105th CONGRESS 2nd Session } HOUSE OF REPRESENTATIVES { REPORT 105-807

THE 1998 JOINT ECONOMIC REPORT

REPORT

OF THE

JOINT ECONOMIC COMMITTEE CONGRESS OF THE UNITED STATES

ON THE

1998 ECONOMIC REPORT OF THE PRESIDENT

together with

MINORITY VIEWS

October 10, 1998. Committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

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LETTER OF TRANSMITTAL

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, DC, October 10, 1998.

Hon. NEWT GINGRICH,
Speaker of the House, House of Representatives,
Washington, DC.

DEAR MR. SPEAKER: Pursuant to the requirements of the Employment Act of 1946, as amended, I hereby transmit the 1998 Joint Economic Report. The analyses and conclusions of this Report are to assist the several Committees of the Congress and its Members as they deal with economic issues and legislation pertaining thereto.

Sincerely,

Jim Saxton,
Chairman.

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October 10, 1998.--Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

MR. SAXTON, from the Joint Economic Committee, submitted the following

REPORT

together with

MINORITY VIEWS

Report of the Joint Economic Committee on the 1998 Economic Report of the President

OVERVIEW OF THE MACROECONOMY

The performance of the macroeconomy over the past several quarters and into the first half of 1998 has been quite favorable. Low and declining inflation has been associated with lower interest rates, sustained, healthy overall economic and employment growth, together with the lowest rate of unemployment in decades. This growth has been healthy enough to generate the tax revenues producing the first annual budget surplus since 1969. Most economic observers agree that this extended performance was related to the fact that no important macroeconomic policy mistakes have been made in recent years. In particular, Federal Reserve Policy has gradually squeezed inflation out of the system so as to promote economic growth. Congressional spending restraint together with tax relief has enabled the economy to continue to expand, while at the same time reducing the budget deficit.

By most measures, general inflation rates have continued to trend downwards in recent years. This trend has persisted into 1998. Gross domestic product (GDP) deflators are registering their lowest year-over-year inflation rates in decades. The core Consumer Price Index also has recorded the lowest year-over-year inflation rates since the 1960s.

Similarly, producer prices show downward trending price changes with little sign of inflation in the earlier stages of processing. Commodity price indices actually show persistent weakness. In short, general price measures show continued disinflation and very low rates of measured inflation.

This lower inflation has translated into lower interest rates. Both long-term and short-term rates have decreased. Recently, the Federal Reserve has lowered short-term rates while long-bond yields of Treasury securities reached their lowest level since the 1960s.

Lower inflation and lower interest rates have worked to foster economic growth. Indeed, real GDP growth has averaged better than 3.75 percent over the last six quarters (at the time of this writing). Much of that strength has occurred in interest-rate sensitive sectors such as investment, consumer durables, and housing.

Payroll employment gains have been impressive, while household employment growth has been strong enough to enable the overall unemployment rate to fall to its lowest levels in decades. Similarly, the employment/population ratio and labor force participation rates are close to all-time highs.

This forward momentum in production, employment, and economic activity has been consistent enough to generate sizable increases in tax revenues. Spending restraint on the part of the Congress prevented this added revenue from being spent. Accordingly, these revenue gains together with this rigid congressional spending restraint eliminated the budget deficit; a yearly budget surplus was actually obtained for fiscal year 1998, the first time since 1969.

Of course, recent disturbances in international financial markets have raised concerns about the export sector, financial markets, as well as the general prospects for maintaining positive economic performance. These disturbances should remind policymakers that a prudent, flexible policy stance is most appropriate at this juncture. But macroeconomic policies of tax relief, spending restraint, and price stabilizing monetary policy should remain key policy ingredients to further boost economic performance.

REPRESENTATIVE JIM SAXTON,
Chairman.
SENATOR CONNIE MACK,
Vice Chairman.

MAJORITY STAFF REPORT

MONETARY POLICY

ESTABLISHING FEDERAL RESERVE INFLATION GOALS

INTRODUCTION

Recently, several Members of Congress have endorsed the concept of price stability as the principal policy objective for Federal Reserve monetary policy. After outlining current institutional arrangements and congressional responsibilities, the reasons why the goal of stabilizing the purchasing power of money is appropriate are detailed. Moreover, this paper demonstrates that such a goal (1) has a rich historical heritage, (2) recently has been successfully adopted in several countries, (3) in effect, implicitly has worked in the United States in recent years, and (4) has already been endorsed by a number of Federal Reserve officials.

Although inflation has receded, and hence price stability is no longer a "headline-grabbing" issue, the paper highlights several important reasons why now is the opportune time to adopt such a strategy. The U.S. legislative history of this approach is summarized and essentials of current price stability legislation presented.

In the context of this paper, the policy of price stability will generally refer to inflation targeting whereby target bands are used for changes in some conventional broad price index or measure of inflation.

BACKGROUND: INSTITUTIONAL ARRANGEMENTS, CONGRESSIONAL RESPONSIBILITIES, AND PREVIOUS APPROACHES

In order to assess the appropriateness of adopting the monetary policy goal of price stability, some background material–a brief review of the current monetary regime as well as congressional responsibilities–is essential.

The Current Monetary Regime

A cogent description of current monetary institutional arrangements perhaps is best provided by Milton Friedman:

> ... a world monetary system has emerged that has no historical precedent: a system in which every major currency in the world is, directly or indirectly, on an irredeemable paper money standard . . . It is worth stressing how little precedent there is for the present situation. Throughout recorded history . . . commodity

> money has been the rule. So long as money was predominantly coin or bullion, very rapid inflation was not physically feasible . . . The existence of a commodity standard widely supported by the public served as a check on inflation . . . The key challenge that now faces us in reforming our monetary and fiscal institutions is to find a substitute for convertibility into specie that will serve the same function: maintaining pressure on the government to refrain from its resort to inflation as a source of revenue. To put it another way, we must find a nominal anchor for the price level to replace the physical limit on a monetary commodity.[1]

In other words, the emergence of this fiat money, flexible exchange rate system (after the demise of the Bretton Woods System in the early 1970s), means there is no reliable mechanism anchoring the price system; no reliable store or standard of value exists.[2] Instead, the stability of the current monetary regime fully depends on the competence of central bankers to provide these critical functions of a dependable monetary system: to substitute for the reliability of a commodity standard.

Congressional Authority

At the same time, the Congress has clear legal authority over regulating the value of money. Specifically, the U.S. Constitution (Article I, Section 8) explicitly gives Congress the power over money and the regulation of its value. This responsibility was delegated by Congress to the Federal Reserve; the Federal Reserve was created by an act of Congress. This delegation implies that Congress has important responsibilities for overseeing the conduct of Federal Reserve monetary policy.

Of course, at the time of the creation of the Federal Reserve and for most of the period until the demise of the Bretton Woods System, the

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[1]Milton Friedman, "Monetary Policy in a Fiat World," in Money Mischief: Episodes in Monetary History, Harcourt Brace Jovanovich, New York, 1992, pp. 249, 252-4.

[2]Furthermore, current monetary arrangements are unlikely to change in the near future. Specifically, because the potential for sharply changing demands for international monetary reserves is associated with the rapid growth of emerging markets and the evolution of the European Monetary Union, a near-term stable, international monetary anchor appears unlikely.

United States was on some form of commodity standard so that no explicit price anchor mandate was essential.[3] With the emergence of fiat money/flexible exchange rate arrangements in the early 70s, however, such a mandate–which Congress clearly has the authority to implement–is not only appropriate but necessary.

The Failure of Other Approaches

Unfortunately, inappropriate or multiple and conflicting monetary policy goals for the Federal Reserve have been prescribed and found wanting during much of the period since the demise of Bretton Woods. In part, such prescription reflects Keynesian predilection for managing real economic activity and full employment macroeconomic policy goals, culminating in the Full Employment and Balanced Growth Act of 1978 (Humphrey-Hawkins Act). This Act prescribes multiple and conflicting policy goals and, accordingly, has made it more difficult to achieve viable objectives of monetary policy such as price stability.

But (intermediate) monetary targeting for the Federal Reserve also was prescribed during this period. These monetary targets proved less reliable than expected for a number of reasons relating partly to deregulation.

This post-Bretton Woods experience has culminated in the realization that price stability is the single, appropriate goal for monetary policy; a monetary standard securely anchoring the price system is essential. This view is now embodied in current price stability legislation described below.

RATIONALE FOR ADOPTING THE GOAL OF PRICE STABILITY

Given this background, it is natural that Congress should move to consider making price stability the explicit key objective for monetary policy. A number of specific reasons indicate why price stability is the appropriate monetary policy goal; these reasons relate not only to

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[3]With the existence of a fixed exchange-rate gold standard at the time the Federal Reserve was created, monetary policy was not seen as a potent tool of government economic policy making. (Federal Reserve policy was guided by the behavior of the gold reserve ratio following Central Bank practice under the gold standard.) Accordingly, congressional oversight was not seen as a high priority responsibility. With the emergence of the fiat system described above, this mechanism has changed, and monetary oversight now is accorded more importance.

efficient provision of monetary services but to minimizing the many disruptive costs of inflation.

- **Price stability enables money to best perform its various functions.**

  Money can best provide its functions of a medium of exchange, a store of value, and a standard of value under a regime fostering price stability. Such stability anchors the price system so that comparative values can be established and accurately measured.

- **Price stability enables the price system to work better.**

  Price stability enables the price system–the information or signaling mechanism of free-market economies–to function effectively by directing resources to their most beneficial use. Price stability is associated with both lower inflation volatility and with lower (relative) price dispersion than inflationary circumstances. Lower inflation reduces the variability between individual prices or reduces the noise and distortions in the price system.[4] This allows the price system to better serve its information and allocative functions. As a result, the economy operates more efficiently and therefore grows faster.

- **Price stability promotes transparency, accountability, and credibility.**

  Explicitly adopting price stability as the principal monetary policy goal serves to promote transparency, accountability, and credibility to monetary policy. Furthermore, explicit inflation targets reduce incentives of the monetary authority to renege or backslide on its commitment to price stability.

- **Price stability enhances fiscal discipline.**

  Explicit price or inflation targeting prevents the use of inflation as a revenue source for the government. More specifically, price stability minimizes seignorage as well as government's ability to reduce its outstanding debt via inflation. Moreover, price stability minimizes those interactions of inflation with non-indexed portions of the tax code that effectively result in higher taxation. Lowering inflation, therefore, in many ways

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[4]See, for example, Guy Debelle and Owen Lamont, "Relative Price Variability and Inflation: Evidence From U.S. Cities," Journal of Political Economy, vol. 105, no. 1, February 1997.

acts like a tax cut by removing these potential sources of revenue.[5]

Moreover, adopting the goal of price stability and moving to lower inflation has a number of beneficial economic effects relating to minimizing the disruptive costs of inflation:

- **Price stability lowers interest rates.**

  A credible, sustained reduction of inflation will lower expectations of future inflation. Accordingly, the inflationary expectations component of interest rates will dissipate from the structure of both short- and long-term interest rates and interest rates will decline.

- **Price stability works to stabilize financial markets and interest-sensitive sectors of the economy.**

  As inflation diminishes, the variability of inflation also is reduced. Lower inflation is associated with lower volatility of inflation. Accordingly, financial markets have less tendency to overshoot 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. Thus, lower inflation stabilizes financial markets. As a result, market participants tend to become more confident or self-assured and more willing to invest, take risk, and innovate. Businesses are better able to plan and coordinate, thereby improving efficiency. Furthermore, this enhanced financial stability works to stabilize interest-rate-sensitive sectors of the economy and, therefore, the macro economy as well.

- **Price stability promotes growth.**

  By enabling the price system to work better, enhancing fiscal discipline and minimizing tax distortions, lowering interest rates, and helping to stabilize both financial markets and interest-sensitive sectors of the economy, price stability promotes economic growth. Resources can engage in productive activities rather than finding ways to circumvent

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[5]This argument is especially relevant in circumstances when tax limitation provisions and/or balanced budget regimes are being implemented; i.e., when stricter fiscal regimes are put in place. It is in these circumstances that government will look for new revenue sources.

costs of inflation. Several recent empirical studies have found that lower inflation is associated with higher growth.[6]

ADDITIONAL CONSIDERATIONS

In addition to these important reasons for adopting price stability as the primary goal of monetary policy, a number of additional considerations lend further support to the argument.

(1) Historically, this view has been endorsed by many of the world's most preeminent monetary economists: Support for the goal of price stability under fiat money is, of course, not novel. Many of the economic profession's most revered monetary writers have supported this objective.

Probably history's most famous monetary debate occurred during the Napoleonic era when Britain went off the gold standard. During this period, classical bullionist writers such as Henry Thornton and David Ricardo recognized that under these circumstances the Bank of England had responsibility to regulate the value of money; in effect, to provide a stable monetary standard substitute for gold convertibility. This endorsement of price stability under fiat money was later supported by such eminent economists as John Stuart Mill and Alfred Marshall. Knut Wicksell further refined existing approaches to achieving price stability; his views were widely embraced by other Swedish economists such as Gustav Cassel. Famous British economists during the interwar period such as Ralph Hawtrey and John Maynard Keynes also endorsed price stability as the appropriate goal for monetary policy.[7] The view was also supported by esteemed economists in the United States such as Irving Fisher, Henry Simons, and Lloyd Mints, as well as most modern-day monetarists.[8]

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[6]See, for example, Robert Barro, "Inflation and Economic Growth," National Bureau of Economic Research Working Paper No. 5326, October 1995; Brian Motley, "Growth and Inflation: A Cross-Country Study," Center for Economic Policy Research, publication no. 395, March 1994; and Todd E. Clark, "Cross-Country Evidence on Long-Run Growth and Inflation," Economic Inquiry, vol. 35, no. 1, January 1997.

[7]This support is especially evident in Keynes' Tract on Monetary Reform, as well as his Treatise on Money.

[8]A history of the price stabilization movement was published by Irving Fisher in 1934. See Stable Money: A History of the Movement. Adelphi Co., New York, 1934.

(2) Both historical and contemporaneous evidence indicate that the price stability objective can work quite successfully: A good deal of empirical evidence shows that price stability or inflation targeting regimes have worked successfully. Historically, the first such regime was the Swedish price stabilization regime of the early 1930s. Upon suspending gold payments in 1931, Swedish authorities explicitly announced the adoption of a price stability standard, a monetary policy explicitly directed to stabilize the internal purchasing power of the krona. The policy was remarkably successful: prices were stabilized, contributing significantly to the stability of the domestic economy and insulating the Swedish economy from the 1930s' worldwide depression.[9]

More recently, the single monetary policy goal of price stability has been successfully implemented in a number of countries. Explicit, quantifiable inflation targets have been adopted by Canada, the United Kingdom, Australia, New Zealand, Sweden, Spain, and Finland. In fact, the summary of a recent conference sponsored by the Federal Reserve proclaimed that, "Central banks throughout the world are moving to adopt long-term price stability as their primary goal."[10] The evidence to date indicates these policies have been quite successful. Those countries adopting a price stability goal, for example, significantly improved their inflation performance. Specifically, they have all dramatically lowered their inflation rates since adopting targets for inflation, often to lower rates not observed for decades. Several of these countries reached their inflation objectives well ahead of schedule; inflation targets have often been met or undershot. Preliminary studies have shown that those countries adopting explicit inflation targets have outperformed other countries not only in terms of lowering inflation but in a number of other

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[9]The Swedish experience led Irving Fisher to assert that "This achievement of Sweden will always be the most important landmark up to its time in the history of (price) stabilization," Irving Fisher, Stable Money, Adelphi Co., New York, 1934, pp. 408-9. (parenthesis added). For further documentation of this episode, see Manuel Johnson and Robert Keleher, Monetary Policy, A Market Price Approach, chapter 13, Quorum Books, Westport, Connecticut, 1996.

