a surplus of $69 billion. The $426 billion difference between the projected and actual deficit for 1998 can be explained largely by economic and

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[10] Articles reviewing the argument that monetary policy dominates fiscal policy as a determinant of aggregate spending include, for example, Bennet T. McCallum, "Monetary Versus Fiscal Policy Effects: A Review of the Debate," in *The Monetary Versus Fiscal Policy Debate: Lessons From Two Decades*, edited by R.W. Hafer, Rowman & Allanheld Publishers, Totown, NJ, 1986 (see esp. pp. 10, 23-24); and Lawrence Meyer and Robert Rasche, "Empirical Evidence on the Effects of Stabilization Policy," in *Stabilization Policies: Lessons From the '70's and Implications for the '80's*, Center for the Study of American Business, 1980 (see pp. 51,54).

[11] Tax rate increases may not work to meaningfully reduce budget deficits since such increases can slow economic growth.

[12] Christopher Frenze, "Whither the Budget Deficit?," Joint Economic Committee Study, July 1996.

[13] The data were provided by CBO (Table 1 in letter of August, 1999).

[14] Technical factors include economically driven factors such as capital gains realizations.

technical factors, which account for 70 percent of the difference. The next most important explanation is changes in legislated outlays (which account for 19 percent of the difference). The least important explanatory factor is legislated revenue changes, which account for just 11 percent of the difference. Endogenous or non-legislated factors, therefore, explain the bulk of this deficit decline. The Clinton Administration's interpretation ignores these important endogenous or economic factors which involve causation running counter to their explanation.

In sum, there are a number of serious inconsistencies in the Administration's narrow explanation of the reasons for the current sustained expansion.

Longer-term Prospects for Continued Expansion

The current expansion is expected to persist into the foreseeable future. In part, this expansion relates to the absence of substantial existing imbalances in the economy. In particular, inventory imbalances, corporate or bank balance sheet distortions, overbuilding in the construction industry, serious resurgences of inflation, or substantial interest rate increases are neither evident nor expected. This expectation also relates to the expected continuation of those policies outlined earlier in this paper. More specifically, a price-stabilizing monetary policy, an incentive structure involving low tax rates built into the existing tax code, a policy of government spending restraint, and promotion of open markets and international integration are all expected to be maintained.

As long as no policy errors occur involving efforts to reverse the above-mentioned policies, the economic expansion should continue. That is, so long as the Federal Reserve keeps inflation at bay, substantial tax rate increases or budget-busting increases in government spending are avoided, restrictive trade practices, capital controls, or policies shackling new technologies are not embraced, the recovery should persist and establish new longevity records.

SUMMARY AND CONCLUSIONS

The current economic expansion is remarkably resilient and sustained. One of the remarkable features of the expansion is the simultaneous achievement of low rates of inflation and unemployment together with relatively robust rates of economic growth.

A key reason for the durability of the expansion owes to the maintenance of macroeconomic policies promoting long-run efficiency and growth without inflation. Appropriate macroeconomic policies evolved from the gradual recognition that monetary and fiscal policies should be directed at different and independent objectives; monetary policy should focus on achieving price stability whereas fiscal policy should focus on open market, growth-promoting tax and spending restraint policies encouraging entrepreneurial activity (i.e., policies promoting aggregate supply).

More specific reasons for the economy's remarkable sustainability all promote growth without inflation and include the following:

- The many growth-enhancing effects of a gradual and credible anti-inflationary monetary policy.
- The growth-promoting effects of credible government spending restraint.
- The long-term growth effects of an efficiency-promoting incentive structure embedded in the tax code (as epitomized by marginal income tax rates that remain lower than those of the 1950s, 1960s, and 1970s).
- The effects on aggregate supply and capacity of substantial investment in equipment as well as in productivity-enhancing new technologies.
- The specialization and efficiency-promoting effects of increased international integration and open markets (globalization).

The Administration offers an alternative explanation. It contends that its 1993 policy of raising tax rates worked to reduce the budget deficit and interest rates and to foster sustained recovery. This view proves inadequate for a number of reasons including the following:

- Raising taxes does not promote economic growth without inflation.
- The current expansion began well before the inauguration of President Clinton, and thus could not have been initiated by Clinton Administration policies.
- The budget deficit began contracting well before Clinton Administration policy could have been implemented. Hence, the budget deficit reductions were not initiated by Clinton policy.
- The timing of interest rate movements is decidedly inconsistent with the Administration's explanation.
- The Clinton Administration's own economic projections were not consistent with its after-the-fact explanations.
- The Clinton Administration's explanation of the recovery ignores the growth-enhancing effects of a gradualist, price stabilizing monetary policy.
- The Clinton Administration provides an inaccurate explanation of the disappearance of budget deficits.

The prospects for continued expansion look favorable so long as appropriate macroeconomic policies are maintained and no serious policy errors are made.

Robert Keleher
Chief Macroeconomist
to the Vice Chairman

International Dimensions to U.S. Monetary Policy

INTERNATIONAL DIMENSIONS TO U.S. MONETARY POLICY

INTRODUCTION

Traditionally, Federal Reserve monetary policy has focused on the domestic economy. Although international factors have not been ignored, they have been subordinate to domestic concerns. International concerns are rarely important rationale influencing Federal Reserve monetary policy decisions; further, the global impacts of U.S. monetary policy decisions seldom receive much attention from monetary officials.

Recent trends and developments, however, suggest this domestic orientation may not be entirely satisfactory for U.S. monetary policy. There is a growing recognition of the fact that financial capital is increasingly mobile, and financial markets are evermore globally integrated. At the same time, varying degrees of dollarization have occurred in several emerging market economies and the dollar remains the world's principal international currency despite evolving developments in exchange rate arrangements. These considerations have a number of important implications for U.S. monetary policy. For example, they help to explain why changes in U.S. monetary policy can have increasingly potent effects on emerging market economies that should be recognized and why the Federal Reserve's implicit international lender-of-last-resort (LOLR) responsibilities are so important.[1] These international considerations can be taken into account by anchoring prices with a price stabilization policy goal and using key market price indicators as policy guides.

After briefly describing these evolving circumstances -- namely, increased capital mobility, dollarization, and the international role of the dollar -- this paper briefly reviews the evidence suggesting that changes in Federal Reserve monetary policy have implications for both emerging markets and the global economy. Implications for the Federal Reserve's international LOLR role are highlighted and some recommendations for monetary policy are outlined.

Recent Trends and Developments

- Increasing Financial Integration and Growing Capital Mobility.

Clearly, one important trend of recent years is increasing international financial integration and growing capital mobility.[2] Most economists now recognize the inexorable trend toward globalization or growing international integration of financial markets and increasing capital mobility. Empirical results, for example, increasingly provide

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[1] For a discussion of these responsibilities, see Robert E. Keleher, "An International Lender of Last Resort, the IMF, and the Federal Reserve," Joint Economic Committee, February 1999.

[2] The word integration denotes the bringing together of parts into a whole. The more integrated markets are, the more they behave as a unified whole, rather than segmented parts. Financial market integration increases the degree of interdependence among financial markets and such integration is alternatively defined as (1) the extent to which markets are connected, (2) the degree of responsiveness and sensitivity to foreign disturbances, or (3) the degree of openness.

evidence of growing capital mobility. In particular, data on capital flows as well as interest rate differentials indicate that a growing degree of capital market integration or increased capital mobility has occurred since the 1970s.[3] The U.S. economy, along with most other economies, is more open. Many experts believe these trends are largely inevitable and irreversible, partly because they are being driven by communications and informational technological change and partly because policymakers increasingly recognize the many compelling benefits of regulatory changes that foster financial integration.[4] Accordingly, a growing consensus among economists is that there is no turning back: i.e., that capital mobility is here to stay.[5]

There are a number of important implications of this increased international financial integration. This more open environment, for example, implies that changes in monetary policy involve a somewhat different transmission mechanism. In particular, the more integrated the economy, the more quickly and substantially do divergent policies affect financial markets and capital flows. And the foreign exchange rate may play an increasingly important role in transmitting changes in monetary policy to the macroeconomy. Accordingly, exchange rate movements potentially may contain more useful information about changes in monetary policy than in previous, more closed (less integrated) circumstances.