[10]George A. Kahn, "Achieving Price Stability: A Summary of the Bank's 1996 Symposium," Economic Review, Federal Reserve Bank of Kansas City, vol. 81 no. 4, fourth-quarter 1996, p. 53.

criteria as well.[11] This evidence underscores the argument that explicit, quantifiable goals of price stability can be implemented successfully.

(3) Recent Federal Reserve policy focus on price stability has also been successful: The Federal Reserve's emphasis on price stability in recent years has also worked to lower inflation, thereby contributing to the sustainability of the current expansion. While the Federal Reserve has not adopted explicit, quantifiable inflation targets like the central banks of countries cited above, Federal Reserve officials have repeatedly endorsed price stability in speeches, testimony, interviews, and official publications. The preemptive policy move to tighten monetary policy beginning in February 1994 demonstrated that these public pronouncements were genuine and so this move not only worked to reduce inflation but also enhanced the central bank's inflation fighting credibility.

This credible disinflation policy has worked to lower interest rates, stabilize financial markets and interest sensitive sectors of the economy, promote the efficient operation of the price system, and, in effect, act like a tax cut in many ways.[12] All of this has contributed to promoting the sustainability of the expansion and further demonstrates the value of price stability as a principal policy goal.

(4) Price stability as the principal goal of monetary policy has already been endorsed by several Federal Reserve policy-makers: Adopting price stability as the primary goal of monetary policy has received the support of many academic economists as well as many officials and policy-makers of the Federal Reserve system itself. For example, Federal Reserve regional bank presidents from the New York, Richmond, St. Louis, San Francisco, and Cleveland banks have all explicitly endorsed price stability as monetary policy's primary policy goal.

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[11]See, for example, Bennett T. McCallem, "Inflation Targeting in Canada, New Zealand, Sweden, the United Kingdom, and in general," National Bureau of Economic Research Working Paper no. 5579, May 1996. p. 9.

[12]See Robert Keleher, *The Roots of the Current Expansion*, a Joint Economic Committee study, April 1997, for a more detailed discussion of the contribution of monetary policy to the sustainability of the expansion.

THE OPPORTUNE TIME TO ADOPT TARGETS FOR PRICE STABILITY

Although inflation has receded and hence price stability is no longer a "headline-grabbing" issue, there are several important reasons why now is the opportune time to adopt targets for price stability:

- **Cement current gains.**

  Adopting targets for price stability would ensure the many beneficial economic effects of low inflation are maintained. Such targets are easiest to implement when inflation is already low, political opposition is relatively weak, and price stability has attained a degree of credibility as a proper goal for monetary policy. In short, the current period is the politically opportune time to cement gains and credibility that have been achieved, thereby minimizing the costs of moving to price stability.[13] Adopting formal price stabilization goals now when political barriers are relatively low ensures that procedures for maintaining price stability are in place when inevitable difficult tightening decisions have to be made in the future.

- **Remove incentives to backslide.**

  As memories of high inflation fade, interest groups increasingly emphasize near-term benefits of stimulative monetary policy; demands for monetary relief from adverse changes in interest rates, foreign exchange rates, or output proliferate. Implementing explicit targets for price stability would serve to insulate the Federal Reserve from such political pressures.

Furthermore, without targets for price stability, incentives grow for inflationary policies when inflation is low. Specifically, short-sighted policy-makers recognize that surprise (unexpected) expansionary policies are more potent than expected policy changes. So when inflation is reduced and is expected to remain subdued, stimulative policies that are a surprise have a larger economy-boosting impact. In short, as inflation

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[13]Targets for price stability should be introduced when there is a realistic chance of reducing inflation (i.e., when inflation is low or trending down); credibility is an important reason for targets and hitting the first target is especially significant for establishing credibility. See Charles Freedman, "The Canadian Experience with Targets for Reducing and Controlling Inflation," Inflation Targets, edited by Leonardo Leiderman and Lars Svensson, Center for Economic Policy Research, Glasgow, 1995, p. 28.

is reduced, incentives increase for policy-makers to unexpectedly stimulate the economy. Pre-commitments to explicit price targets reduce these perverse incentives.[14]

- **Govern by rules rather than by men.**

  While the Federal Reserve has performed admirably under the regimes of Chairmen Volcker and Greenspan, there is no guarantee that it will continue to perform so well in the future under different management. Institutionalizing the goal of price stability will help ensure that Federal Reserve performance depends more on a transparent system of rules rather than upon the vagaries of individuals and is less prone to political manipulation or pressure. Adopting such rules would provide a political buffer, preventing future administrations from manipulating monetary policy when there are incentives to do so.

- **Prevent the use of inflation as a source of government revenue.**

  Continued pressures on fiscal policy to balance the budget, resolve entitlement problems, and limit taxation will induce government policymakers to look for alternative revenue sources. Inflation, after all, can serve as a mechanism to finance government spending and reduce real government debt. Adopting explicit rules for price stability would prevent the use of monetary policy for such purposes.

ALLOWANCE FOR FLEXIBILITY

One of the key criticisms of adopting inflation targets is that such a strategy would remove monetary policy's flexibility. With fiscal policy constrained so that it cannot be used for stabilization policy, it is argued that monetary policy is the only tool left for this purpose and therefore should remain relatively unencumbered.

This criticism seems misplaced for several reasons. Certainly the international experience with inflation targeting provides ample evidence that, in practice, inflation targets leave room for a good deal of flexibility. In particular, inflation targets normally consist of bands rather than point estimates. They are usually multi-year in nature. The relevant targeted inflation index often is adjusted for volatile (supply-side) components. And even after such adjustment, some countries (e.g., New Zealand)

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[14]In economic jargon, this is referred to as the "time inconsistency" problem.

allow for further exceptions to specified targets. All of these considerations allow for considerable flexibility, yet maintain a focus on long-term price stability.

Furthermore, if unanticipated shocks are "demand-side" in nature, inflation targets automatically direct appropriate monetary policy responses that work to stabilize the economy. Finally, by adopting inflation rather than price level targets, some accommodation of unanticipated one-time supply-side shocks are allowed for (i.e., inflation targets do not require offsetting deflation and hence associated economic disruption as do price level targets).[15] In sum, inflation targets retain a good deal of flexibility for monetary policy.

LEGISLATIVE HISTORY

In the United States, legislation mandating price stability for monetary policy is not new. As ably documented by Irving Fisher, a series of bills to stabilize the purchasing power of money or the general price level were introduced and re-introduced during the 1920s and 1930s.[16] The most prominent sponsors of these bills were T. Alan Goldsborough (MD) and James A. Strong (KS). Congressional hearings were held on several of these price stabilization bills and during these hearings, the idea of price stabilization received significant support from academics, businessmen, and farmers. Opposition came from various officials of the Federal Reserve System.[17]

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[15]Because offsetting deflation is not required by inflation targets, these targets embody "base drift" (an ever-increasing price level). In other words, inflation targets imply that the price level becomes "non-stationary"; once disturbed, the price level does not return to its previous level. Because of this characteristic, inflation targets are associated with greater long-term variance and uncertainty of prices. Nonetheless, because inflation targets enhance policy flexibility, they are viewed as more realistic politically.

[16]See Irving Fisher, *Stable Money: A History of the Movement*, Adelphi Co., New York, 1934 (see chapters V and VI).

[17]Governors Strong, Harrison, and Norris as well as Board members Meyer, Miller, and Young voiced opposition to the idea. Director of Research Goldenweiser also opposed the idea during such hearings. See Fisher, pp. 150-206.

The Goldsborough Bill mandating price stability passed the House of Representatives on May 2, 1932 by an overwhelming vote of 289-60.[18] The Bill, however, was blocked in the Senate principally by Senator Carter Glass (Federal Reserve officials testified in opposition to the Bill).

Price stability, of course, has been identified as one of several economic objectives mandated to the Federal Reserve as embodied in the Employment Act of 1946 and the Full Employment and Balanced Growth Act of 1978 (Humphrey-Hawkins Act). The need to focus primarily on price stability, however, re-emerged as a legislative priority in the Neal Resolution. This congressional Resolution instructed the Federal Reserve to gradually eliminate inflation within five years and then to maintain price stability. The initiative, however, remained in committee.

CURRENT PRICE STABILITY LEGISLATION

The Mack-Saxton Bill was introduced during the 104th Congress in September 1995 and reintroduced during the 105th Congress in April 1997. The Bill includes the following features:

- Establishes long-term price stability as the primary goal of Federal Reserve monetary policy.
- Repeals the Full Employment and Balanced Growth Act of 1978 (Humphrey-Hawkins Act) and the multiple policy goals mandated by this Act; amends portions of the Employment Act of 1946.
- Places responsibility on the Federal Reserve to numerically define price stability and set the time table for achieving it.
- Requires the Federal Reserve to report to Congress semi-annually and provide information on the numerical progress toward achieving the price stability goal.
- Requires the Federal Reserve to describe variables used to gauge its own progress toward price stability and to report to Congress when it changes methods for measuring its own progress.

As these features suggest, the Bill is a significant step forward in moving to make long-run price stability a reality. But the legislation may not be the final word on this issue. Continued progress on this front, for example, might include additional ingredients to:

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[18]This bill mandated price stability and additionally gave the Federal Reserve the power to raise or lower the price of gold when necessary. See Fisher pp. 186-7.

- Allow for significantly improving the transparency of monetary policy; specifically, requiring that Federal Reserve reporting and disclosure be more timely, frequent, thorough and detailed as well as more accessible to the public. This might involve, for example, requiring an explicit "inflation report" detailing the inflation outlook to be presented at more regularly scheduled congressional oversight hearings.
- Promote the transparency of Federal Reserve and Treasury exchange rate policy and clarify the relationship of this policy to mandated Federal Reserve inflation goals. Such clarification would involve identifying the precedence of inflation objectives vis-a-vis exchange rate policy as well as simplifying and clarifying related decisionmaking processes.
- Require the Federal Reserve to identify before the fact what remedial action will be undertaken should price stability goals not be achieved.

IMPLICATIONS FOR CURRENT MONETARY POLICY

Regardless of the success of price stability legislation in the United States Congress, the Federal Reserve should move forward on several fronts unilaterally to adopt these features fostering price stability and enhanced transparency. Doing so will not only promote the credibility of monetary policy but will also help to remove uncertainties spawning unnecessary market volatility. These actions will enable market prices to serve as more reliable sources of information and policy indicators and furthermore will foster improved market discipline on monetary policy.

SUMMARY AND CONCLUSIONS

Currently, our fiat money system has no reliable price anchor or standard of value. At the same time, Congress has the legal authority and oversight responsibility for regulating the value of money and providing for such an anchor. There are many reasons for and benefits from adopting price stability as the primary goal of monetary policy. This objective has been endorsed not only by many of the world's most esteemed monetary economists but also by many Federal Reserve officials. Both historical and contemporary evidence demonstrates that such a strategy works quite well. Furthermore, the approach allows for ample monetary policy flexibility; there are many reasons why this approach should be adopted now.

The time has come to introduce price stability as a legislative goal. Current price stability legislation is not the first to advocate stable

money, but it offers much of what was the best in earlier initiatives. Such legislation deserves the support of both Houses.

LESSONS FROM INFLATION TARGETING EXPERIENCE

INTRODUCTION

While some forward-looking U.S. Congressmen have promoted price stability and introduced legislation to make it the primary goal of Federal Reserve monetary policy, many other countries, including Canada, The United Kingdom, New Zealand, Sweden, Spain, Finland, Australia, and Israel have moved forward beyond the rhetoric, explicitly adopting price stability as the primary goal for their monetary policy. There is a growing consensus that under current monetary arrangements, the single appropriate goal of monetary policy should be price stability.[19],[20]

There are many important lessons from this surprisingly rich international experience relevant to both U.S. legislators (charged with Federal Reserve oversight) as well as to Federal Reserve policy makers themselves. After briefly summarizing the benefits of price stability, this paper succinctly summarizes these key lessons to highlight possible policy approaches and promote awareness of this important issue.

THE RATIONALE FOR PRICE STABILITY

The foreign governments and Central Banks cited above recognize the following well-known benefits of and rationale for price stability:

- **Anchors the Price System.**

  Recent decades have witnessed both the breakdown of the Bretton Woods System as well as disappointment with the performance of monetary aggregates as guides for monetary policy. This left a fiat money system with no reliable anchor of value. Such an anchor is needed to provide a standard of value, so that comparative values can be established and accurately measured. Price (or inflation) targets resulting in price stability provide such an anchor.

- **Allows the Price System to Function Effectively.**

  Importantly, price stability enables the price system–the information or signaling mechanism of free market

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[19]Current monetary arrangements entail a fiat money, flexible exchange rate regime.

[20]This goal has been explicitly endorsed by a number of Federal Reserve officials including several Federal Reserve Bank Presidents.

economies–to function effectively by directing resources to their most beneficial use, thereby fostering efficiency.

- **Promotes Stability and Growth.**

  By minimizing price volatility, distortions affecting the price system, as well as uncertainty and inflation premiums, price stability not only promotes economic and financial market stability but also lowers interest rates and fosters sustainable economic growth.[21] Indeed, a benefit of a credible price stability goal is that market forces could serve as natural stabilizers.

- **Eliminates Distortive Effects of Inflation Interacting with the Tax Code.**

  Since investors continue to pay income taxes on the inflation component of interest and dividend income as well as capital gains attributable to inflation, price stability would eliminate these and other forms of tax distortion and such "taxation without representation."

- **Promotes Transparency, Accountability, and Credibility.** Explicitly adopting price stability as the principal monetary policy goal serves to promote transparency, accountability, and credibility to monetary policy. Furthermore, explicit inflation targets reduce incentives of the monetary authority to renege or backslide on its commitment to price stability.[22]

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[21]Recent empirical research has documented a negative relationship between inflation and economic growth. See, for example, Robert J. Barro, "Inflation and Economic Growth," NBER Working Paper 5326, October 1995; Brian Motley, "Growth and Inflation: A Cross Country Study," Federal Reserve Bank of San Francisco Working Paper 94-08; and Stanley Fischer, "The Role of Macroeconomic Factors in Growth," NBER Working Paper No. 4565, December 1993.

[22]The "time inconsistency" problem arises when inflation is reduced, but short-sighted policy makers recognize that surprise (unexpected) expansionary policies can have significant short-term economy-boosting effects. In short, as inflation is reduced, incentives for policy makers to unexpectedly stimulate the economy increase. Pre-commitments to explicit price targets reduce these perverse incentives.

LESSONS FROM RECENT INFLATION TARGETING EXPERIENCE

Recognizing these benefits, the governments and central banks of Canada, The United Kingdom, Australia, New Zealand, Sweden, Spain, Israel, and Finland explicitly have adopted targets for price stability as the principal goal of monetary policy.[23],[24] Other countries, such as Germany and Italy, also have embraced price stability.

There are many important lessons from this recent international experience with targets for price stability. These lessons, summarized in the following paragraphs, should be of special interest to both legislators interested in monetary policy oversight as well as to monetary policy makers themselves.

Lesson #1: The Single Explicit Goal of Price Stability Can Be Successfully Implemented.

The single monetary policy goal of price stability has been successfully implemented in a number of countries. Explicit, quantifiable inflation targets have been adopted by a number of countries including Canada, The United Kingdom, New Zealand, Sweden, and Finland. Evidence to date indicates these experiments have been quite successful. Those countries adopting a price stability goal, for example, significantly have improved their inflation performance. Specifically, they have all dramatically lowered their inflation rates since adopting targets for inflation, often to lower rates not observed for decades. Several of these countries reached their inflation objectives well ahead of schedule; inflation targets have often been met or undershot. Preliminary studies have shown that those countries adopting explicit inflation targets have outperformed other countries not only in terms of lowering inflation but in a number of other criteria as well.[25]

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[23]The reasons these governments opted for explicit price stability goals included disappointment with fixed exchange rate arrangements and/or monetary aggregate targeting.

[24]Sweden successfully adopted price stability as a goal of monetary policy in the 1930s. See, for example, Robert Keleher, "The Swedish Market Price Approach to Monetary Policy of the 1930's," Contemporary Policy Issues, Vol. IX, No.2, April 1991.

[25]See, for example Bennett T. McCallem, "Inflation Targeting in Canada, New Zealand, Sweden, The United Kingdom, and in general." NBER Working Paper No. 5579, May 1996, p.9.

This evidence underscores the argument that explicit, quantifiable goals of price stability can be implemented successfully. While implicit goals of price stability may also work, in some cases it appears that explicit targets can help further to achieve price stability in a number of ways discussed below; however, price stability goals must be credible. Many of the lessons enumerated below provide guidelines to enhance the credibility, and therefore the likely success, of inflation targets.

Lesson #2: Targets for Price Stability Can Take the Form of Inflation Targets Rather Than Price Level Targets.

Central Banks recently embracing explicit targets for price stability have adopted inflation targets rather than price level targets.[26] There are important differences between these two forms of targets for price stability. With an increase in prices, for example, price level targets require an offsetting decline in (deflation of) prices whereas inflation targets merely require a cessation of the increase. This difference has several important implications. Inflation targets, for example, allow for more policy flexibility in responding to (one-time) supply-side shocks since no price deflation (and hence less real economic disruption) is required. Because of this enhanced policy flexibility, inflation targets are viewed as more realistic politically and hence, more credible. But because offsetting deflation is not required by inflation targets, these targets also embody "base drift" (an ever-increasing price level) and greater longer term variance and uncertainty of prices.[27]

Lesson #3: The Consumer Price Index (CPI) Can Be Used as the Inflation Target.

Although countries adopting explicit inflation targets recognize well-known mis-measurement biases of consumer price indices, they all have used the CPI (or variants of the CPI) as the basis of their inflation target. These biases are viewed as being relatively minor and outweighed by the CPI's practical advantages: namely, its familiarity, ready availability, minor revisions, and convenience in communication with the public.

Additionally, most countries using CPI targets adjust the index for volatile components and non-monetary influences. Adjustments have

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[26]The price stabilization regime adopted in Sweden during the 1930s, however, focused on price level stability as its primary goal (Keleher *op.cit.*).

[27]Inflation targets imply that the price level becomes "non-stationary"; once disturbed, the price level does not return to its previous level. Some economists argue that inflation targets can be an effective first step to price level targeting at a later date.

often been made for volatile food and energy components as well as for housing costs or mortgage payments and indirect taxes. Despite imperfections, therefore, the CPI target is viewed as practical and useable. Should the U.S. CPI be revised to account for measurement biases, an adjusted version may still be a viable target. But alternative price indices may also be workable and not precluded from consideration.

Lesson #4: Inflation Targets Should Take the Form of Bands Rather Than Point Estimates.

Countries adopting explicit inflation targets generally have specified target bands (or tolerance intervals) rather than point estimates for their inflation targets. These bands allow for the realities of measurement imprecision as well as unexpected shocks to specific prices. Accordingly, existing inflation targets normally have a tolerance width of about two percentage points.

In addition to tolerance bands and above-cited adjustments to the CPI, some countries (e.g., New Zealand) have provided for escape clauses which allow for further modifications or exceptions in cases of special circumstances. These features all help to make adherence to explicit targets more believable and hence more credible.

Lesson #5: Establishing the Credibility of a Price Stabilizing Monetary Policy Takes Time.

Experience in several countries indicates that establishing the credibility of inflation targeting arrangements is not easy and occurs only over an extended time frame.[28] The mere announcement of such targets does not by itself readily lend credibility to inflation targets. It is only after a record of price stability and the establishment of complementary institutional arrangements that credibility develops, implying that inflationary expectations and risk premiums of interest rates will disappear only slowly over time.[29]

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[28]The credibility of price stabilizing policy refers to the public's belief that the central bank will adhere to the policy consistently. Such credibility is important because it influences expectations affecting interest and exchange rates and thereby affects the cost of reducing inflation in terms of lost output and employment.

[29]See, for example, John Judd, "Inflation Goals and Credibility," Weekly Letter, Federal Reserve Bank of San Francisco, Number 95-19, May 12, 1995.

Lesson #6: Inflation Objectives Should be Multi-Year in Nature So As to Allow for a Gradual Adjustment to Price Stability.

Countries adopting inflation targets have employed a multi-year time frame in establishing their inflation objectives so as to allow for a gradual, extended adjustment to price stability. An extended time period is essential for complete disinflation to occur. Such an approach considers not only the long lags of monetary policy on inflation, but also the long-term contracts and the lags in the adjustment of both behavior and inflationary expectations. Establishing multi-year objectives increases the chances of success by allowing for a gradual conditioning of expectations; hence, these objectives minimize economic disruption while enhancing the credibility of inflation goals.

Lesson #7: Inflation Targets Should be Accompanied by More Open, Transparent Monetary Policy Reporting by Central Banks.

Central Banks adopting explicit inflation targets have improved their communication and reporting about the intent of and progress toward achieving their stated targets. These banks recognize that for their policies to be successful, their policy goals should be transparent; objectives should be understandable, simple, explained, justified, and restated frequently. Accordingly, these banks have more regularly issued increasingly informative inflation reports. The Bank of England and the Central Bank of New Zealand, for example, issue quarterly inflation reports whereas the Swedish Riksbank issues such a report three times a year. These reports are useful in both publicizing and explaining policy goals to the public as well as to the financial press. The reports sometimes present an explicit inflation outlook and spell out ongoing inflation developments. Such improved communication about both policy targets and the actual inflation record is an essential element in improving the credibility of inflation targets, thereby reducing the costs of disinflation.

Lesson #8: The Inflation Targets for Monetary Policy Should be Consistent With Other Macroeconomic Policies of the Government.

Most countries adopting explicit inflation targets recognize that monetary policy goals of price stability should be consistent with other macroeconomic policies of the government. A disinflation monetary policy program which is inconsistent with other macroeconomic policies may not be credible and hence may be more costly to implement than otherwise would be the case.

Exchange rate objectives, for example, should be subordinate to inflation targets for the latter to be credible, implying that the priorities of the Treasury Department (or Minister of Finance) should be made compatible with central bank objectives. Similarly, if levels of public spending and budget deficits are high and increasing, the credibility of price stability goals may be difficult to maintain.[30],[31]

One element of government debt policy is particularly notable in this regard. Specifically, issuing inflation indexed bonds adds to the credibility of monetary policy aimed at price stability because such debt issuance removes government incentives to use inflation as a financing tool (at least for that portion of the debt that is indexed). Indexed debt cannot be inflated away, and such debt shifts the risks of inflation onto the issuer (government) as opposed to the debt holder.[32] Accordingly, incentives for inflation are reduced and the credibility of price stability goals is enhanced.

Notably, most countries recently adopting inflation targets also issue inflation indexed debt. The United Kingdom, New Zealand, Canada, and Sweden, for example, all issue indexed debt and all have had successful inflation targeting experiences.

Lesson #9: Mandating the Goal of Price Stability Should Not Be Accompanied by Directives on Specific Procedures as to How the Central Bank Should Achieve Price Stability.

Successful experience in implementing price stability as the monetary policy goal has been associated with the use of several (intermediate) policy indicators or guides rather than a single (intermediate) policy target. Indeed, adoption of inflation targets represents movement away from a rigid adherence to explicit intermediate policy targets. Thus,

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[30]Pressures to monetize the debt and/or deficit may increase with rising interest rates.

[31]This is the rationale underlying European debt and deficit criteria (under the Maastricht Treaty) for entry to the European Monetary Union. This also underpins the German desire for a European "Stability Pact" agreement to bolster the credibility of the EMU.

[32]As Treasury's Lawrence Summers has stated, "Governments that sell inflation insurance will tend to avoid inflation." Lawrence Summers, "Comments on Why are Central Banks Pursuing Long-Run Price Stability," Federal Reserve Bank of Kansas City Symposium on "Achieving Price Stability," Jackson Hole, Wyoming, August 29-31, 1996.

successful approaches to price stability involve instrument independence but not goal independence; i.e., a mandated price stability goal but central bank independence as to what procedures or guides to use to best achieve this goal.

More specifically, successful pursuit of inflation targets has not been achieved by targeting monetary aggregates, interest rates, or real economic activity; i.e., unemployment rates or economic growth. Some successful price stabilizing central banks, however, have used market price variables such as exchange rates, commodity prices, or measures of price expectations as policy guides.[33]

SUMMARY AND CONCLUSION

A number of countries recognize the many potent benefits of price stability and consequently have explicitly adopted it as the principal goal of monetary policy. To date, preliminary evidence suggests the inflation targeting experience of many foreign central banks has been quite successful and promises to continue to provide excellent results. A number of very important lessons can be learned from the accumulated knowledge and experience in The United Kingdom, New Zealand, Australia, Spain, Canada, Sweden, Finland, and other countries. This paper briefly summarized these key lessons with the hope of improving congressional legislative initiatives dealing with the goal of price stability for U.S. monetary policy.

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[33]See, for example, Keleher, *op cit*; Charles Freedman, "What Operating Procedures Should be Adopted to Maintain Price Stability? Practical Issues," Paper presented at Federal Reserve Bank of Kansas City Conference on "Achieving Price Stability," Jackson Hole, Wyoming, August 29-31, 1996.

A Response to Criticisms of Price Stability

Introduction

Central banks in several industrialized countries have made price stability the primary goal of monetary policy in recent years.[34] Similar proposals have been made for the U.S. Federal Reserve. A number of criticisms have been directed at this strategy.

With deficit-manipulating fiscal policy no longer viewed as an appropriate tool for macroeconomic stabilization policy, some critics argue that a price stability mandate for monetary policy removes the only remaining governmental economic policy tool capable of stabilizing the macroeconomy over the business cycle.

Other critics posit that price stability is an inappropriate policy goal, contending that some positive inflation improves the workings of the economy by providing "the grease" for labor market adjustment and by ensuring that monetary policy remains viable and potent while minimizing deflation risk. Some cost-benefit (welfare) analysts contend that the costs of pursuing price stability outweigh its benefits. Still other critics focus on the measurement problems of defining price stability and using existing biased price indices such as the Consumer Price Index (CPI) as an inflation gauge.

This paper addresses key criticisms of price stability as monetary policy's primary goal. Each criticism is addressed and, for reasons that will be delineated, found to be without merit.

The Criticisms

Criticism #1: ***Mandating price stability as the primary goal of monetary policy removes the only remaining policy tool capable of stabilizing the macroeconomy over the business cycle. With fiscal policy in a "balanced budget mode" and therefore deficit-manipulating fiscal policy no longer capable of serving a stabilization role, monetary policy must retain flexibility essential to assume stabilization responsibilities. Without such***

[34]These countries include Australia, Canada, Finland, New Zealand, Spain, Sweden, and The United Kingdom.

flexibility, nothing remains to stabilize a macroeconomy vulnerable to various shocks.

This criticism overlooks the workings of fiscal stabilizers as well as important stabilizing properties of both price stability and the manner in which price stability should be (and has been) implemented. Price stability itself works to stabilize the economy in several important ways: it lowers interest rates and, because lower inflation is associated with lessened volatility of inflation, it also lowers interest rates' risk and uncertainty premiums, thereby stabilizing both financial markets and interest rate sensitive sectors of the economy.[35] Businesspeople and investors no longer base their decisions on expectations of future inflation. Moreover, price stability fosters more efficient operation of the price system and effectively acts like a tax cut.[36] As Federal Reserve officials themselves have emphasized repeatedly, price stability lays the groundwork for maximum sustainable long-term economic growth.

In responding to demand-side "shocks" or disturbances such as sudden spending slow-downs, price stabilizing monetary policy and counter cyclical policy are one and the same; such recessionary forces would put downward pressure on prices, but monetary policy under a price stability goal would be exerted in the opposite direction to stabilize the economy. Thus, inflation targeting would automatically work to minimize or offset demand-side disturbances to the macroeconomy, thereby removing or minimizing one key source of business cycle disturbance. Indeed, if the Federal Reserve successfully stabilizes prices, recession is less likely since most economic downturns occur in response to monetary policy actions to stem excessive buildups of inflation.

Furthermore, inflation targeting provides enough flexibility to manage even supply-side disturbances. International experience demonstrates, for example, that inflation targets are normally bands or ranges, allowing a good deal of flexibility in responding to such disturbances. Adjustments to price indices for volatile (often supply-side) price

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[35]See Robert E. Keleher, *The Roots of the Current Expansion*, a Joint Economic Committee report, April 1997, for an explanation of how anti-inflationary monetary policy has contributed to the current expansion.

[36]Price stability removes distortions to the price system and eliminates those interactions of inflation and the tax code that lead to higher taxation on capital. Price stability implies tax rates are effectively lowered on items such as capital gains and/or depreciation allowances.

components such as food and energy are common. Furthermore, escape clauses for special situations have also been used, and multi-year targets emphasizing the long-term nature of price stability are typical. All of these factors allow for policy reactions that promote a gradual transition back to price stability, minimizing the disruption of supply-side shocks while at the same time allowing leeway for near-term counter cyclical policy. Additionally, inflation targeting as opposed to price level targeting implies that inflationary supply-side disturbances need not be offset by episodes of deflation: i.e., inflation targeting allows for a more flexible, gradual, and non-disruptive return to stability.