- Clarification of the "policy trilemma"

These altered conditions of increased capital mobility also place important constraints on monetary policy, commonly referred to as the "policy trilemma." As Obstfeld ably describes it:

> The limitations that open capital markets place on exchange rates and monetary policy are summed up by the ideas of the 'inconsistent trinity' or ...'the open-economy trilemma' ...that is, a country cannot simultaneously maintain fixed exchange rates and open capital markets while pursuing a monetary policy oriented toward domestic goals. Governments may choose only two of the above.[6]

If capital mobility is, indeed, an irreversible given, the policy choices circumscribed by the above trilemma are increasingly limited. In particular, policy choices are now between flexible exchange rate/domestic policy goal (e.g., inflation targeting) regimes and fixed exchange rate/without domestic goal regimes.[7] If

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[3] See, for example, Maurice Obstfeld, "The Global Capital Market: Benefactor of Menace?", Journal of Economic Perspectives, Volume 12, Number 4, Fall 1998, pp.9-30; Maurice Obstfeld and Alan M. Taylor, "The Great Depression as a Watershed: International Capital Mobility over the Long Run," in The Defining Moment: The Great Depression and the American Economy in the Twentieth Century, Edited by Michael D. Bordo, Claudia Goldin, and Eugene N. White, University of Chicago Press, Chicago, 1998, pp.353-402.

[4] See Barry Eichengreen, Toward A New International Financial Architecture, Institute for International Economics, Washington DC, 1999, pp.2-3.

[5] See, for example, Eichengreen, *op. cit.*, p.3.

[6] Obstfeld, (1998) *op. cit.*, pp.14-5.

[7] These might take the form of currency boards or dollarization regimes.

policymakers fix the exchange rate, they lose control of the interest rate; if they peg the interest rate they can't control the exchange rate. In starker terms, capital mobility "confronts national authorities with a decision over controlling either interest rates or exchange rates."[8] Some authors [e.g., Obstfeld (1998), Eichengreen (1996)] suggest that in recent years, the choice has moved mostly in favor of the flexible exchange rates/domestic policy alternative: i.e., mostly in favor of "controlling" interest rates rather than exchange rates.[9] The U.S. has evolved into such a regime: namely, a *de facto* informal "inflation targeting" position.[10] For most countries, this result may be due in part to considerations of political economy; contemporary political forces may mandate that domestic policy goals be given attention.[11] Nonetheless, the trend does underscore the constraints brought to bear on policy choices by increased capital mobility.

- The Continued International Currency Role of the Dollar

Another important trend relates to the continued international currency role of the U.S. dollar. Despite the collapse of the dollar-based Bretton Woods (fixed exchange rate) system and the move to more flexible exchange rate arrangements, the dollar continues to be used as the principal international currency. As Robert Mundell has aptly stated:

> Flexible exchange rates did not dispense with the need for international reserves or end the dominant role of the dollar. In one sense the dollar became more important than ever. The need for an international unit of account for purposes of international trade and finance was just as great as ever, and the increased uncertainty associated with flexible exchange rates increased, rather than eliminated the need for international reserve assets... The dollar remained the principal international monetary reserve (in the 1980s and 1990s). The enhanced role of the dollar under flexible exchange rates was reflected in the rapid expansions of dollar reserves which has more than kept pace with the growth of trade...[12]

More specifically, the dollar continues to provide the principal functions of an international money and thereby remains the dominant international key, vehicle, and reserve currency. This fact has been documented by several recent studies [such as McKinnon (2000) and Hartmann (1998)].[13]

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[8] Obstfeld, 1998, *op. cit.*, p.18.

[9] For an alternative perspective, see Jeffrey Frankel, "No Single Currency Regime is Right for All Countries of at All Times," NBER Working Paper 7338, September 1999.

[10] Inflation targeting in and of itself does not have to be exclusively "inward looking" in the U.S., but instead can be implemented in a way that recognizes international concerns (see below).

[11] See, for example, Barry Eichengreen, Globalizing Capital, Princeton University Press, Princeton, 1996, p.195.

[12] R.A. Mundell, "The Future of the Exchange Rate System," paper prepared for the Rocca di Salimbeni Conference, Monte dei Paschi di Siene, Siena, Italy, November 24, 1994, p.12 (parentheses added).

[13] See Ronald McKinnon, "Mundell, the Euro, and the World Dollar Standard," paper prepared for presentation at the American Economic Association, January 8, 2000, pp.8-10, and Philipp Hartmann, Currency Competition and Foreign Exchange Markets: The Dollar, the Yen, and the Euro, Cambridge University Press, Cambridge, 1998, pp. 35-39, especially Chapter 2.

The continued use of international currency suggests there remains an important demand for the services of international currency: i.e., continued demand for a "money for other monies." Given this existing global demand, important responsibilities accrue to the supplier of this principal global currency, the Federal Reserve. In particular, if the supplier of international reserve currency pays attention to changes in its demand and, accordingly, adjusts supply to match changes in the demand for international currency, global stability may be promoted. This suggests that the Federal Reserve should focus attention on price signals and should provide a stabilizing price anchor for the current fiat money system. It also suggests that the Federal Reserve -- as the supplier of the dominant international reserve asset -- should recognize that when it tightens policy (thereby restricting the supply of international reserves), other central banks may well tighten, and when it eases, others may ease. In short, its policy moves can be magnified or made more potent because of these reactions. Additionally, the use of global reserves suggests the need for the services of an international lender of last resort (LOLR) for liquidity crisis situations involving sharp increases in the demand for international reserves.[14] Since the Federal Reserve is the ultimate supplier of this liquidity, these international LOLR responsibilities fall upon the Federal Reserve.

- The Dollarization of Emerging Market Economies

Another notable and related development relates to the dollarization -- the official and unofficial use of the dollar to displace domestic currency -- in several emerging market economies. A number of studies examining the extent of such dollarization suggest that it is substantial in a number of countries, especially those in Latin America as well as in Russia.[15] Related evidence indicates that foreigners hold significant percentages (above 50 percent) of dollar notes in circulation.[16]

This widespread dollarization suggests that changes in U.S. monetary policy may have important impacts on the many users of dollars. Accordingly, there may be potential implications for Federal Reserve monetary policy. Since these effects of changes in Federal Reserve policy can be nontrivial, it may be desirable to consider them in policymaking deliberations.

Implications

The trends and developments outlined here can have some important implications. All of these factors -- the increased international integration of financial markets together with dollarization and the continued international currency role of the dollar -- suggest that changes in Federal Reserve monetary policy may have differing effects than revealed in earlier experience. With this more open economy and key role of the dollar, the transmission mechanism of U.S. monetary policy may have changed. In particular,

[14] See Robert E. Keleher, "An International Lender of Last Resort, the IMF, and the Federal Reserve" Joint Economic Committee, February, 1999.
[15] See Kurt Schuler, "Basics of Dollarization," JEC Staff Report, July 1999.
[16] See, for example, Richard D. Porter and Ruth A. Judson, "The Location of U.S. Currency: How much is Abroad?" Federal Reserve Bulletin, October 1996, pp.883-903.

various financial markets (e.g., foreign exchange, bonds, equities) may currently play a more significant role in transmitting changes in monetary policy. Changes in U.S. monetary policy may have more potent impacts on foreign countries than earlier was the case. And the global economy itself may experience different impacts of changes in Federal Reserve policy.