In short, adopting price stability as the primary goal of monetary policy allows for a significant degree of flexibility so that in practice, it does not preclude achieving other desirable goals. A "gradualist" pursuit of price stability typically does not conflict with stabilization goals. And demand-side as well as supply-side disturbances can be readily managed. Operationally, central banks pursuing price stability have not completely abandoned stabilization goals; they have adopted "gradualist" approaches and cushioned transitions to price stability.

Empirical evidence supports these assertions. The recent U.S. disinflation experience, for example, has been associated with lower interest rates, stable financial markets, significant contributions from interest-rate sensitive sectors, and a remarkably sustained recovery. Similarly, at least one study has demonstrated that those countries recently adopting inflation targets have not only significantly lowered their inflation rates but have outperformed other (non-inflation targeting) countries in several other respects as well.[37] Furthermore, because of Sweden's price stability regime, it outperformed most other countries in the turbulent 1930s.[38] Additionally, some evidence suggests that lower inflation is associated with higher economic growth.[39] Criticism suggesting the stabilization

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[37]See, for example, Bennett T. McCallum, "Inflation Targeting in Canada, New Zealand, Sweden, The United Kingdom, and in General," National Bureau of Economic Research, Working Paper No. 5579, May 1996, p. 9.

[38]See Robert Keleher, "The Swedish Market Price Approach to Monetary Policy of the 1930s," *Contemporary Policy Issues*, Volume IX, No. 2, April 1991.

[39]See, for example, Robert J. Barro, "Inflation and Economic Growth," National Bureau of Economic Research, Working Paper No. 5326, October 1995; Ruth Judson and Athansasios Orphanides, "Inflation, Volatility, and Growth," Board of Governors of the Federal Reserve System, May 1996; and Brian Motley, "Growth and Inflation: A Cross-Country Study," Federal Reserve Bank of San

function vanishes under inflation targeting regimes, therefore, has little basis in either theory or fact and thus cannot be used as an argument to discredit the goal of price stability.

Criticism #2: ***A strict price stability target for monetary policy is suboptimal since it renders labor market adjustments inoperative in the face of unemployment disturbances and inflexible wages. With downward rigid nominal wages, some positive inflation is essential to foster labor market (real wage) adjustment to unemployment disturbances. Price stability, on the other hand, lowers real wage flexibility and the allocative efficiency of the labor market. Accordingly, the cost of eliminating inflation is higher than many believe since at low levels of inflation a permanent tradeoff between unemployment and inflation emerges; the unemployment costs of eliminating inflation increase as inflation approaches zero.***[40]

This criticism misses the mark for a number of important reasons. It recycles repudiated Keynesian arguments regarding macroeconomic policy and the labor market.[41] According to this view, price stability will result in increased (persistent) unemployment. This rise in unemployment, in effect, results from insufficient aggregate demand and, accordingly, its remedy is to pursue expansionary policies that produce more (albeit moderate) inflation. This higher inflation works to permanently lower unemployment. As the arguments below show, increasing inflation to reduce unemployment is inappropriate for a number of reasons.

Francisco, Working Paper 94-08.

[40]In other words, the Phillips Curve is non-linear and not vertical at low levels of inflation.

[41]The writings of John Maynard Keynes in the 1930s reflected the special circumstances characterizing The United Kingdom but not the United States. Specifically, British labor markets in the 1920s and 1930s exhibited not only high unemployment but a substantial degree of rigidity reflecting powerful, entrenched labor unions, unemployment insurance, minimum wage laws, and welfare schemes that had minimal influence in more flexible U.S. labor markets in the 1920s and early 1930s.

This criticism rests on the presumption that nominal wages are (downwardly) rigid when both inflation and expectations of future inflation are eliminated. But empirical evidence that nominal wages are rigid even during periods of moderate inflation is not conclusive.[42] Some researchers, for example, find little evidence of such wage rigidity.[43] Furthermore, there is anecdotal evidence that wage flexibility may have increased as union membership has declined (as a percentage of the labor force) and as higher percentages of workers are employed in smaller firms whose wage arrangements are more likely to resemble "auction" rather than "contract" formats.

Empirical evidence mustered to support the view that wages are rigid under price stability is based largely on historical data from periods of moderate inflation. While some evidence supporting some wage rigidity may exist during periods of moderate inflation, there is little if any evidence that nominal wages would be downwardly rigid under price stability. Indeed, there is reason to believe that wages likely would become more flexible after a period of stable prices since such a regime would generate a different set of expectations and hence foster different behavior on the part of both suppliers and demanders of labor services.[44] Historical episodes of relatively stable prices in the early 1900s, especially the 1920s, much of the 1950s, and even the mid-1990s indicate

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[42]Moreover, the methodology used to assess such rigidity is dubious. Specifically, observations of the frequency of downward wage adjustments (during moderate inflation) are used to draw inferences about wage "rigidity." With positive productivity growth, it is not obvious why negative wage movements would be expected under price stability. Furthermore, economic definitions of wage "rigidity" pertain to the responsiveness of nominal wages to changes in unemployment rather than to simply the frequency of negative (nominal) wage adjustments.

[43]See, for example, A. Crawford, and C. Dupasquier, "Can Inflation Serve as a Lubricant for Market Equilibrium," in Economic Behavior and Policy Choice Under Price Stability. Ottawa, Bank of Canada, 1994, pp. 49-80; David E. Lebou, David J. Stockton, and William L. Wascher, "Inflation, Nominal Wage Rigidity, and the Efficiency of Labor Markets," Finance and Economics Discussion Series, Board of Governors of the Federal Reserve System, 94-95, October 1995; and Kenneth J. McLaughlin, "Rigid Wages?," Journal of Monetary Economics, 34 (1994), pp. 383-414.

[44]See, for example, Robert J. Gordon, "Comments and Discussion," Brookings Papers on Economic Activity, 1, 1996, p. 62.

that during these periods unemployment rates were low, not high, as predicted by this view. In short, workers' resistance to wage cuts depends on the monetary regime; nominal wage rigidity is not necessarily a permanent characteristic of the labor market.

Of course, some wage rigidity may be related to longstanding labor market institutions (e.g., minimum wage laws, unemployment insurance, union strength, etc.) that adjust only very slowly to changes in both money regime and price expectations. Accordingly, such institutional rigidity cannot readily be affected by changes in a monetary policy or policy regime. And changing these institutions is not the function of monetary policy; the monetary authority can only establish a regime that influences expectations of future inflation. The problem of gradual labor market adjustment in this case, therefore, is institutional wage rigidity, not price-stabilizing monetary policy. It would be a serious monetary policy mistake to adopt, in effect, inflationary policies to accommodate these institutions.

The strategy of adopting inflationary policies "to lubricate" the labor market depends on "money illusion" and would fail to lower real wages, to facilitate labor market adjustment, to make the labor market more flexible, or to lower unemployment.[45] Instead, this policy would have the unintended effect of making nominal wages increasingly downwardly rigid and upwardly flexible.[46] Thus, such policy does not predictably lower real wages or the unemployment rate. Indeed, even moderate inflation cannot produce sustained benefits and often leads to both higher unemployment and higher inflation. Furthermore, higher inflation would increase the noise in relative wage changes, thereby reducing the efficiency of the wage setting process.[47] Additionally, this criticism

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[45]"Money illusion" refers to the argument that workers will not accept a reduction in their real wage brought about by lowering nominal wages but will accept an identical real wage reduction implemented by increasing the price level.

[46]This would occur because persistent inflation would work to strengthen the above-mentioned institutional rigidities (causing nominal wages to become more downwardly rigid). At the same time, strengthened expectations of future inflation would bring about more frequent recontracting of nominal wages resulting in increased flexibility in the upward direction.

[47]See Ben Bernanke and Frederic Mishkin, "Inflation Targeting: A New Framework for Monetary Policy?," National Bureau of Economic Research, Working Paper No. 5893, January 1997, p. 29 (footnote 12).

ignores the employment promoting effects of price stability as described, for example, in Keleher (1997).[48]

Fortunately, with theoretical advances in recent years, this view is now a minority position.[49] Such criticism of price stability rests on neither solid theoretical nor empirical ground. Wage rigidities–to the extent they do exist–cannot be mitigated by altering monetary policy. Promoting more inflation to lubricate the labor market would only work to lessen existing wage flexibility. And contrary to this criticism, price stability and stabilizing price expectations would work to promote rather than to inhibit such flexibility.

Criticism #3: ***Positive inflation is essential to allow monetary policy to pursue expansionary policy in a low interest rate environment. With positive inflation rates, central banks can respond to negative aggregate demand shocks by driving nominal short-term rates below expected inflation, thus making the real Fed funds rate negative and boosting the economy. Under price stability (or zero inflation), on the other hand, the zero interest rate floor on nominal interest rates translates into an equivalent non-negative floor for real short-term rates, limiting the central bank's ability to reduce real short-term rates and stimulate the economy. Yet historically, negative real (short-term) interest rates have been essential ingredients in facilitating economic recoveries and bolstering the financial system in situations of financial crisis or strain. Thus, zero inflation importantly constrains monetary policy by removing this degree of freedom and removing the central bank's ability to pursue expansionary policies in these circumstances. Price stability, therefore, poses important risks. Positive inflation allows for broader monetary policy options and is needed "to lubricate the wheels of monetary policy."***

This criticism reflects remarkable confusion as to the working of monetary policy. It suggests monetary policy may be unable to lower

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[48]Robert E. Keleher, *The Roots of the Current Expansion*, a Joint Economic Committee study, April 1997.

[49]See Carl Walsh, "Nobel Views on Inflation and Unemployment," Economic Letter, Federal Reserve Bank of San Francisco, 97-01, January 10, 1997, p. 2.

short-term interest rates and therefore unable to stimulate the economy under conditions of price stability or deflation. Yet, clearly, the monetary authority can use open market operations to purchase a wide spectrum of financial assets in pursuing expansionary policy; monetary policy need not work exclusively through short-term rates. Most notably, long-dated securities or foreign exchange, for example, easily could be purchased and used as transmission vehicles for expansionary monetary policy.[50] But even if the monetary authority wanted to remain in short-dated securities, it could continue to purchase such securities in the open market, thereby creating reserves until broad money and credit aggregates expanded and forward-looking market prices (such as commodity prices and foreign exchange rates) suggested a depreciation in the value of domestic currency. Monetary policy, therefore, can be expansionary despite low short-term interest rates. Furthermore, the discount window remains available for use in these circumstances. In short, monetary policy can be highly potent through a wide variety of channels in stimulating a weak economy even if interest rates are low.

Empirical indicates that expansionary monetary policy has in fact occurred under noninflationary conditions (for example, in the United States, Britain, and Sweden during the 1930s).[51] In sum, there is no theoretical foundation for and little, if any, empirical evidence supporting the argument that monetary policy cannot be expansionary in low interest rate environments.

This criticism is more an indictment of the effectiveness of real interest rates as guides or indicators for monetary policy than a challenge to the potency of monetary policy in a low rate environment. To repeat a well-known lesson of monetary theory: it is often misleading to equate a particular level of interest rates with the stance of monetary policy. Criticism of price stability as limiting the ability of policy to stimulate

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[50]Such action would push up bond prices and depreciate the foreign exchange rate.

[51]See, for example, Milton Friedman and Anna Schwartz, *A Monetary History of the United States 1867-1960,* 1963, Princeton: Princeton University Press; Frederic Mishkin, "General Discussion: Overview Panel," Achieving Price Stability, Federal Reserve Bank of Kansas City, 1996, pp. 339-340; Frederic Mishkin, "The Channels of Monetary Transmission: Lessons for Monetary Policy," Federal Reserve Bank of New York, February 1996, p. 22; and Christina Romer, "What Ended the Great Depression?," Journal of Economic History, December 1992, 52, No. 4, pp. 757-784.

the economy by lowering short-term interest rates is an example of this common error. Indeed, real interest rates are particularly unreliable guides to monetary policy for a number of reasons.[52] Rather than interest rates, jointly assessed market price indicators (such as commodity prices or foreign exchange rates) as well as broad measures of the money supply are normally reliable monetary policy indicators in noninflationary circumstances.

Finally, the criticism fails to recognize that a credible policy of price stability implies the absence of deflation and deflationary expectations. Such a policy lessens the chances of both negative demand shocks and financial strains of the type requiring stimulative policies suggested in the criticism. In short, potential problems requiring stimulative monetary policy are less likely to occur with a credible price stability policy.

In sum, the presence of low interest rates and the absence of inflation do not constrain monetary policy; stimulative policy can still occur via a wide variety of channels in these circumstances. Price stability, however, does minimize the need for such stimulative policy and this environment highlights the limitations of real interest rates as policy guides.

Criticism #4: ***Once inflation is underway, it is better to tolerate moderate inflation than to bear the significant costs of reducing it to zero. Welfare analysis suggests that reducing inflation to zero is inappropriate since at modest/moderate levels of inflation, the discounted costs of reducing inflation outweigh the accompanying discounted benefits. In short, the cost of going from moderate inflation to zero inflation does not warrant the benefits of price stability.***[53]

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[52]Real interest rates can be inappropriate guides to monetary policy not only because they are unobservable, depending on accurate measures of inflationary expectations, but also because their equilibrium values constantly change with alterations in returns to (and productivity of) capital.

[53]One popular version of this argument is sometimes referred to as Howitt's Rule, which states that the policy of disinflation should be continued until an inflation rate is reached such that the present value of the costs of further disinflation equal the present value of the gains from additional disinflation. See Daniel L. Thornton, "The Costs and Benefits of Price Stability: An Assessment of Howitt's Rule," Federal Reserve Bank of St. Louis Review, March/April 1996, p. 33.

Evaluating such arguments is difficult because proper assessments necessarily entail both comprehensive and accurate measures of the discounted (private and public) costs and benefits of reducing inflation over extended periods of time. The availability of such figures is exceptionally difficult given the current state of knowledge.

For example, whether particular measures of the cost of inflation are comprehensive is difficult to know. Earlier attempts to measure these costs were based on partial equilibrium models with inflation interpreted as a tax on real money balances.[54] These estimates of the cost of inflation were quite low but later refined general equilibrium estimates of these costs of the inflation tax were higher.[55] More recently, research has focused on the interaction of inflation and the tax code. These later calculations are more comprehensive and find significantly higher costs of maintaining existing inflation than those interpreting inflation as a tax on money balances.[56] These more recent results suggest that since the costs of inflation are so high, inflation should be reduced.

Yet most analysts concede that even these most recent calculations are incomplete, omitting, for example, quantification of both inflation's uncertainty costs and the cost of inflation's distortion of the price system.[57] Thus, even these more comprehensive cost estimates most likely are understated.

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[54]See, for example, M.J. Bailey, "The Welfare Cost of Inflationary Finance," Journal of Political Economy, p. 64, April 1956: pp. 93-110; M. Friedman, "The Optimum Quarterly of Money," in The Optimum Quantity of Money and Other Essays, 1969, University of Chicago Press, Chicago, pp. 1-50.

[55]See, for example, Richard Black, Donald Coletti, and Sophie Monnier, "On the Costs and Benefits of Price Stability," Bank of Canada Conference on Price Stability, Inflation Targets, and Monetary Policy, May 1997, p. 27. These estimates are sensitive to the specification of money demand and the definition of money (see p. 27).

[56]See Black, Coletti, and Monnier, op.cit., p. 28.

[57]See, for example, Black, Coletti, and Monnier, op. cit., p. 26; Robert E. Lucas, "On the Welfare Costs of Inflation," Center For Market Policy Research, Stanford University, February 1994, p. 22; and Gregory Hess and Charles Morris, "The Long-Run Costs of Moderate Inflation," Economic Review, Federal Reserve Bank of Kansas City, Second Quarter 1996 (Volume 81, No. 2), p. 84.

In addition, the accuracy of these (discounted) costs and benefits of inflation is exceedingly difficult (if not impossible) to establish. Reasons include the following:

- **Estimates depend on factors difficult to measure.**

  The costs of reducing inflation depend significantly on factors notoriously difficult to quantify, such as price expectations, the credibility of policy makers, and the stickiness of prices and wages. Furthermore, there is no way to know how these factors may change in the future.

- **Estimates depend on arbitrary assumptions.**

  The measured costs and benefits of inflation are often conjectural, depending heavily on unavoidable assumptions. For example, the results depend on 1) what discount rate is assumed, 2) whether inflation is presumed to influence the level or growth rate of output, 3) which tax structure is assumed, or 4) whether various costs or benefits of inflation are presumed to be transitory (one-time events) or permanent in nature.[58] If these key assumptions are changed, the conclusions can change dramatically.

- **The power or robustness of the estimates is low at modest levels of inflation.**

  The application of welfare theory to crude, imperfect real-world data is problematic. The power or robustness of relevant empirical estimates is low; these estimates are sensitive and can change dramatically with alternative specifications and/or methodology. This is especially the case when such estimates are made for environments of low levels of inflation where relatively few data points or observations exist.

As a consequence of this lack of precision, numerical estimates of the discounted costs and benefits of moving from low levels of inflation to zero inflation must be regarded with a good deal of caution and reservation.

Nonetheless, despite these many significant problems, the most recent, most comprehensive, and likely most accurate estimates indicate that the costs of even "low" or "a little" inflation are significantly larger

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[58]See, for example, Thornton, op. cit., pp. 33-34.

than suggested by critics of price stability.[59] This research suggests that those critics advocating continued inflation have substantially underestimated its costs, and that the perverse effect of inflation on output is significantly larger at lower rates of inflation than previously believed. These estimates indicate that large net gains would accrue by moving to price stability; the benefits of price stability significantly outweigh its costs.

Prominent examples of such research include Lucas (1994) and Feldstein (1996).[60] Lucas' estimates of the U.S. welfare cost of inflation attaches much higher costs to low rates of inflation than previous estimates. Feldstein argues that the benefit of moving to price stability from low levels of inflation substantially exceeds its costs; he maintains that very large net gains would be made by moving to zero inflation. Focusing on the interaction of inflation and the tax structure, Feldstein contends that these interaction effects cause substantial welfare losses even at low levels of inflation. He argues that the effects of the interaction of inflation and capital taxation are much larger than distortions to money demand and the resulting seignorage.[61] More recent studies by a number of other researchers substantiate these results for both the United States and other countries.[62]

In conclusion, this welfare cost criticism of price stability, therefore, does not withstand close scrutiny, depending only on arbitrary assumptions and selective methodology. To be sure, there are formidable problems of calculating comprehensive and accurate measures of the net

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[59]Comparisons of the results of these studies are difficult to make because of the many differences cited above. A thorough review of the literature is found in Black, Coletti, and Monnier, op. cit.

[60]Robert E. Lucas, Jr., "On the Welfare Cost of Inflation," Center for Economic Policy Research, Stanford University, February 1994; Martin Feldstein, "The Costs and Benefits of Going from Low Inflation to Price Stability," National Bureau of Economic Research, Working Paper No. 5469, February 1996.

[61]Feldstein, op. cit., pp. 51-52.

[62]See contributions summarized in "The Costs and Benefits of Achieving Price Stability," NBER Reporter, Spring 1997, pp. 29-30, to be published by the University of Chicago Press in National Bureau of Economic Research conference volume. See also Andrew B. Abel, "Comment," in Reducing Inflation: Motivation and Strategy, edited by Christina D. Romer and David H. Romer, University of Chicago Press, Chicago, 1997.

benefits of moving to zero inflation from low levels of inflation. Nonetheless, the best recent research suggests that the benefits of moving to zero inflation substantially outweigh the costs of doing so; price stability is well worth its cost.

Criticism #5: ***The true rate of price inflation cannot be measured accurately with broad price indices such as the Consumer Price Index. There are well-documented measurement biases of the CPI involving overestimates of inflation: i.e., the true rate of inflation is below the measured rate. These biases imply that the CPI (and other broad inflation measures) cannot be employed as useful policy goals. As a consequence, price stability or inflation targeting is unworkable as a strategy for monetary policy and cannot, in practice, be implemented.***

While mismeasurement bias certainly exists and should be considered, the problem is not a major one and is certainly easily manageable. Estimates of the CPI inflation bias do vary, but most fall within a range of about 0.5 percent to as much as 2.0 percent per year.[63] Any price stability or inflation target adopted, therefore, could easily include an adjustment equal to the estimated measurement bias. And since such targets normally take the form of bands, uncertainties associated with these estimates could be reflected in the band width. Furthermore, some of the CPI measurement bias is already being remedied by the Bureau of Labor Statistics and plans for correcting other problems are already underway.[64] An adjusted CPI inflation target, therefore, could readily serve as a viable inflation policy goal.

But the inflation targeting strategy is not necessarily wedded to the CPI or any single measure of price change. Should the CPI not be chosen, other indices are readily available and accessible.

The rich international experience of inflation targeting provides many lessons in this regard. Despite recognized measurement bias in

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[63]Alternative price indices have problems of their own, so no practical alternative exists. See, for example, Charles Steindel, "Are There Good Alternatives to the CPI?," Current Issues, Federal Reserve Bank of New York, Volume 3, Number 6, April 1997.

[64]See Bureau of Labor Statistics, U.S. Department of Labor, "Measurement Issues in the Consumer Price Index," June 1997.

their respective CPI inflation measures (or equivalents), the several countries that have adopted explicit inflation targets all have successfully used the CPI (or equivalent) measure as the basis for their inflation targeting and anti-inflation programs. Measurement bias is viewed as a relatively minor problem outweighed by the CPI's many practical advantages: namely, its familiarity, ready availability, minor revisions, and convenience in communicating with the public. Notably, most countries using CPI inflation targets adjust the index for volatile components and non-monetary influences. Despite imperfections, therefore, CPI targets are viewed as quite practical and useful; the CPI is certainly a viable price or inflation target.

SUMMARY AND CONCLUSIONS

A number of criticisms have been directed at the strategy of mandating price stability goals for monetary policy. These criticisms have been addressed in this paper and shown not to withstand scrutiny. Price stability remains a viable policy goal. In particular:

- Price stabilizing monetary policy not only retains a good deal of flexibility so that other policy goals are achievable, but this policy itself works to stabilize economic activity.
- Inflation is not necessary to foster labor market adjustment and may work to remove existing wage flexibility, unlike price stability.
- An environment of price stability and low interest rates does not constrain monetary policy; central banks can pursue stimulative policy via a variety of channels under stable prices. Price stability, however, does minimize the need for such stimulative policy and highlights the limitations of real interest rates as effective monetary policy guides.
- The CPI remains a viable price index measure suitable for use as an inflation target. Despite some measurement bias, the CPI has many advantages which outweigh its disadvantages.
- The best recent research suggests that the benefits of price stability far outweigh its costs; price stability is well worth its price. This research indicates that inflation's costs are high, even at low levels of inflation.

TRANSPARENCY AND FEDERAL RESERVE MONETARY POLICY

INTRODUCTION

Today's changing financial environment demands more transparent Federal Reserve monetary policy. Such transparency would help to establish understandable rules and procedures, to eliminate unnecessary market uncertainties and volatility, and to minimize the costs of anti-inflation monetary policy. Two reasons underscore the need for greater transparency.

First, previous commodity-based monetary standards anchored the price system and established well-understood, automatic rules governing central bank actions.[65] Until the demise of the (Bretton Woods) commodity-linked international monetary system in the early 1970s, the actions of the central bank were predictable in given circumstances, obviating the need for explicit delineation of objectives and operating procedures.

Today, no monetary standard or price anchor has emerged to replace the previous system's rules. As a result, both the goals of monetary policy and the principles that govern policy remain unclear. This uncertainty makes financial markets more volatile and anti-inflation monetary policy more costly than necessary.

Second, monetary policy transparency can make financial markets less volatile and can help them better reflect relevant information for monetary policy. Milton Friedman recognized the relationship between the information revolution and the disciplinary role of financial markets:

> The information revolution has greatly reduced the cost of acquiring information and has enabled expectations to respond more promptly and accurately to economic disturbances, including changes in government [monetary] policy. As a result, both the public at large and financial markets

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[65]See J.M. Keynes, *Treatise on Money: The Applied Theory of Money*, MacMillan, London, 1971, p. 207.

> have become far more sensitive to inflation and more sophisticated about it than in earlier times.[66]

Because of this phenomenon, central banks are increasingly obliged to pay more attention to, respond to, and in effect be disciplined by inflationary signals in the foreign exchange, commodity, and bond markets. Many central banks have found that increased transparency improves the efficiency of financial markets and, therefore, enhances their usefulness for market participants as well as for the central banks themselves. Recognizing transparency's benefits, these central banks not only have adopted explicit goals in the form of inflation targets but have also improved their reporting of progress in achieving these targets, of procedures and indicators used in conducting policy, and of policy decisions. The Federal Reserve has also made some progress on this front but generally has lagged behind several other central banks.

The U.S. Congress, of course, has an inherent interest in and responsibility for increased Federal Reserve transparency because of its oversight responsibilities for monetary policy. By enforcing greater transparency in the form of mandated explicit policy goals and improved reporting requirements, Congress' oversight responsibilities would be simpler and less burdensome. Congress can learn from these developments and international experience, in effect delegating a portion of oversight responsibility to the financial markets and allowing them to play a larger disciplinary role.

After defining transparency and describing reasons for and consequences of traditional central bank secrecy, this paper presents the case for increased Federal Reserve transparency. Historical improvements in Federal Reserve transparency are documented, and comparisons to other central banks are made. Several forms of transparency are delineated and specific recommendations for improved transparency are described.

DEFINITION OF TRANSPARENCY

Dictionaries define "transparency" as easily seen through or detected; obvious, candid or open, clear; free from guile. A transparent monetary policy is characterized by lack of secrecy, obfuscation, or ambiguity, and should be understandable to those outside the policy process including both ordinary citizens as well as legislators responsible for policy oversight.

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[66]See Milton Friedman, "Monetary Policy in a Fiat World," in *Money Mischief*, Harcourt Brace Jovanovich, New York, 1992, pp. 254-5 [parenthesis added].

The concept of transparency for monetary policy has multiple dimensions. Transparency is relevant for policy goals as well as for policy procedures or "policy apparatus"; i.e., the instruments, indicators, and procedures used in conducting policy to attain given policy goals. Goal clarification, however, is the more important component of a transparent monetary policy since such clarification helps to identify which instruments, indicators, and procedures are best suited to achieve stated objectives. If price stability is identified as the proper goal of monetary policy, for example, then the policy instruments, indicators, and procedures chosen should maximize the probabilities of achieving this goal. Different goals may necessitate different variables for these purposes. Notably, one of the lessons of international inflation targeting experience is that successful central banks focus more on goal clarification than on explanation of policy procedures.[67] Nonetheless, markets work better when more information is available, when policy goals are well known, and when central bank reactions to indicator variables are understood.

Timeliness is another dimension of transparency. Prompt disclosures of policy objectives, of progress in achieving these goals, and of procedures used in implementing policy are important elements of an open monetary policy. Transparent monetary policy, therefore, necessarily involves not only the clarification of objectives, but the timely and more complete disclosure of policy decisions and their underlying rationale.

CENTRAL BANK SECRECY

The historical reluctance of central banks to become open and transparent is well known. Many journalists, academics, and Members of Congress have recognized that secrecy and ambiguity are part of the culture of central banks.[68] Furthermore, recent research has demonstrated that the Federal Reserve has considerable information about important policy

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[67] See Robert E. Keleher, *Lessons From Inflation Targeting Experience,* A Joint Economic Committee Report, February 1997.

[68] See Marvin Goodfriend, "Monetary Mystique: Secrecy and Central Banking," Journal of Monetary Economics 17, 1986, pp. 63-92, and references cited therein.

variables beyond what is known to commercial forecasters, suggesting that current policy is not transparent in nature.[69]

The Federal Reserve, for example, has explicitly defended secrecy, opposed full disclosure, and (historically) objected to inflation targets.[70] The argument has been that fuller disclosure would promote unnecessary volatility in financial markets, benefit certain speculators, and interfere with the execution of monetary policy. More fundamentally, historical central bank opposition to transparency seemingly relates to a distrust of market mechanisms stemming from the original lender-of-last-resort function of central banks, as well as to bureaucratic rent seeking behavior on the part of central bankers in order to protect their privileged monopolistic position while avoiding accountability.[71]

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[69]See, for example, Christina D. Romer and David H. Romer, "Federal Reserve Private Information and Behavior of Interest Rates," NBER Working Paper 5692, July 1996.

[70]See Goodfriend, op. cit., for a review and analysis of the Federal Reserves' defense of secrecy. See also Robert E. Keleher, "The Pros and Cons of an Immediate Release of the FOMC Directive," unpublished memo, Federal Reserve Bank of Atlanta, June 1984. For documentation of Federal Reserves' historical opposition to inflation targets, see Irving Fisher, *Stable Money*, Aldephi Co., NY, 1934.

[71]For an analysis of bureaucratic incentives for covertness, see John F. Chant and Keith Acheson, "The Choice of Monetary Instruments and the Theory of Bureaucracy," Central Bankers, Bureaucratic Incentives, and Monetary Policy, edited by Eugenia Toma and Mark Toma, Kluwer Academic Publishers, Boston, 1986, pp. 107-128 (esp. pp. 109-11).

The original lender-of-last-resort (LOLR) function of central banks was premised on a belief in the inability of market mechanisms to prevent contagious bank runs causing contractions of the money supply and economic activity. Earlier provision of LOLR services involved the use of the discount window which necessarily involved proprietary information about individual bank loans and the individual portfolios of banks. Part of the responsibility of the LOLR was to maintain public confidence in the banking system while at the same time protecting the proprietary information of troubled banks. This function contributed to the culture of central bank secrecy which continues to this day.