Some Emerging Empirical Evidence

A growing body of empirical evidence suggests that changes in Federal Reserve monetary policy can have significant impacts on foreign countries, on international financial variables, and, indeed, on the global economy. This evidence, however, is dispersed among varieties of research concerned with related, but differing topics; for example, empirical evidence on the Federal Reserve's international effects has emerged from studies examining the determinants of capital flows in emerging markets, the causes of recent banking and currency crises, and the choice of exchange rate regimes. The evidence is not centralized in readily accessible literature, in part because there are multiple channels through which changes in U.S. monetary policy can have its foreign impact. The form of this impact, moreover, depends in part on the existing exchange rate regime.

This diverse literature relating to the international dimension of changes in Federal Reserve policy is organized into three categories and briefly surveyed as follows:

- Studies examining the determinants of capital flows.

Recently, a number of studies have analyzed the determinants of sensitive capital flows to emerging market economies. Initially, researchers focused on the performance and differing characteristics of individual countries in explaining these capital flows; however, they soon noticed that capital flows tended to affect many emerging economies at the same time, despite their differing characteristics. In short, common (international) factors appeared to be important determinants of these movements.

More specifically, investigators found that factors external to these emerging market economies -- such as international interest rate movements in large industrialized economies and financial centers such as the U.S. -- played a significant role in explaining these capital flows. In particular, changes in U.S. monetary policy tended to be associated with changes in financial (money, bond, and equity) markets in several emerging market economies. This was aptly stated by Calvo, *et al.* (1996):

> The tightening of monetary policy in the U.S. and the resulting rise in interest rates in early 1994 made investment in Asia and Latin America relatively less attractive... higher interest rates quickly and markedly affected developing country debt prices. Indeed, the rise in U.S. rates also triggered market corrections in several emerging stock markets. It seems likely that with highly integrated and technologically sophisticated financial markets, changes

in relative rates of return will quickly translate into cross-border capital flows.[17]

Similarly, Goldstein and Turner (1996) argued that:

...empirical evidence suggests that movements in international interest rates can explain between one-half and two-thirds of the swings in private capital inflows to developing countries in the 1990s.[18]

Studies reaching conclusions consistent with these arguments include: Calvo *et al.* (1993), Dooley *et al.* (1994), Chuhan *et al.* (1993), Goldstein (1995), Fernandez-Arias (1994), Eichengreen (1991), and Eichengreen and Fishlow (1996).[19]

In short, this literature establishes that changes in external (or global) factors such as movements in the interest rates of leading industrial countries like the U.S. significantly influence emerging market financial markets and can be dominant determinants of capital flows to these emerging economies (especially in Latin America).

- Studies Examining the Causes of Recent International Financial or Banking Crises

A number of studies have examined the factors causing recent international financial or banking crises. While these studies identify multiple factors contributing to these crises, the literature does find that many banking crises in developing economies are associated with prior increases in the interest rates of key developed economies such as the U.S.

Eichengreen and Rose (1998), for example, note that:

Our central finding is a large, highly significant correlation between changes in industrial-country (including U.S.) interest rates and banking

[17] Guillermo Calvo, Leonard Leiderman, and Carmen Reinhart, "Inflows of Capital to Developing Countries in the 1990s," Journal of Economic Perspectives, Volume 10, Number 2, Spring 1996, p. 126.
[18] Morris Goldstein and Philip Turner, "Banking Crises in Emerging Economies: Origins and Policy Options," B.I.S. Economic Papers No. 46, October 1996, p. 10.
[19] Guillermo Calvo, Leonard Leiderman, and Carmen Reinhart, "Capital Inflows and Real Exchange Rate Appreciation in Latin America," IMF Staff Papers, Vol. 40, No. 1, March 1993, pp. 108-151; Michael Dooley, Eduardo Fernandez-Arias, and Kenneth Kletzer, "Recent Private Capital Flows to Developing Countries: Is the Debt Crisis History?," NBER Working Paper, No. 4792, July 1994; Punam Chuhan, Stijn Claessens, and Nlandu Mamingi, "Equity and Bond Flows to Asia and Latin America: The Role of Global and Country Factors," Policy Research Working Papers, International Economics Department, World Bank, WPS 1160, July 1993; Morris Goldstein, "Coping With Too Much of a Good Thing," Policy Research Working Paper 1597, International Economics Department, The World Bank, September 1995; Eduardo Fernandez-Arias, "The New Wave of Private Capital Inflows: Push or Pull?" Policy Research Working Paper 1312, The World Bank, November 1994.; Barry Eichengreen, "Trends and Cycles in Foreign Lending," in Horst Siebert (ed.), Capital Flows in the World Economy, Tubingen; Mohr, 1991, pp. 3-28; Barry Eichengreen and Albert Fishlow, Contending With Capital Flows: What is Different About the 1990s? A Council on Foreign Relations Paper, 1996.

> crises in emerging markets... Northern interest rates rise sharply and significantly (relative to their level in non-crisis control group cases) in the year preceding the onset of banking crises, before peaking in the crisis year and the year following.
>
> This result... points strongly to the role played by external financial conditions -- and in particular to the effect of rising interest rates in worsening the access of developing-country banking systems to offshore funds...
>
> Our finding of an important role for world interest rates in the onset of banking crises reinforces the conclusions of (others)... for increases in world interest rates to precipitate banking problems.[20]

Others have come to similar conclusions. Frankel and Rose (1996) find that increases in developed country (including U.S.) interest rates significantly enhance the likelihood of a currency crash in developing countries; increases in foreign (e.g., U.S.) interest rates play a meaningful role in predicting currency problems.[21] Kaminsky and Reinhart (1996) suggest that external factors such as increases in interest rates in the U.S. may play an important role in explaining the prevalence of banking and balance of payment crises.[22] Results consistent with this argument were attained by Chang and Velasco (1998). These authors contend that "the 1997-98 crises in Asia were in fact a consequence of international illiquidity" which could in turn be partly rectified by the liquidity provision of an international lender-of-last resort.[23]

In addition to evidence on the effects of changes in U.S. interest rates on recent international financial crises, evidence also exists as to the causal effects of changes in the foreign exchange value of the dollar on such crises.[24] While several authors mention the role of dollar movements as contributing factors in the recent Asian financial crisis, Whitt (1999) provides convincing evidence that dollar appreciation prior to the recent Asian financial turbulence was a significant contributing factor to this crisis.[25] Specifically, several key emerging economies in Asia tied their currencies to the dollar, yet maintained significant trading relationships with Japan. Consequently, a significant appreciation of the dollar relative to the yen impelled these countries to follow the dollar (and U.S. monetary policy), thereby causing their currencies to appreciate against the

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[20] Barry Eichengreen and Andrew K. Rose, "Staying Afloat When the Wind Shifts: External Factors and Emerging-Markets Banking Crises," NBER Working Paper 6370, January 1998, pp. 5, 6 (parentheses added).

[21] Jeffrey A. Frankel and Andrew K. Rose, "Currency Crashes in Emerging Markets: An Empirical Treatment," Journal of International Economics, 41, Nos. 3/4, November 1996, pp. 351-366.

[22] Graciela L. Kaminsky and Carmen M. Reinhart, "The Twin Crises: The Causes of Banking and Balance Payments Problems," International Finance Discussion Papers, Federal Reserve Board, 1996-554, p. 8.

[23] Roberto Chang and Andres Velasco, "The Asian Liquidity Crisis," NBER Working Paper 6796, November 1998 (quoted from abstract).

[24] Changes in the foreign exchange value of the dollar can importantly reflect changes in U.S. monetary policy.