CONSEQUENCES OF SECRECY

Secrecy on the part of central banks such as the Federal Reserve has important consequences. The lack of an understandable price stability objective, for example, often results in multiple, alternating policy goals, producing unnecessary uncertainties and fostering volatility in financial markets. As a result, these markets react to any news suggesting the Federal Reserve is shifting policy objectives. Financial markets also respond to policy moves or statements of Federal Reserve officials since this information provides further clues as to Federal Reserve policy objectives as well as to its "economic model" or "policy apparatus." Therefore, uncertainty premiums build into interest rates causing them to be higher than would otherwise be the case. Furthermore, without a specific understandable policy objective, the central bank cannot be held accountable for its actions, and its credibility suffers. This deterioration of credibility raises the costs of disinflationary monetary policy.

Secrecy of the monetary policy process and policy indicators also promotes increased financial market uncertainty, unnecessary volatility, and, accordingly, larger uncertainty premiums in interest rates. Since markets are unsure as to what variables are used as policy indicators and what weights various data are accorded, markets react to any data releases they believe will influence Federal Reserve behavior.

Partly as a result of recognizing these consequences, much of the rationale for central bank secrecy recently has been discredited by the force of logical argument as well as by empirical evidence.[72] Some central banks themselves have recognized the value of transparency.

THE CASE FOR TRANSPARENT MONETARY POLICY

Establishing understandable monetary policy goals, informing the public about policy decisions in a timely fashion, and explaining how other variables are employed in the policy process have a number of advantages which work to improve monetary policy. Recognizing these advantages has prompted the central banks of several countries to adopt more transparent approaches to monetary policy. Specifically, a more

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[72]For evidence that increased central bank disclosure does not disrupt markets, see Michael T. Belongia and Kevin Kliesen, "Effects on Interest Rates of Immediately Releasing FOMC Directives," Contemporary Economic Policy, Vol XII, October 1994, pp. 79-91; and Daniel L. Thornton, "Does the Fed's New Policy of Immediate Disclosure Affect the Market?," Review, Federal Reserve Bank of St. Louis, November/December 1996, pp. 77-88.

transparent policy approach would make a number of contributions to Federal Reserve monetary policy, to the economy, and to financial markets. Improved transparency, for example, would:

- **Help to clarify the primary long-term policy objective.**

  A more open, forthright policy process would create powerful incentives for monetary policymakers to carefully outline the primary objectives of monetary policy. This process, in turn, would create incentives to keep attention focused on such goals as well as to adopt procedures, indicators, and instruments that would maximize the chances of achieving these objectives.

- **Improve the workings and usefulness of financial markets.**

  Contrary to assertions of the Federal Reserve, empirical evidence shows that central bank provision of more complete and timely information does not increase the volatility of financial markets. Instead, financial markets work better when inflation objectives are clarified and more timely and detailed information is readily available. A more open, transparent policy environment improves the workings of financial markets because unnecessary uncertainties and confusion are minimized and market volatility is reduced. More information enables private sector expectations to adjust faster to changes in monetary policy, allowing private sector agents to learn faster and minimize disruption of policy change. With a consequent reduction in uncertainty premiums, interest rates will be lower, bolstering bond and equity markets. The result is improvement of the information content of these financial market prices, and their increased usefulness as conveyers of market sensitive information.

- **Improve central bank credibility.**

  A more transparent, open monetary policy also enhances central bank credibility. As monetary policy goals and procedures become well known and understood, the public more quickly learns about changes in policy, and central banks become more committed to achieving their publicly stated goals. As they begin to achieve these goals with greater regularity, central banks achieve enhanced credibility.

  This improved credibility, in turn, enables expectations to adjust faster to changes in monetary policy, fostering more flexibility in labor and other markets and lowering

employment and output costs of disinflation. Goals such as price stability, therefore, can more easily be attained, managed, and maintained.

- **Minimize the chances policymakers would manipulate policy for political purposes.**

  A more transparent monetary policy lessens the chances that policymakers will manipulate policy for political purposes.[73] Open, transparent and well-known policy goals and procedures would allow private analysts and financial markets to constantly monitor Federal Reserve actions and readily detect any manipulation of monetary policy for political purposes. Markets would quickly react to such manipulation by immediately revising inflationary expectations, and such action would readily be obvious to everyone. Consequently, the opportunity for central bankers to surprise the markets with stimulative policy would be severely constrained.[74]

- **Work to improve monetary policy.**

  More transparent monetary policy would encourage and lead to more open debate and criticism; private sector analysts could more openly critique central bankers' actions, procedures, and rationale. Such criticism, in turn, would oblige the monetary authority to defend its policy objectives, decisions, and procedures. The Federal Reserve would be forced to openly confront and reconcile inconsistencies in its policy; incentives would be created for the central bank to get its analysis right. This resulting competition of ideas and more open dialogue would inevitably lead to improved, more informed policymaking.

- **Complement congressional oversight responsibilities.**

  A more transparent monetary policy would serve to complement responsibilities of the Congress for overseeing Federal Reserve policy. As suggested above, more timely, detailed Federal Reserve disclosure and a more open approach to monetary policymaking would help to improve the workings

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[73] In technical jargon, transparency would help to minimize the "time inconsistency problem."

[74] See Andrew G. Haldane, "Introduction," *Targeting Inflation*, edited by Andrew Haldane, Bank of England, 1995, pp. 10-11.

of financial markets and enable these markets, in effect, to better discipline monetary policy. As such, these markets could serve to complement congressional responsibilities for overseeing monetary policy. In particular, Congress could adopt a strategy to enhance transparency and thereby impose increased market discipline on Federal Reserve policy. Committees responsible for monetary policy oversight could closely monitor key market variables in assessing and evaluating the appropriateness of the stance of monetary policy. In effect, Congress could facilitate the delegation of some oversight responsibility to the market. Congressional oversight, therefore, would be simplified.

ADOPTION OF MORE TRANSPARENT CENTRAL BANK POLICIES

Recently, the Federal Reserve as well as several other central banks have adopted more transparent monetary policies. In the 1990s, for example, a number of central banks identified price stability as their primary policy goal and, accordingly, adopted explicit inflation targets.[75] But the commitment to transparency has taken these central banks far beyond the adoption of inflation targets. Many of these banks, for example, have consciously made improved transparency a goal of their respective institutions.[76] In implementing their strategies, for example, several of these banks immediately disclose policy decisions when they are made. These announcements are often accompanied by a detailed discussion as to the rationale for the policy move. More frequent and higher quality published materials, testimony, and speeches also are elements of such strategies to improve transparency. Some of these banks publish inflation forecasts as part of their efforts.[77]

The Federal Reserve has also made moves to become more transparent in recent years. Such moves, for example, include:

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[75] See Robert E. Keleher, *Lessons From Inflation Targeting Experience,* A Joint Economic Committee Report, February 1997.

[76] See, for example, Gordon G. Thiessen, Governor of the Bank of Canada, "Towards a More Transparent and More Credible Monetary Policy," Remarks, Montreal, Quebec, October 9, 1996; Andrew G. Haldane, op.cit, pp.10-11; and Frederic S. Mishkin and Adam S. Posen, "Inflation Targeting: Lessons from Four Countries," Economic Policy Review (Special Issue on Inflation Targeting), August 1997, Volume 3, number 3.

[77] The Bank of England's Inflation Report is often cited to illustrate this point.

- immediate notification of FOMC policy decisions;
- earlier release of the FOMC policy directive; and
- release of more information such as regional information contained in the so-called "Beige Book."[78]

In addition, the Federal Reserve provides a significant amount of information about its operations in various publications, reports, speeches, and testimony.

RECOMMENDATIONS FOR MORE TRANSPARENT FEDERAL RESERVE MONETARY POLICY

Although the Federal Reserve has come a long way from its earlier, more secretive approach to policy, its journey toward openness is still incomplete. Indeed, Federal Reserve policies still lag behind the more transparent policies of many of the world's more innovative central banks.

In view of its lackluster record on openness, the Federal Reserve should work to transform its historic secretive "culture" by adopting a number of changes to make U.S. monetary policy more transparent. In particular, the Federal Reserve should:

- **Adopt explicit inflation targets.**

  The most important step the Federal Reserve could take in moving to a more transparent policy would be to explicitly adopt price stability as the primary goal of monetary policy. As previous Joint Economic Committee studies have demonstrated, this can best be accomplished by adopting

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[78] For descriptions of the historical evolution of Federal Reserve disclosure policy, see, for example, Anna J. Schwartz, "Central Banking in a Democracy," unpublished manuscript presented at Western Economic Association meetings, Seattle, Washington, July 9-13, 1997; and Marvin Goodfriend, op.cit.

Before 1967, the record of policy action was published only in the Federal Reserve Board's Annual Report. Beginning in mid-1967, the Board began to release this record 90 days following an FOMC meeting. In March 1975, the Federal Reserve further reduced the delay from 90 days to 45 days. In May 1976, the release was further changed from 45 days to a few days after the next regularly scheduled FOMC meeting (a week or two earlier than previously). Recently, this report has been released on Thursday following the next regularly scheduled FOMC meeting. The "Beige Book" was formerly the "Red Book," which had (lower-level) confidential status until mid-1983.

inflation targets as many other successful central banks have done.

- **Report to the Congress more frequently on monetary policy.**

  The Federal Reserve could improve the transparency of monetary policy by reporting more frequently to the Congress than biannually as is now the practice. Reporting quarterly or every four months would be more appropriate.

- **Release information earlier to the public.**

  The transparency of policy could also be improved by earlier release of information to the public. With speedy modern information processing equipment, it no longer should take more than six weeks to prepare and release (edited) minutes of FOMC meetings. Furthermore, while some delay may be appropriate, there appears to be little reason for a five-year delay in releasing verbatim transcripts of FOMC meetings as well as "Greenbook" forecasts and "Bluebook" analyses.

- **Provide more useful information to the public.**

  The Federal Reserve can improve its information dissemination function in many ways. At the time FOMC decisions are announced, for example, more detailed explanations as to the rationale for policy change could be provided, perhaps involving a brief press conference. When the FOMC decides to leave policy unchanged, an explanation regarding why no action was taken can be just as important as providing rationale for an actual change in policy.[79]

  The Federal Reserve also could keep markets better informed about its current policy position. When market expectations appear to be at a variance with the Federal Reserve's internal expectation, for example, the Federal Reserve could make an effort to condition market expectations by providing more information about its policy intentions, goals, strategy, and "model of the economy." This would help foster predictability and promote financial market stability.

  More information about current inflation, Federal Reserve progress in reaching inflation targets and explanations as to

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[79] The Federal Reserve's current practice is to issue a brief statement when it changes policy, but to give no explanation when it holds rates steady.

how FOMC decisions and Federal Reserve policy instruments and indicators help to achieve price stability would also be useful. Such reporting might include the provision of "inflation reports" and inflation forecasts similar to some other central banks. Furthermore, advance identification of the form of FOMC action to be undertaken should inflation objectives not be reached also would be useful.

A review of the Federal Reserve system's procedures for classifying the confidentiality of documents also would be helpful in moving the system to a more open, transparent central bank. The Federal Reserve, for example, could make available to the public more internal research, forecasts, memos, and internal briefings that are currently restricted unnecessarily. The taxpayers, after all, are the ultimate financiers of such efforts.

SUMMARY AND CONCLUSIONS

Transparent monetary policy is characterized by openness and a lack of secrecy and ambiguity. Monetary policy transparency involves a number of different dimensions including the clarification of policy goals and policy procedures as well as the timeliness in reporting policy decisions.

More transparent monetary policy has a number of advantages. It would, for example, 1) clarify policy objectives, 2) improve the workings of financial markets, 3) enhance central bank credibility, 4) reduce the chances of monetary policy manipulation for political purposes, 5) foster better monetary policymaking, and 6) complement congressional monetary policy oversight responsibilities.

Recently, many central banks have recognized these advantages and have moved toward making their monetary policies more transparent. The Federal Reserve has made some progress on this front but generally has lagged behind other central banks. The Federal Reserve could move toward a more transparent monetary policy by 1) adopting explicit inflation targets, 2) reporting more frequently to the Congress, 3) releasing information earlier, and 4) providing more information to the public.

BUDGET POLICY

TRENDS IN CONGRESSIONAL APPROPRIATIONS: FISCAL RESTRAINT IN THE 1990S

INTRODUCTION

Balanced federal budgets have not been a regular occurrence since the 1950s, and this persistence of deficit spending has greatly influenced the debate about budget policy during the past four decades. However, the dynamics of deficit spending changed dramatically in July 1997 when Congress passed, and the President signed, legislation that slowed the growth of spending enough to allow the federal budget to reach balance by 2002. Thanks to the robust economic expansion, unexpectedly strong revenue collections are now allowing balance to be achieved as early as the current fiscal year (FY1998).

The purpose of this report is to review trends in congressional budget policy, measured here as changes in discretionary appropriations spending. Since it is the only portion of the budget that Congress revisits and directly sets each year, discretionary spending is the most immediate reflection of congressional budget policy. Two-thirds of federal spending is classified as entitlement or mandatory spending, which budget scholar Allen Schick defines as programs where "spending increases are not at the discretion of Congress but are prescribed by existing law and are built into baseline projections."[80] Whereas the dynamics surrounding most entitlement programs make frequent changes to them politically difficult, the structure of the annual appropriations process grants Congress the initiative (though not the final say) in setting policy.[81] For this reason, this paper limits its discussion of congressional budget policy to changes in discretionary spending.

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[80] Allen Schick, *The Federal Budget* (Washington, DC: Brookings Institution, 1995), 192.

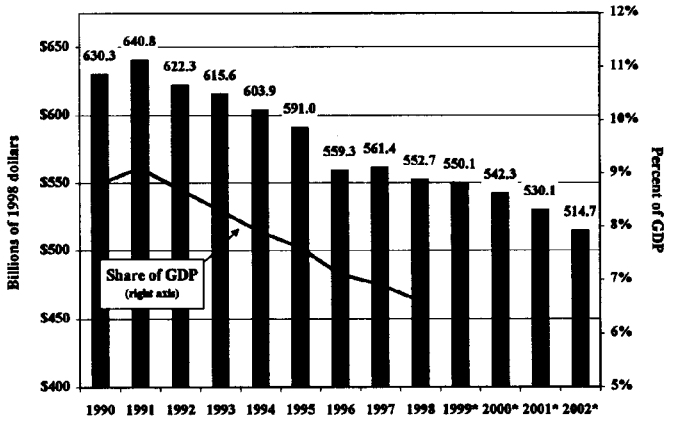
[81] For authority on the dynamics of both discretionary and mandatory spending policy, see Aaron Wildavsky, the new Politics of the Budgetary process, 2nd ed. (New York, NY: Harper Collins, 1992).

RECENT TRENDS IN DISCRETIONARY SPENDING

In order to compare spending from different time periods, differences in inflation and the size of the economy must be taken into account. For example, $100 had much greater purchasing power in 1965 than it does today. Therefore, this analysis examines discretionary spending measured two ways: in real terms (adjusted for inflation) and as a share of gross domestic product (GDP). In addition, the analysis distinguishes between the three different kinds of discretionary spending: defense, international and non-defense domestic. A complete set of historical data is included in Table 2 through Table 5 at the end of the paper.[82]

As can be seen in Figure 1, recent congressional budget policy has successfully reduced the amount of discretionary spending, measured either in real-dollar terms or as a share of GDP. Between 1990 and 1998,

Figure 1. Real discretionary outlays, 1990-2002



* Projected

Source: Joint Economic Committee and Office of Management and Budget.

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[82] Nominal outlays were adjusted to 1998 dollars using the implicit price deflator for each type of spending. Figures indicate outlays by fiscal year. The sum of the components may not equal the total for a given year because each series is deflated separately and then rounded to the nearest decimal point. Figures for 1998 are estimates for current year outlays and do not include any supplemental appropriations. All data are from Office of Management and Budget, *Historical Tables* and *Analytical Perspectives, Budget of the united States Government, Fiscal Year 1999* (Washington, DC: Government Printing Office, 1998).

total discretionary spending fell $77 billion, or 12 percent, measured in inflation-adjusted 1998 dollars.[83] As a share of GDP, discretionary outlays have followed the same trend, falling from around 9 percent of GDP at the beginning of the decade to well below 7 percent in 1998. In 1996 alone, discretionary outlays were reduced by $32 billion, the largest single-year drop since 1969. Although there was an increase the following year, total discretionary spending in 1998 was still $38 billion below the 1995 level.

Figure 1 also indicates expected levels discretionary outlays for fiscal years 1998 to 2002. Under the Budget Act of 1990, discretionary spending is capped at levels specified by law. The Balanced Budget Act of 1997 implemented a new set of discretionary spending caps for fiscal years 1998 to 2002. Assuming lawmakers comply with the spending caps, real discretionary outlays will fall from current levels by an additional $38 billion by 2002.[84] Relative to 1990, discretionary spending in 2002 will be down more than $115 billion or 18 percent.

The data in Figure 1 indicate the trend in total discretionary spending, but a related interest is how spending in specific categories has changed. As previously noted, discretionary spending generally falls into one of three categories: defense, international or domestic. To a certain degree, the amount spent on defense and international programs is dictated by international factors. As might be expected, the end of the Cold War has been accompanied by real decreases in spending on defense and international programs. In contrast, domestic discretionary spending has enjoyed relatively unrestrained real growth since.

Figure 2 presents the amount of discretionary spending for fiscal years 1990 to 1998 (in real 1998 dollars). As can be seen, domestic discretionary spending experienced real increases each year until it reached an all-time high in 1995. In 1996, domestic discretionary spending was cut by $9.3 billion, the largest single-year reduction in domestic outlays since 1982. Even with the $6 billion increase in 1997

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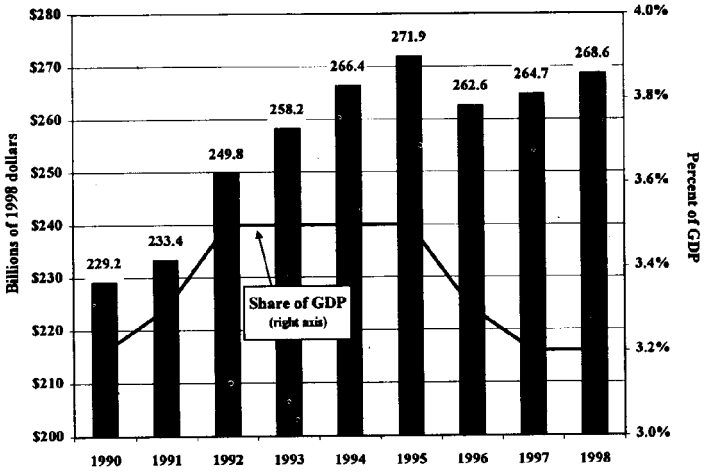
[83] Because all figures have been rounded to the nearest decimal point, some rounding error may be evident.

[84] Of course, if the spending caps are broken then these projected savings will not materialize.

and 1998, domestic discretionary spending is still $3.3 billion below the 1995 level.[85]

Figure 2. Real domestic discretionary outlays, 1990-1998



Source: Joint Economic Committee and Office of Management and Budget.

Since biannual elections reshape Congress every two years, an alternative way of identifying trends in congressional budget policy is to aggregate discretionary spending by congressional sessions. Doing so reveals that the 104th Congress (FY 1996-97) was the most fiscally-restrained session of Congress in the 1990s. Total discretionary outlays in the 104th Congress were $74 billion lower than in the previous Congress (Table 1), a reduction of more than 6 percent.[86] As a share of

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[85] Since the new discretionary spending caps make no distinction between domestic non-defense and international outlays, protected amounts for 1999-2002 are not included.

[86] The figures in Table 1 indicate the net change in outlays relative to the previous two-year budget cycle. Thus, legislation enacted by one Congress that affected spending in a different fiscal year is not credited to the relevant Congress. For example, 104th Congress rescinded $9.1 billion in budget authority for the fiscal year 1995. The resulting outlay reductions, however, are included in the spending totals for the 103rd Congress. Figures for the 105th Congress are not included because appropriations for 1999 have not been completed.

GDP, discretionary outlays fell almost a full percentage point, from 7.8 percent in the 103rd Congress to 7.0 percent in the 104th Congress.

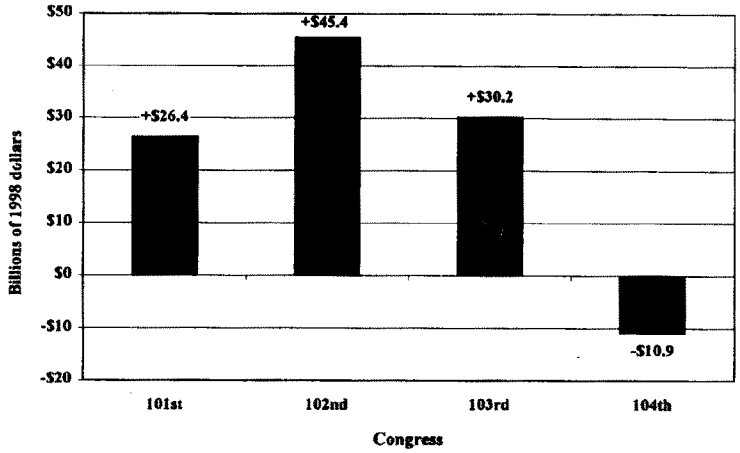
Table 1. Change in discretionary outlays from previous Congress (billions of 1998 dollars)

Congress	Total	Defense	International	Domestic
101st (FY90-91)	+$11.1	-$19.0	+$4.6	+$26.4
102nd (FY92-93)	-$33.2	-$76.4	-$1.1	+$45.4
103rd (FY94-95)	-$43.0	-$69.5	-$2.6	+$30.2
104th (FY96-97)	-$74.1	-$57.0	-$5.9	-$10.9

Source: Joint Economic Committee and Office of Management and Budget.
Note: Totals may not sum due to rounding.

Although previous Congresses also reduced overall discretionary spending, large defense cuts allowed for real increases in domestic spending. In the last four Congresses (FY1990 to FY1997), defense spending fell $222 billion in real terms. In contrast, domestic discretionary spending enjoyed real increases during the 1990s. Domestic outlays climbed an average of $34 billion in each of the three Congresses prior to the 104th, totaling $102 billion. The 104th Congress reversed this trend: domestic outlays in the 104th Congress were $10.9 billion below what was spent in the 103rd Congress (Figure 3). The 104th Congress is

Figure 3. Change in real domestic outlays by Congress



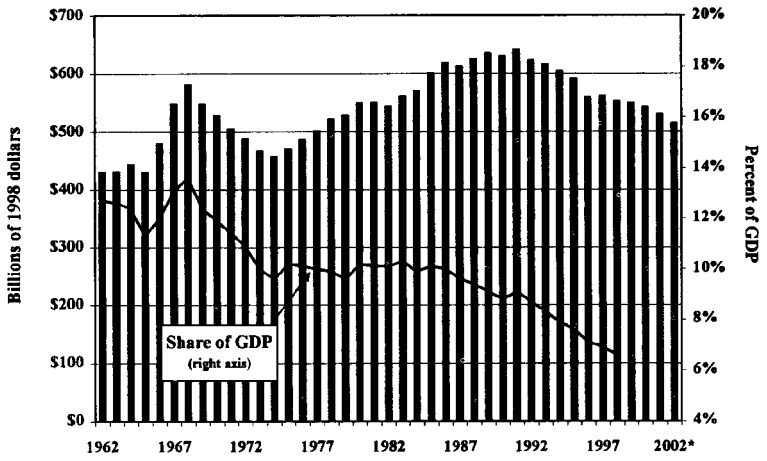
Source: Joint Economic Committee and Office of Management and Budget.

the only Congress in the past 36 years to exact spending reductions in all three categories.

DISCRETIONARY SPENDING OVER THE LONG TERM

Two findings emerge from an analysis of discretionary spending over the long run. The first is that the fiscal restraint achieved in the 1990s reverses the long-term upward trend in discretionary spending (Figure 4). Between 1962 and 1990, growth in discretionary spending outpaced inflation by more than 46 percent, reaching an all-time high of $641 billion in 1991. Although actual expenditures have been increasing over time, discretionary spending as a share of GDP has fallen steadily. After peaking at 13.6 percent of GDP in 1968, discretionary outlays fell to an all-time low of 6.6 percent in 1998.

Figure 4. Real discretionary outlays, 1962-2002

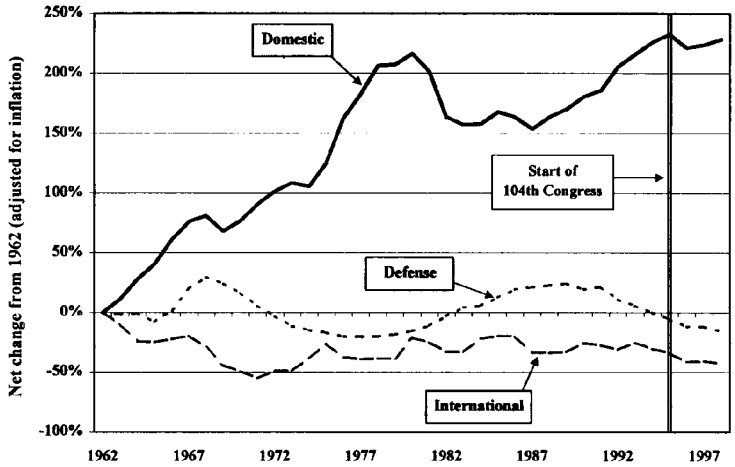


*** Amounts for 1999-2002 are projected.**
Source: Joint Economic Committee and Office of Management and Budget.

The second conclusion about discretionary spending is that while defense and international spending have remained at relatively stable levels over the past 36 years, domestic spending has sky-rocketed (Figure 5). In real terms, both defense and international outlays in 1998 were actually below their 1962 level. International outlays have consistently remained below their 1962 level and were down 43 percent in 1998. Spending on defense has experienced expansions as well as contractions, although total defense outlays have never been 30 percent greater than the

1962 level. In 1998, defense spending was down 15 percent from its level 36 years ago.

Figure 5. Net percent change in real discretionary spending



Source: Joint Economic Committee and Office of Management and Budget.

The most dramatic trend visible in Figure 5 is the large growth in domestic spending. Spending on non-defense domestic programs increased by approximately 228 percent between 1962 and 1998. The only extended period during which domestic spending growth was interrupted was during the early 1980s, a period during which increases in defense spending more than offset the savings from reductions in domestic spending. The cumulative long-term impact of this surge in domestic spending growth is considerable. Over the period 1962-1998, if domestic spending had grown at the same rate as defense spending, the federal government would have spent $4.3 trillion less than it actually did (measured in 1998 dollars), an amount larger than the entire federal debt held by the public. The fact that domestic programs have enjoyed relatively unrestrained growth, even in the face of rising budget deficits, suggests that curbing domestic spending can be an extremely difficult task.

CONCLUSION

Two conclusions about congressional budget policy are evident from the data presented in this paper. First, recent efforts to curb discretionary spending have successfully stemmed, at least for the time being, the long-term upward trend in spending growth. The 104th Congress became

the first Congress on record to impose real reductions in all three categories of discretionary spending. In addition to continuing the long-term downward trend in defense and international spending, the 104th Congress reversed the upward trend in real domestic spending. Whereas each of the three previous Congresses increased domestic spending by an average of $34 billion each, the 104th Congress cut domestic discretionary outlays by close to $11 billion. Even with the increase in fiscal year 1997 and 1998, domestic spending in 1998 was down still $3.3 billion from the all-time high reached at the end of the 103rd Congress.

The second conclusion is that all types of discretionary spending need to be kept in check in order to preserve the savings achieved thus far. As indicated above, most of the long-term growth in discretionary spending is attributable to increases in domestic expenditures. If the growth in domestic outlays had been limited to the same growth rate of defense outlays, the federal government would have spent $4.3 trillion less over the past three-and-one-half decades. However, this trend has not been fully apparent in overall discretionary spending totals due to reductions in defense and international spending. If Congress desires to avoid a return to deficit spending, then fiscal restraint must be applied to all types of spending.

Table 2. Federal outlays in billions of nominal dollars.

Fiscal Year	Discretionary				Mandatory	Net Interest	Total Outlays
	Total	Defense	International	Domestic			
1962	72.1	52.6	5.5	14.0	27.9	6.9	106.8
1963	75.3	53.7	5.2	16.3	28.3	7.7	111.3
1964	79.1	55.0	4.6	19.5	31.2	8.2	118.5
1965	77.8	51.0	4.7	22.1	31.8	8.6	118.2
1966	90.1	59.0	5.1	26.1	35.0	9.4	134.5
1967	106.4	72.0	5.3	29.1	40.7	10.3	157.5
1968	117.9	82.2	4.9	30.9	49.1	11.1	178.1
1969	117.3	82.7	4.1	30.5	53.7	12.7	183.6
1970	120.2	81.9	4.0	34.3	61.1	14.4	195.6
1971	122.5	79.0	3.8	39.7	72.9	14.8	210.2
1972	128.4	79.3	4.6	44.5	86.8	15.5	230.7
1973	130.2	77.1	4.8	48.3	98.1	17.3	245.7
1974	138.1	80.7	6.2	51.1	109.8	21.4	269.4
1975	157.8	87.6	8.2	62.0	151.3	23.2	332.3
1976	175.3	89.9	7.5	77.9	169.8	26.7	371.8
1977	196.8	97.5	8.0	91.3	182.5	29.9	409.2
1978	218.5	104.6	8.5	105.3	204.8	35.5	458.7
1979	239.7	116.8	9.1	113.8	221.7	42.6	504.0
1980	276.1	134.6	12.8	128.7	262.3	52.5	590.9
1981	307.8	158.0	13.6	136.1	301.7	68.8	678.2
1982	325.8	185.9	12.9	127.0	334.9	85.0	745.8
1983	353.1	209.9	13.6	129.7	365.4	89.8	808.4
1984	379.2	228.0	16.3	134.9	361.5	111.1	851.9
1985	415.7	253.1	17.4	145.2	401.3	129.5	946.4
1986	438.3	273.8	17.7	146.8	416.1	136.0	990.5
1987	444.0	282.5	15.2	146.2	421.5	138.7	1,004.1
1988	464.2	290.9	15.7	157.5	448.5	151.8	1,064.5
1989	488.6	304.0	16.6	167.9	485.9	169.3	1,143.7
1990	500.3	300.1	19.1	181.1	568.7	184.2	1,253.2
1991	533.0	319.7	19.7	193.6	596.8	194.5	1,324.4
1992	534.0	302.6	19.2	212.3	648.2	199.4	1,381.7
1993	540.4	292.4	21.6	226.4	670.2	198.8	1,409.4
1994	543.3	282.3	20.8	240.2	715.5	203.0	1,461.7
1995	545.1	273.6	20.1	251.4	738.5	232.2	1,515.7
1996	533.8	266.0	18.3	249.5	785.6	241.1	1,560.5
1997	548.3	271.6	19.0	257.6	809.0	244.0	1,601.2
1998	552.7	265.1	18.9	268.6	872.4	242.7	1,667.8

Source: Office of Management and Budget.
Note: Totals may not sum due to rounding.