[25] See Joseph Whitt, "The Role of External Shocks in the Asian Financial Crisis," Economic Review, Federal Reserve Bank of Atlanta, Second Quarter 1999, pp. 18-31, and studies cited therein (p. 24).

yen. Consequently, their trade positions with Japan were severely effected just before the currency attacks began, thereby significantly contributing to the financial crises in Asia.[26]

- Other Evidence

Evidence on the impact of changes in U.S. monetary policy on foreign (international) interest rates recently has emerged from research related to the choice of exchange rate regime literature. In considering alternative exchange rate regimes available to emerging market countries, for example, Frankel and others have examined the interest rate responses in emerging countries to changes in U.S. (Federal Reserve) interest rates.[27] Frankel finds that when the Federal Reserve raises interest rates, these increases are quickly and entirely passed through to those emerging market economies with exchange rates rigidly tied to the dollar. Such exchange rate regimes require the emerging economy to follow the same monetary policy as the U.S. regardless of its appropriateness to local economic conditions. The situation is even more dramatic, Frankel finds, for emerging market economies that maintained a "loose link" to the dollar (such as Brazil or Mexico). In these cases, a Federal Reserve interest rate hike induces local interest rates to increase by more than those in the U.S.; these emerging market rates turn out to be more sensitive to U.S. policy moves and rise by more than one-for-one.[28] (Similar results are found by Hausmann *et al.*, and Frankel and Okongwu.) Frankel argues that the reason for this surprising result is that the U.S. interest rate increase has a large negative effect on capital flows and international investors are nervous about the loose exchange rate link, requiring an extra risk premium for devaluation and default risk as well as for the lack of credibility on the part of macroeconomic policymakers.

In short, this evidence indicates that changes in U.S. monetary policy can have potent impacts on the interest rates in emerging market economies under different exchange rate regimes. The evidence suggests that as international financial markets become more integrated, interest rates in emerging economies may become increasingly sensitive to changes in the interest rates of large developed countries.

The empirical evidence briefly outlined here indicates that changes in U.S. monetary policy importantly affect financial markets in emerging markets in a number of ways. These changes may dominate capital flows in emerging market economies and

[26] See also Ronald I. McKinnon, "Euroland and East Asia in a Dollar-Based System," The International Economy, September/October 1999, p. 45, 67.

[27] See Jeffrey A. Frankel, "No Single Currency Regime is Right for All Countries," Testimony before the Subcommittee on Domestic and International Monetary Policy of the Committee on Banking and Financial Services, U.S. House of Representatives, May 21, 1999(a); Jeffrey A. Frankel, "No Single Currency Regime is Right for All Countries or at All Times," NBER Working Paper 7338, September 1991(b); Jeffrey A. Frankel and Chudozie Okongwu, "Liberalized Portfolio Capital Inflows in Emerging Markets: Sterilization, Expectations, and the Incompleteness of Interest Rate Convergence," International Journal of Finance and Economics, Vol. 1, No. 1, January 1996, pp. 1-23; and Ricardo Hausmann, Michael Gavin, Carmen Pages-Serra, and Ernesto Stein, "Financial Turmoil and the Choice of Exchange Rate Regime," Inter-American Development Bank, Office of Chief Economist, Working Paper #400, 1999. The discussion here follows Frankel 1999(a).

[28] See Frankel 1999(a), pp. 7-8; and Frankel 1999 (b), p. 22.

U.S. rate hikes have been associated with banking or financial crises in these developing economies. Further, movements in U.S. interest rates may have potent effects on interest rates in emerging markets under differing exchange rate regimes.

- Anecdotal Evidence: The Interest Rate Cuts in the Fall of 1998

In addition to this growing collection of formal empirical evidence, anecdotal evidence is also relevant. In particular, assessments of the three Federal Reserve interest rate cuts in the fall of 1998 led several analysts and "Fed watchers" to conclude that international factors may have weighed heavily in precipitating this Federal Reserve action.

These interest rate cuts, it will be remembered, took place in the context of international financial market turbulence associated with the Russian devaluation and debt moratorium in mid-August 1998. It was during this period that the Federal Reserve cut interest rates and took to monitoring risk and liquidity spreads after world financial markets threatened to "seize up" following the Russian problems.

The official rationale for these rate cuts was always framed in terms of their effects on the U.S. economy. Nevertheless, FOMC minutes indicated the moves were undertaken in light of the effects of the prevailing global (international) turmoil including its impact on the liquidity of financial markets.[29]

In assessing the episode, various economists, "Fed watchers," and market observers generally concurred with the need for Federal Reserve action. Their interpretations of this action, however, often more explicitly recognized the international dimension of the Federal Reserve policy moves and of the Federal Reserve's implicit assumption of important international lender-of-last-resort responsibilities (associated with the dollar's reserve currency status).

One well-known market observer, Allen Sinai, for example, argued that:

> The Greenspan Federal Reserve appears to have shifted regime, operating with a new policy framework that takes the world economy and financial system into account, viewing the U.S. as one component in this system.[30]

Another market observer remarked:

> The Fed Chairman understood that he had to act quickly to convince markets the U.S. central bank was ready to assist the world economy in crisis.[31]

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[29] See, for example, "Minutes of the Federal Open Market Committee," Federal Reserve Bulletin, January 1999, p. 45.

[30] Sinai was quoted in Gerald Baker, "Man of the Year Alan Greenspan: Guardian Angel of the Financial Markets," Financial Times, December 24, 1998, p. 9.

[31] Baker, *ibid.*

Similarly, in remarks to the American Economic Association in January 1999, the IMF's Stanley Fischer stated that:

> ...in recent months the leading central banks, in recognition of the feedbacks between the emerging market and the industrialized economies, have taken actions in the interests of their own countries that stabilize the world economy.[32]

In short, in taking this action, the Federal Reserve indicated it is capable of taking international, global factors into account and, indeed, providing important international lender-of-last-resort services, thereby serving to calm skittish world financial markets in situations of sharp increases in demand for international liquidity.[33] This is another manifestation of the international dimensions of Federal Reserve policy, which is sometimes not explicitly recognized.

Summary

Federal Reserve monetary policy has traditionally focused on the domestic economy. Over time, however, a number of significant trends have underscored the potential importance of the international dimension of contemporary monetary policy. Such trends include the following:

- Financial markets continue to become increasingly integrated internationally; capital is evermore mobile.
- The U.S. dollar continues to remain the world's principal international (key, reserve, and vehicle) currency despite evolving exchange rate arrangements.
- Official and unofficial dollarization continues in several emerging market economies.

These trends suggest that monetary policy may have differing transmission mechanisms increasingly involving international variables than was earlier the case. In addition to these trends, empirical evidence recently has accumulated showing that changes in U.S. monetary policy can significantly impact emerging market economies in a number of ways. For example, changes in U.S. monetary policy can (1) dominate capital flows in emerging market economies, (2) be associated with financial crises in these countries, and (3) significantly impact interest rates and financial markets in emerging economies under differing exchange rate arrangements. Furthermore, experience shows that the Federal Reserve can successfully assume international lender-

[32] Stanley Fischer, "On the Need for an International Lender of Last Resort," paper prepared for delivery at the American Economic Association, New York, January 3, 1999.

[33] It should be noted that key market price indicators (i.e., commodity prices, bond yields, and the foreign exchange value of the dollar) were signaling the Federal Reserve to ease at the time and broad measures of price inflation were benign.

of-last-resort responsibilities and stabilize world financial markets in situations of international liquidity crises.

Implications for U.S. Monetary Policy

Several important implications for U.S. monetary policy emerge from these trends and growing empirical evidence. They include the following:

- Given capital mobility and the practical reality that political pressures will dictate a preference for domestic monetary policy goals, the "policy trilemma" for the U.S. boils down to flexible exchange rate arrangements and a price stability objective for monetary policy.

- The Federal Reserve cannot deviate from or lose sight of its price stability goal, and the Federal Reserve should not sacrifice domestic for other goals. Nonetheless, it may be desirable to recognize the significant, increasingly important international repercussions of changes in U.S. monetary policy in order to better achieve these domestic goals. Recognizing these repercussions and their potentially important feedback effects suggest that changes in U.S. monetary policy may be more potent and wide-ranging than earlier believed. Consequently, to best achieve domestic goals in a nondisruptive manner, the degree or speed of policy moves may need to be adjusted accordingly.

  If these increasingly important repercussions and their potential feedback effects (e.g. changes in exports, import prices, or capital flows) can be identified, anticipated, and taken into account, their effects potentially may be offset, resulting in smoother transitions for the domestic economy and for financial markets. By taking these effects into account, implementation of policy changes can result in a less volatile, less costly, less disruptive outcome. Policy implementation may be improved. In short, informal "inflation targeting" by the Federal Reserve may be implemented in a way that recognizes international concerns.

- Recognizing these growing international impacts of changes in monetary policy suggests that in order for the Federal Reserve to best achieve its goals, policy changes may need to be undertaken in a well-telegraphed, gradual, deliberate manner so that no policy surprises or unanticipated repercussions occur, disrupting international and domestic markets. In short, to promote stability, the Federal Reserve may be well advised whenever possible to avoid sharp, rapid, and unexpected policy changes.

- The Federal Reserve should increasingly recognize international LOLR responsibilities and be prepared to respond to international liquidity crises.[34]

[34] For a discussion of these responsibilities and ways to implement them, see Keleher *op. cit.*, p. 9.

- These international factors may best be taken into account by maintaining a stable price environment and carefully, jointly monitoring forward-looking market prices such as various bilateral and broad trade-weighted measures of the dollar exchange rate, commodity prices, and bond yields as policy indicators. These market price indicators may in turn be supplemented by various measures of global prices, world commodity prices, and global bond yields to gain information about prospective global price movements, global price expectations, and world liquidity.[35]

Dr. Robert E. Keleher
Chief Macroeconomist to the Vice Chairman

[35] See discussion in Keleher, *op. cit.*, p.9.

The Performance of Current Monetary Policy Indicators

THE PERFORMANCE OF CURRENT MONETARY POLICY INDICATORS

INTRODUCTION

The Federal Reserve necessarily uses intermediate indicators in implementing a price-stabilizing monetary policy because of the well-known lags involved as well as the need for occasional pre-emptive action. With a quasi (informal) inflation targeting approach in place, the Fed's intermediate indicators must provide reliable signals of future changes in inflation. In recent years, however, mainstream economists (and their favored indicators) have done a relatively poor job of forecasting inflation. Inflation has been routinely overestimated: i.e., forecasted inflation has been higher than actual inflation. "Standard tools" or conventional indicators commonly used for forecasting inflation in many of these models involve the gap between actual unemployment and NAIRU[1] or between actual and potential GDP. In recent years, these policy guides (and models making use of such guides) have faired poorly, persistently overestimating inflation.

This paper briefly reviews the poor performance of these indicators in recent years and describes important problems of using real economic variables to forecast inflation. An alternative approach using market price indicators is briefly described, its advantages outlined, and its performance reviewed. These market price indicators consistently provided accurate signals as to future movements in core inflation and, accordingly, appear to have outperformed the conventional indicators.

The Policy Framework

A great deal of agreement has emerged in recent years as to the proper goal of monetary policy. In particular, under current exchange rate arrangements, the credible maintenance of price stability or a stable value of money has come to be viewed as the proper ultimate objective of monetary policy.[2] The obvious nature of this monetary policy goal was perhaps best summarized by Swedish economist Knut Wicksell more than a century ago:

> There is no need to waste words proving how important it is that the exchange value of money or, what is the same thing seen from the opposite angle, the general level of ...prices, remains as stable and constant as possible. Money is the standard of all values, the basis of all property transactions, and daily becomes more and more so. All commodities are exchanged for money, and moreover, we produce only in order to exchange, and to exchange for money. What then can be more important

[1] NAIRU is an acronym for non-accelerating inflation rate of unemployment. If actual unemployment falls below NAIRU, inflation is projected to increase (and vice versa).

[2] The case for and advantages of price stability have been made elsewhere and will not be repeated here. See, for example, Robert Keleher, "Establishing Federal Reserve Inflation Goals," a Joint Economic Committee study, April 1997.

than that what constitutes the standard of everything else, should itself remain a constant magnitude.[3]

In pursuit of price stability, the Federal Reserve in recent years has in effect adopted a quasi (informal) inflation targeting procedure, which has succeeded in lowering and containing inflation.[4] With price stability the central focus of monetary policy, the policy apparatus chosen should be that which best contributes to achieving this goal. Key elements of this policy apparatus are the intermediate indicators or guides used to achieve price stability. Such intermediate indictors are essential to this effort because of well-known policy lags, the frequent need for pre-emptive policy action, and other well-known problems with direct price targeting.[5] Appropriate intermediate indicators should be reliable forerunners or proxies for inflation or inflationary expectations: indicators or guides that reliably signal future changes in inflation or changes in inflationary expectations.

Currently, there is a good deal of disagreement among economists as well as Federal Reserve policymakers as to the best set of intermediate indictors to use in obtaining the Fed's goal. Conventional analysts, for example, use models that typically embody a "Phillips curve" relationship relating inflation positively to an "output gap." That is, these analysts employ the gap between actual unemployment and NAIRU or the gap between actual GDP and potential GDP as key inflation indicators or guides.[6] These are among their standard tools for forecasting inflation.[7]

Forecast Errors of Mainstream Models

In recent years, however, the inflation forecasts of mainstream economists (and their models) have been inaccurate and off the mark. Analysts generally agree that, for the most part, economists have done a poor job forecasting inflation. In particular, inflation has generally been overestimated; inflation forecasts have been persistently higher than actual inflation. An evaluation of inflation forecasts by the Congressional Budget Office (CBO), for example, indicates that the Blue Chip consensus persistently overestimated (two-year average) inflation rates from 1991-1992 to 1998-1999.[8]

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[3] Wicksell, Knut, "The Influence of the Rate of Interest on Commodity Prices," in Knut Wicksell: Selected Papers on Economic Theory, edited by Erik Lindahl, Harvard University Press, Cambridge, Mass., 1958, p. 67 (originally published in 1898).

[4] See, for example, the testimony of Federal Reserve Chairman Alan Greenspan: *The Economic Outlook and Monetary Policy*, Hearing before the Joint Economic Committee, Congress of the United States, One Hundred Fifth Congress, First Session, October 29, 1997. See especially page 14.

[5] See, for example, Manuel Johnson and Robert Keleher, Monetary Policy: A Market Price Approach, Quorum Books, Westport, Conn., 1996, p. 23.

[6] If actual unemployment falls below NAIRU, inflation is projected to increase (and vice versa). If actual GDP growth exceeds potential GDP growth, inflation is projected to increase (and vice versa).

[7] Relationships similar or analogous to these are ingredients in approaches used by the Congressional Budget Office and by the staff at the Federal Reserve Board. See, for example, Douglas Hamilton, "Description of Economic Models," CBO Paper, November 1998, p. 7; and David Reifschneider, Robert Tetlow, and John Williams, "Aggregate Disturbances, Monetary Policy, and the Macroeconomy: The FRB/US Perspective," Federal Reserve Bulletin, January 1999, p. 7.

[8] See Matthew Solomon, "Appendix B: Evaluating CBO's Record of Economic Forecasts," The Budget and Economic Outlook: Update, CBO, July 2000, Table B-4, p. 61. Analysis of forecasts by St. Louis Federal Reserve

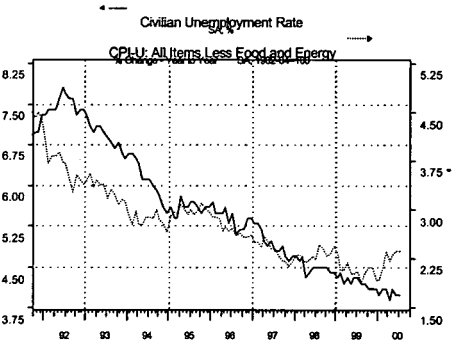
Part of the reason for these inaccurate forecasts relates to unreliable indicators used in forecast formulation. In particular, models using the actual unemployment rate relative to NAIRU (or actual GDP relative to potential GDP growth) as key ingredients in their inflation forecasts were inaccurate; these models persistently overestimated inflation. For example, CBO -- which employs such variables as important ingredients in its inflation forecasts -- assessed its recent forecasts and established that CBO has persistently overestimated inflation since the early 1990s.[9] Similarly, staff at the Federal Reserve Board (FRB) recognized inadequacies of inflation forecasts based on Phillips Curve or NAIRU concepts. A recent FRB study of such relationships, for example, found that actual inflation consistently fell short of their model's predictions of inflation over a recent five-year period.[10] This led them to remark that:

> The tendency of our baseline equations to significantly overpredict inflation since the mid-1990s... is an indication of structural change... or of misspecification.[11]

Some Simple Observations

It is not necessary, however, to engage in sophisticated forecast assessment to recognize the inadequacies of these Phillips curve-type guides as indicators of inflation. These inadequacies can readily be observed with a few simple graphs. For most of the past eight years, for example, the unemployment rate and core inflation have fallen together (see Chart 1[12]). During this lengthy period, there is little sign of an inverse relation between these two variables as is sometimes suggested by Phillips curve proponents.

Chart 1



Bank Economists draws similar conclusions. See William T. Gavin and Rachel J. Mandal, "Mixed Signals?" National Economic Trends, Federal Reserve Bank of St. Louis, July 2000.

[9] See Solomon, *op. cit.*, p. 61.

[10] Flint Brayton, John M. Roberts, and John C. Williams, "What's Happened to the Phillips Curve?" Division of Research and Statistics, Federal Reserve Board, Washington, DC, September 1999.

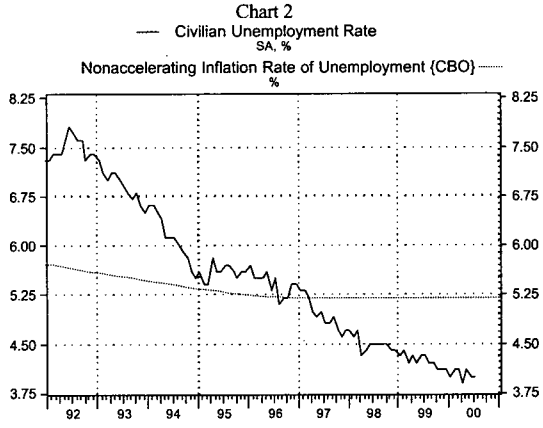
[11] *Ibid.*, p. 4.

[12] The source for all graphs is Haver Analytics.

As Chart 2 reveals, the civilian unemployment rate has fallen for eight years, has remained below 6 percent for more than six years, below 5 percent for more than three years, and has vacillated in the neighborhood of 4 percent during the past year. As late as the mid-1990s, estimates of NAIRU were typically in the neighborhood of 6 percent.[13] As Robert Gordon noted in 1998:

> In contrast to the near universal forecasts of accelerating inflation that would accompany a dip in the unemployment rate below 6 percent, inflation actually decelerated significantly between 1994 and 1998.[14]

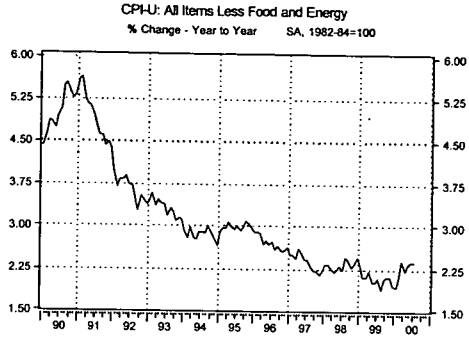
Chart 2



Accordingly, as unemployment continued to fall with no signs of accelerating inflation, erroneous estimates of NAIRU were downward-revised. Current (downward-revised) CBO estimates of NAIRU are also shown in Chart 2. Even with a downward-revised estimate of NAIRU, the unemployment rate has remained below NAIRU for almost 3 1/2 years. Yet the core rate of inflation, as measured, for example, by the core CPI, has remained relatively well behaved, as Chart 3 illustrates. In short, these charts suggest that in recent years the unemployment rate, either alone or relative to NAIRU, has not been a reliable guide or indicator of future inflation.

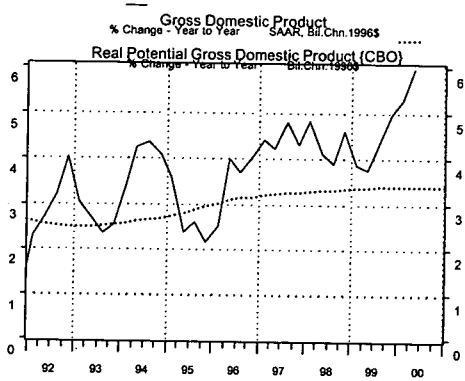
[13] See, for example, Arturo Estrella and Frederic S. Mishkin, "Rethinking the Role of NAIRU in Monetary Policy: Implications of Model Formulation and Uncertainty," NBER Working Paper No. 6518, April 1998, p. 1.
[14] Robert J. Gordon, "Foundations of the Goldilocks Economy: Supply Shocks and the Time-Varying NAIRU," February 3, 1999. Revision of paper presented at the Brookings Panel on Economic Activity, September 4, 1998, p. 1.

Chart 3



As Chart 4 indicates, similar observations about the inadequacies of inflation guides can be made with respect to the growth of actual GDP relative to estimates of potential GDP growth. Real GDP growth has consistently exceeded estimates of potential GDP growth (on a year-over-year basis) since the mid-1990s: i.e., for almost five years. Yet for the most part core inflation decelerated over this period. And analogous to NAIRU, as this gap persisted while core inflation continued to decelerate, (erroneous) estimates of potential GDP have repeatedly been revised upward, from the neighborhood of 2 1/2 percent to about 3 1/2 percent. Nonetheless, the conclusion remains inescapable: this actual GDP-potential GDP gap has been an unreliable guide to future movements of inflation.

Chart 4



The charts depicted here lead to a number of observations. In particular, in recent years:

- Low unemployment, even when it is low relative to downward revised estimates of NAIRU, has not been reliably associated with increased inflation.

- Economic growth persistently in excess of (upward-revised) estimates of potential GDP growth has not meaningfully stimulated core inflation or inflationary expectations.

- The gap between actual unemployment and NAIRU as well as the gap between actual GDP growth and potential GDP growth have been inaccurate guides to or indicators of inflation. These variables have contributed to inaccurate inflation forecasts. Indeed, for much of the late 1990s, these variables sometimes have not even predicted the correct direction of core inflation movements; core inflation has often continued to decelerate when these gaps have widened.

Problems with using conventional "gap" models to forecast inflation.

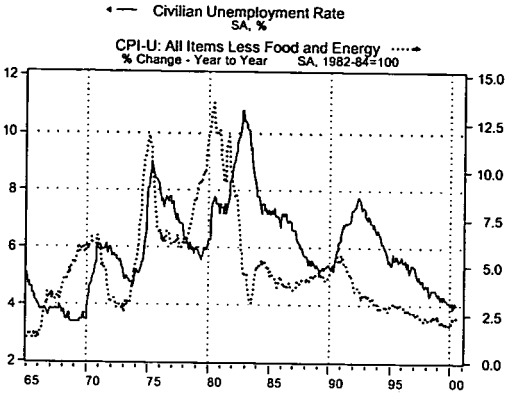
There are a number of theoretical and empirical problems with using real economic variables -- such as the gap between actual and " non-inflationary" unemployment or the gap between actual and potential GDP growth -- to forecast inflation. These problems, for example, include the following:

- The relationship between real economic activity and inflation is ambiguous. For decades it was generally believed that prices were pro-cyclical: i.e., that output and prices were positively correlated. Often, some form of Phillips curve relationship (associated with demand-side disturbances) was used to rationalize such correlation.[15] Recent evidence, however, indicates that properly assessed, this correlation is negative over the post-war period.[16] And from a long-term trend perspective, unemployment and inflation move together i.e., they are positively correlated as indicated in Chart 5. This suggests that robust real economic activity does not necessarily lead to higher inflation.

[15] See, for example, Wouter J. den Haan, "The Comovement Between Output and Prices," Journal of Monetary Economics, 46 (2000), p. 4.

[16] See, for example, Michael Pakko, "The Cyclical Relationship between Output and Prices: An Analysis of the Frequency Domain" Journal of Money, Credit, and Banking, Vol. 32, No. 3, August 2000, part 1, p. 382 and the evidence cited therein.

Chart 5



Part of the reason for this ambiguity is that using real economic activity to forecast inflation often does not adequately distinguish between demand-side and supply-side disturbances. These respective disturbances, however, can have very differing impacts on the output-price relationship. Demand-side stimulus, for example, can produce short-term output gains with increases in inflation. On the other hand, supply-side stimulus such as productivity advances can produce output gains with falling inflation. Furthermore, stable, decelerating inflation can serve to promote economic growth. The unreliability of this output/inflation relationship suggests that real economic variables may be misleading policy guides for the Federal Reserve in an inflation-targeting monetary policy strategy.

- Potential GDP and NAIRU are unobservable and the latter cannot be estimated with precision: Since both potential GDP and NAIRU are unobservable, there is an inherent problem of estimating or measuring these variables. The only truly foolproof way to determine or verify whether actual GDP is meaningfully above or below potential is to observe aggregate price movements. Similarly, the only foolproof way to truly verify whether actual unemployment is in the vicinity of NAIRU is to observe price or wage movements.

  Furthermore, recent research has demonstrated that NAIRU cannot be estimated with much precision; there is significant uncertainty in the empirical estimates of NAIRU. Empirical analysis by Staiger et. al., demonstrates that estimates of NAIRU are quite imprecise with large, wide confidence bands.[17] This suggests a

[17] Staiger, Douglas, James H. Stock and Mark Watson, "How Precise are Estimates of the Natural Rate of Unemployment?" in Reducing Inflation: Motivation and Strategy, edited by Christina D. Romer and David H.

lack of confidence as to the actual estimates. In assessing the Staiger et. al., analysis, for example, one commenter stated:

> ...The data are incapable of distinguishing between a wide range of estimates of the natural rate... a variety of plausible models yield widely differing estimates of the natural rate at a point in time... The standard errors of the estimated natural rates are quite large -- a typical 95% confidence interval runs from 5 to 8 percent... Even with forty-two years of monthly time-series observations, the data just do not provide precise estimates.[18]

For all practical purposes, the size of this imprecision and uncertainty precludes the use of NAIRU as a reliable guide for a price-stabilizing monetary policy.

- Potential GDP (or NAIRU) is constantly changing in unpredictable ways: In a dynamic economy, potential GDP and NAIRU are constantly changing in unpredictable ways. NAIRU, for example, was estimated to be around 5% in the 1960s, 7% in the 1970s, and 6% in the early to mid-1990s. More recently (and following NAIRU's poor inflation forecasting record) estimates of NAIRU have been revised down again. These changes in NAIRU are related to a number of factors including changing labor force demographics, government unemployment programs, or regional economic disturbances among other factors.[19] In practice, these unpredictable changes contribute to forecasting error and make NAIRU an unreliable policy guide in a price stabilizing monetary policy regime.

In short, there are a number of theoretical, empirical, and practical problems associated with the use NAIRU or potential GDP as policy guides in a price-stabilizing monetary policy strategy. These problems, together with the recent poor forecasting record of these variables, suggest that alternative policy guides should be considered.

Some Alternative Monetary Policy Indicators: Market Price Guides to Monetary Policy

An alternative set of monetary policy indicators appropriate for price stability goals has recently been proposed. A detailed description of the approach using these indicators has been given elsewhere and will only be briefly summarized here.[20] This approach uses certain market price indicators -- broad indices of commodity prices, various measures of the foreign exchange value of the dollar, and long-term bond yields -- as guides for a price-stabilizing monetary policy. All of these sensitive market prices yield early warning signals pertaining to changes in the value of, or price of money: i.e., relevant to movements in the general price level. Being

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Romer, University of Chicago Press, Chicago, 1997(a); Staiger, Douglas, James H. Stock and Mark Watson, "The NAIRU, Unemployment, and Monetary Policy," Journal of Economic Perspectives 11:33-49, 1997(b).

[18] Alan B. Krueger, "Comment," in Reducing Inflation: Motivation and Strategy, edited by Christina D. Romer and David H. Romer, University of Chicago Press, Chicago, 1997, pp. 242-3.

[19] John Judd, "NAIRU: Is it Useful for Monetary Policy?" Federal Reserve Bank of San Francisco, Economic Letter No. 97-35; November 21, 1997, p. 2.

[20] For a through description of this approach see Manuel Johnson and Robert Keleher, Monetary Policy, A Market Price Approach, Quorum books, Westport, Connecticut, 1996.

prices, these indicators signal movements in demand relative to supply and accordingly potentially can be more useful than the above-described "gap" models. These market prices are intended to serve as informational indicators, not policy targets. Other things equal, each indicator can signal the relative "ease" or "tightness" of monetary policy.

These market prices have a number of distinct advantages over competing intermediate indicators of monetary policy. Such market price data, for example, are observable, easy-to-understand, timely, and readily available, literally minute-by-minute. They are accurate, less subject to sampling error, and unaffected by revision, rebenchmarks, seasonal adjustments, or shift-adjustments that sometimes plaque quantity data. Several formal studies investigating the usefulness of various forms of economic statistics conclude that market price data are superior to other forms of data.[21] Furthermore, they are forward-looking and can signal future changes in inflation and inflationary expectations. If these market price indicators are carefully assessed in conjunction with one another, they can be useful forerunners of inflation and helpful guides for a price-stabilizing monetary policy.

Recent Performance

Recently, while conventional models were overestimating actual inflation, market price indicators provided relatively reliable signals as to future movements of general prices. In particular, these indicators accurately foretold the persistent disinflation of core CPI prices, for example, and have accurately suggested that no important resurgence of inflation was imminent. These guides indicated that monetary policy generally remained in an anti-inflation mode rather than "easy" as suggested by the above-cited conventional "gap" models.

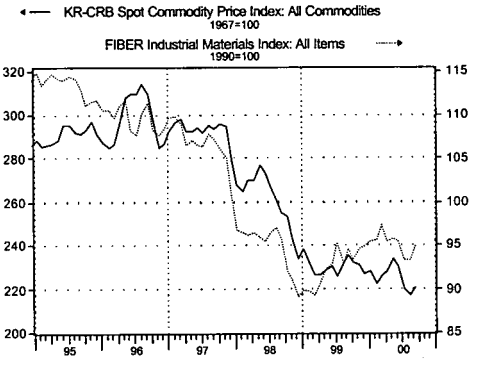
Each major market price indicator contributed to this interpretation as follows:

- Commodity prices: Since the mid-1990s, broad indices of commodity prices have generally signaled that monetary policy remained in an anti-inflation mode. Broad indices of core commodity prices have generally remained stable or persistently trended down since 1995 with some commodity prices indices remaining below commodity price levels registered in the early 1980s. The KR-CRB spot index (which does not include energy prices), for example, has persistently trended down since the mid-1990s and remains at levels below those registered in the early 1980s[22] (see Chart 6). This commodity price measure, therefore, served as a reliable forerunner of persistent downward trends of core CPI inflation during the latter half of the 1990s.

[21] See, for example, Oskar Morgenstern, On the Accuracy of Economic Observations, Princeton University Press, Princeton, N.J., 1963; and Victor Zarnowitz, "On Functions, Quality, and Timeliness of Economic Information," NBER Working Paper Series, No. 608, December 1980.

[22] The source for the Commodity Research Bureau Commodity (KR-CRB) price indices is Knight-Ridder financial.

Chart 6



Various other indices of commodity prices provide some variation of this general picture but generally corroborate the central theme. The KR-CRB futures index (which includes energy prices) has trended down from 1995, but ticked up with energy prices early in 1999 before cooling in mid-2000. Similarly, as shown in Chart 6, popular indices of industrial materials prices (which also include energy prices) generally trended down after 1994 but ticked up with energy prices in 1999 and early 2000 before cooling in mid-2000[23]. Apparently, the recent energy price increase generated some heightened inflationary expectations during 1999. Abstracting from the effects of energy prices, therefore, for the most part these commodity price indices signaled that from the mid-1990s, core inflationary pressures were benign with no significant resurgence of inflation expected. These indictors, therefore, suggested that monetary policy remained in an anti-inflation mode during the second half of the 1990s. They served as accurate forerunners of the persistent lower trends in core inflation as measured, for example, by core CPI (as depicted in Chart 3).

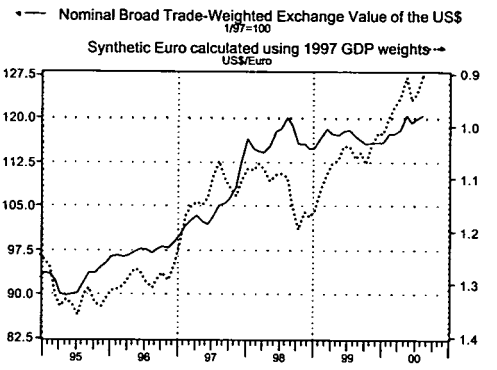
- Foreign Exchange Rates: Various measures of the foreign exchange rate of the dollar also yield potentially important information about future inflation and inflationary expectations (relative to other countries). In recent years, and especially since 1995, certain bilateral and most multilateral measures of the dollar's value have steadily appreciated, thereby persistently signaling (other things equal) that U.S. monetary policy has been firm relative to that in other countries.[24] In particular, as Chart 7 indicates, the dollar has firmed on (various measures of) a trade-weighted basis, against the yen until 1998, and especially against (synthetic measures of) the Euro. Notably, this persistent

[23] Popular indices of industrial materials prices include the FIBER (Foundation for International Business and Economic Research) industrial materials price index or the JOC-ECRI (Journal of Commerce-Economic Cycle Research Institute) industrial price index.

[24] Exchange rate movements measure changes in the value of money relative to other monies.

appreciation occurred during a period when core CPI continued to decelerate (as depicted in Chart 3 above), suggesting that (other things equal) these dollar movements accurately signaled a continuing disinflationary environment despite unemployment falling below NAIRU and robust (above potential) GDP growth. In short, during the period after the mid-1990s, this market price indicator continued to yield accurate signals as to the inflationary environment while "gap" models persistently overestimated inflation.

Chart 7

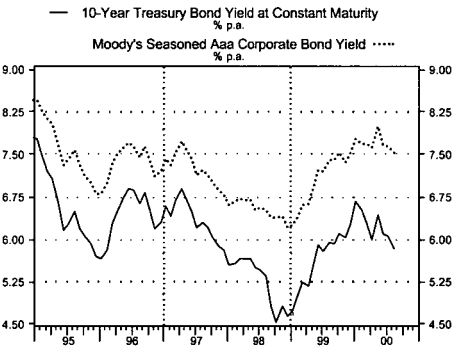


- Long-Term Interest Rates: Another market price indicator that provides useful information in assessing the prospects for inflation and expected inflation is long-term interest rates. From early 1995 to early 1999, for example, bond market yields trended down, thereby presaging a benign inflationary environment. Early in 1999, however, changes in several factors impacted the bond market. Sharp increases in energy prices influenced most general inflation indices even though core measures of inflation remained relatively well-behaved. This generated an increase in inflationary expectations as measured, for example, by some survey and market-based gauges.[25] Partly because of these altered expectations, anticipations about Federal Reserve policy began to change; the market began to expect tighter Fed policy in the future. The Fed did raise the fed funds rate six times beginning in June 1999, hiking the rate 175 basis points to 6.50 percent by May, 2000. These factors worked to increase long-term interest rates during 1999, before these rates cooled in 2000 as Chart 8 indicates. But while long-term rates advanced during this period, short-term rates increased even more, inducing the yield spread to narrow and by some measures to invert, signaling a more restrictive monetary

[25] For example, year-ahead household inflation expectations as measured by the University of Michigan's Survey of Consumers as well as market-based measures based on inflation indexed Treasury securities both indicated that inflationary expectations increased beginning in early 1999.

policy.[26] By mid-2000, therefore, long-term rates had fallen from their peak and expectations of inflation had again moderated; the inflationary environment had regained a tamer demeanor.

Chart 8



- A Joint Assessment of Market Price Indicators: The market price indicators discussed here all provide useful information as to the inflationary environment and therefore to monetary policymakers. While useful, these market price indicators are not infallible; each has drawbacks. These indicators, therefore, should be assessed jointly or in conjunction with one another in order to minimize misinterpretation. Such joint assessments provide superior information than indicators analyzed in isolation.[27]

Generally, during most of the post-1995 period, these guides consistently indicated that a resurgence of core inflation was not a serious concern. More specifically, for most of the post-1995 period, broad indices of "core" (ex-energy) commodity prices remained weak, various bilateral and multilateral measures of the foreign exchange value of the dollar remained strong, and except for the early 1999-Spring 2000 period, bond yields remained benign. For the most part, these indicators suggested that a resurgence of inflation was not likely and that significant inflationary pressures were not an important concern. The inflation message of these indicators was consistent with the actual benign core inflation that characterized the period. In this sense, these market price indicators provided more accurate inflationary signals than the above-described "gap" models that consistently predicted higher than actual inflation.

[26] Some moderation of long-term U.S. government security rates during the later portion of this period reflected diminished issuance and the debt paydown program. Nonetheless, spreads between the fed funds rate and quality corporate bond yields showed a similar pattern during this period.

[27] For a discussion of the rationale for such joint assessments, see Johnson and Keleher, *op. cit.*, especially pp. 39-40 and Chapter 11 (pp. 183-216).

SUMMARY AND CONCLUSIONS

Price stability is currently a central focus of U.S. monetary policy. Because of well-known policy lags and the need for preemptive policy action, the Federal Reserve necessarily uses intermediate indictors to help attain its inflation goals. Currently, there is a good deal of disagreement among economists as well as Federal Reserve policy makers as to the proper set of intermediate indictors to use in conducting a price stabilizing monetary policy.

Some analysts, for example, use models that typically embody a "Phillips curve" relationship relating inflation positively to an "output gap" typically using the gap between actual unemployment and NAIRU or the gap between actual GDP and potential GDP as inflation guides. In recent years, however, these models have not performed well; their inflation forecasts have persistently been higher than actual inflation. There are a number of problems associated with the use of NAIRU or potential GDP as policy guides in a price stabilizing monetary policy strategy. These problems, together with the recent poor inflation forecasting record of these variables, suggest that alternative policy guides should be considered.

Market price indicators are such an alternative useful set of guides to a price stabilizing monetary policy. These indicators -- commodity price indices, the foreign exchange value of the dollar, and long-term bond yields -- have a number of advantages as policy guides, especially when they are jointly assessed in conjunction with one another. Recently, these indicators consistently provided reliable signals as to the direction of, and to future movements in, core general prices. The inflation signals of these indicators were consistent with the actual benign core inflation that characterized the period. In this sense, these indicators provided more reliable inflationary signals than the above-described "gap" models that consistently predicted higher than actual inflation.

Assessments of this period add further empirical support to a market price approach to monetary policy and suggest that when jointly assessed in conjunction, these market price indicators are viable, useful intermediate guides to monetary policy, particularly in a (quasi) inflation targeting regime.[28]

Dr. Robert E. Keleher
Chief Macroeconomist to the Vice Chairman

[28] Empirical support for these market price indicators is presented in Johnson and Keleher, *op. cit.* (see chapters 8-10, 12, 13).