Table 3. Federal outlays in billions of real 1997 dollars.

Fiscal	Discretionary					Net	Total
Year	Total	Defense	International	Domestic	Mandatory	Interest	Outlays
1962	430.9	313.8	33.0	81.8	133.5	33.2	595.2
1963	431.0	308.2	29.8	90.8	132.7	36.9	598.3
1964	443.6	312.1	25.1	104.5	146.1	38.5	625.9
1965	430.5	288.9	24.8	114.9	147.2	39.7	615.2
1966	479.6	320.5	25.7	131.7	159.5	42.4	678.9
1967	548.4	375.6	26.6	143.9	180.4	44.9	770.8
1968	581.0	406.9	23.4	147.9	211.4	46.7	836.1
1969	548.3	389.8	18.4	137.3	221.6	51.3	818.4
1970	528.0	364.4	16.8	144.5	241.9	55.1	822.4
1971	504.1	331.3	14.9	155.9	275.6	54.2	831.6
1972	487.7	304.5	16.9	164.7	317.0	53.9	856.4
1973	466.0	277.5	16.9	170.4	345.8	57.9	867.8
1974	457.1	267.6	20.3	168.0	357.3	66.7	879.4
1975	470.9	261.5	24.4	184.2	446.8	65.6	981.6
1976	486.2	250.6	20.7	214.6	470.7	70.3	1,025.6
1977	501.3	250.0	20.1	231.0	470.7	73.2	1,043.4
1978	521.6	250.8	20.3	250.4	492.8	81.0	1,093.5
1979	528.2	256.6	20.3	251.3	491.6	89.9	1,108.0
1980	550.4	265.6	26.0	258.7	525.3	101.8	1,175.8
1981	551.1	279.4	24.8	246.4	551.7	121.3	1,222.4
1982	543.4	304.7	22.1	215.5	574.8	140.1	1,257.0
1983	560.7	327.1	22.2	210.0	599.1	141.5	1,299.9
1984	569.9	332.0	25.8	210.8	569.9	168.5	1,307.0
1985	600.2	353.2	26.6	219.0	610.5	189.7	1,399.3
1986	618.3	374.8	26.5	215.4	613.4	193.9	1,424.4
1987	612.4	380.9	22.0	207.4	602.1	192.0	1,405.2
1988	624.8	385.4	21.9	215.5	615.2	203.2	1,442.0
1989	635.2	390.4	22.1	220.7	635.8	217.4	1,487.1
1990	630.3	375.0	24.6	229.2	710.2	227.2	1,566.8
1991	640.8	381.8	24.0	233.4	711.2	230.0	1,581.0
1992	622.3	348.6	22.8	249.8	748.5	229.0	1,599.2
1993	615.6	331.8	24.7	258.2	753.7	222.5	1,591.1
1994	603.9	313.9	23.1	266.4	786.9	221.8	1,612.0
1995	591.0	297.0	21.9	271.9	791.2	247.3	1,629.4
1996	559.3	277.1	19.4	262.6	823.8	251.1	1,634.2
1997	561.4	276.9	19.6	264.7	826.4	248.6	1,636.6
1998	552.7	265.1	18.9	268.6	872.4	242.7	1,667.8

Source: Joint Economic Committee and Office of Management and Budget.
Note: Totals may not sum due to rounding.

Table 4. Federal outlays a percentage of gross domestic product (GDP).

Fiscal	Discretionary					Net	Total
Year	Total	Defense	International	Domestic	Mandatory	Interest	Outlays
1962	12.7%	9.3%	1.0%	2.5%	4.9%	1.2%	18.8%
1963	12.6%	9.0%	0.9%	2.7%	4.7%	1.3%	18.6%
1964	12.4%	8.6%	0.7%	3.0%	4.9%	1.3%	18.5%
1965	11.3%	7.4%	0.7%	3.2%	4.6%	1.3%	17.2%
1966	12.0%	7.8%	0.7%	3.5%	4.7%	1.2%	17.9%
1967	13.1%	8.9%	0.7%	3.6%	5.0%	1.3%	19.4%
1968	13.6%	9.5%	0.6%	3.6%	5.7%	1.3%	20.5%
1969	12.4%	8.7%	0.4%	3.2%	5.7%	1.3%	19.4%
1970	11.9%	8.1%	0.4%	3.4%	6.1%	1.4%	19.4%
1971	11.4%	7.3%	0.3%	3.7%	6.8%	1.4%	19.5%
1972	10.9%	6.7%	0.4%	3.8%	7.4%	1.3%	19.6%
1973	10.0%	5.9%	0.4%	3.7%	7.5%	1.3%	18.8%
1974	9.6%	5.6%	0.4%	3.6%	7.6%	1.5%	18.7%
1975	10.2%	5.6%	0.5%	4.0%	9.7%	1.5%	21.4%
1976	10.1%	5.2%	0.4%	4.5%	9.8%	1.5%	21.5%
1977	10.0%	4.9%	0.4%	4.6%	9.3%	1.5%	20.8%
1978	9.9%	4.7%	0.4%	4.8%	9.3%	1.6%	20.7%
1979	9.6%	4.7%	0.4%	4.6%	8.9%	1.7%	20.2%
1980	10.2%	5.0%	0.5%	4.7%	9.6%	1.9%	21.7%
1981	10.1%	5.2%	0.4%	4.5%	9.9%	2.3%	22.2%
1982	10.1%	5.8%	0.4%	4.0%	10.4%	2.6%	23.2%
1983	10.3%	6.1%	0.4%	3.8%	10.7%	2.6%	23.6%
1984	9.9%	6.0%	0.4%	3.5%	9.5%	2.9%	22.3%
1985	10.1%	6.2%	0.4%	3.5%	9.8%	3.2%	23.1%
1986	10.0%	6.3%	0.4%	3.4%	9.5%	3.1%	22.6%
1987	9.6%	6.1%	0.3%	3.2%	9.2%	3.0%	21.8%
1988	9.4%	5.9%	0.3%	3.2%	9.1%	3.1%	21.5%
1989	9.1%	5.7%	0.3%	3.1%	9.1%	3.2%	21.4%
1990	8.8%	5.3%	0.3%	3.2%	10.0%	3.2%	22.0%
1991	9.1%	5.5%	0.3%	3.3%	10.2%	3.3%	22.6%
1992	8.7%	4.9%	0.3%	3.5%	10.6%	3.2%	22.5%
1993	8.3%	4.5%	0.3%	3.5%	10.3%	3.1%	21.8%
1994	7.9%	4.1%	0.3%	3.5%	10.5%	3.0%	21.4%
1995	7.6%	3.8%	0.3%	3.5%	10.3%	3.2%	21.1%
1996	7.1%	3.5%	0.2%	3.3%	10.4%	3.2%	20.7%
1997	6.9%	3.4%	0.2%	3.2%	10.1%	3.1%	20.1%
1998	6.6%	3.2%	0.2%	3.2%	10.5%	2.9%	20.0%

Source: Joint Economic Committee and Office of Management and Budget.
Note: Totals may not sum due to rounding.

Table 5. Discretionary outlays by Congress

	Billions of nominal dollars				Billions of real 1997 dollars				Percent of GDP			
Congress	Total	Defense	International	Domestic	Total	Defense	International	Domestic	Total	Defense	International	Domestic
87th	147.4	106.3	10.7	30.3	862.0	622.0	62.9	172.6	12.6%	9.1%	0.9%	2.6%
88th	156.9	106.0	9.3	41.6	874.1	601.1	49.9	219.4	11.8%	8.0%	0.7%	3.1%
89th	196.5	131.0	10.4	55.2	1,028.0	696.1	52.3	275.5	12.6%	8.4%	0.7%	3.5%
90th	235.2	164.9	9.0	61.4	1,129.3	796.7	41.8	285.2	13.0%	9.1%	0.5%	3.4%
91st	242.7	160.9	7.8	74.0	1,032.1	695.8	31.6	300.4	11.6%	7.7%	0.4%	3.5%
92nd	258.6	156.4	9.4	92.8	953.7	582.0	33.8	335.1	10.4%	6.3%	0.4%	3.7%
93rd	295.9	168.3	14.4	113.1	928.0	529.2	44.7	352.3	9.9%	5.6%	0.5%	3.8%
94th	372.1	187.4	15.5	169.2	987.5	500.6	40.8	445.5	10.1%	5.1%	0.4%	4.6%
95th	458.2	221.4	17.6	219.1	1,049.8	507.4	40.7	501.7	9.7%	4.7%	0.4%	4.7%
96th	583.9	292.6	26.4	264.8	1,101.4	544.9	50.9	505.1	10.1%	5.1%	0.5%	4.6%
97th	678.9	395.8	26.5	256.7	1,104.1	631.8	44.3	425.5	10.2%	6.0%	0.4%	3.9%
98th	794.9	481.1	33.7	280.1	1,170.2	685.3	52.4	429.8	10.0%	6.1%	0.4%	3.5%
99th	882.3	556.3	32.9	293.0	1,230.7	755.7	48.5	422.8	9.8%	6.2%	0.4%	3.3%
100th	952.8	594.9	32.3	325.4	1,260.0	775.8	44.0	436.3	9.2%	5.8%	0.3%	3.2%
101st	1,033.3	619.8	38.8	374.7	1,271.1	756.8	48.6	462.6	9.0%	5.4%	0.3%	3.2%
102nd	1,074.4	595.0	40.8	438.7	1,237.9	680.4	47.5	508.0	8.5%	4.7%	0.3%	3.5%
103rd	1,088.4	555.9	40.9	491.6	1,194.9	611.0	44.9	538.3	7.8%	4.0%	0.3%	3.5%
104th	1,082.1	537.6	37.3	507.1	1,120.8	553.9	39.0	527.3	7.0%	3.5%	0.2%	3.3%

Source: Joint Economic Committee and Office of Management and Budget.

Note: Totals may not sum due to rounding. See infra note 7 for additional explanation.

BUDGET PROCESS REFORM

INTRODUCTION

This paper reviews problems in the Federal budget process and the reasons that make some procedures and institutional structures counterproductive in helping to control the size of government, resulting in increased spending to levels higher than necessary. As a prescription for a healthier economy, this study recommends improvements in the budget process to reduce the bias toward spending and excessive government.

OVERSPENDING AND EXCESSIVE GOVERNMENT

The size of government can be a major determinant of the growth rate of the economy. Up to a point, contributions by government are essential to healthy growth, since government provides the basic framework of a property-rights system and enforcement of those rights, both of which permit a sophisticated economy to function. In addition, government usually provides physical infrastructure like transportation systems, public safety and health protection, and other public goods necessary for a complex economy.

There is a point, however, after which the size of government and the type of expenditures it makes become a hindrance to economic growth and the well-being of the nation. The hindrance occurs not only because of the large size of government and the burden of paying for its activities, but also because a large and overly complex government makes the public's understanding of the decision-making process more difficult. This permits special-interest groups to seek benefits for themselves behind a veil of confusion. The problem of special-interest influences is not new; in fact, Madison warned the Nation of this problem even before the adoption of our Constitution.[87]

In the United States, growth in government has been significant since the 1930s. In 1930, Federal expenditures constituted 3.3 percent of gross domestic product (GDP); the estimate for 1997 is 20.8 percent. Much of the increased spending has been facilitated by the accumulation of debt and inflationary increases in the money supply. The size of the Federal Government has exceeded the point at which it makes a constructive contribution to economic growth, and current budgetary processes do not appear helpful in controlling this spending.

Much of the spending problem lies in human nature and the political process. The rational self-interest of people in and outside of government

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[87] James Madison, *Federalist Paper No. 10*, November 1787.

often causes the steering of benefits to small, well-organized interest groups at the expense of taxpayers and the electorate at-large.[88] Policy makers expand budgets to fund programs of questionable public value in order to gain the support of these groups, while the taxpayers remain largely ignorant of the cost to themselves of these political rewards. Within the government bureaucracy, self-interest takes the form of agencies expanding their own budgets and responsibilities beyond the point of effective execution of their programs. One estimate, for example, puts the potential output of a government bureaucracy at twice the level of a competitive industry facing similar demand and cost parameters.[89] The large size and complexity of programs not only prohibit the public from understanding the real decision process with its rewards to special-interest groups, but they also reduce the quality of the services to those who are the putative beneficiaries.

Economists use the term "deadweight burden" to refer to the net losses resulting from the imposition of some government policies. The deadweight burden of government spending is found in the actions of individuals who respond to the incentives created by government interference in the market economy. For example, individuals expend resources competing for the purely redistributional opportunities created by government programs. These resources are not spent on producing wealth, but on the seeking of government license to conduct some activity. The resources could have been employed to produce goods and services demanded by the economy rather than lost on non-productive competition.

Recent studies have begun to evaluate the aggregate effects of government size on economic growth. One statistical evaluation suggests that the optimal size of the Federal Government is in the range of 17 percent of GDP, roughly four percentage points lower than current levels, the equivalent of about $280 billion in expenditures.[90] Another study, focusing on the period 1949-1989, concluded that, in order to achieve

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[88] Economic theory predicts that there is a rational self-interest in bearing the cost of organizing a small group to pressure government to adopt policies by which small per capita costs are apportioned among a large group in order to provide large per capita benefits to the small group.

[89] William A. Niskanen, *Bureaucracy and Representative Government*, Aldine Publishing, Chicago, 1971.

[90] Lowell Gallaway and Richard Vedder, *The Impact of the Welfare State on the American Economy*, Joint Economic Committee, 1995.

maximum economic growth rates, total government taxes–federal, state, and local–should have been in the 21.5 to 22.9 percent range, and that such levels would have produced growth rates for the economy of 5.56 percent per annum instead of the 3.50 percent rates actually achieved.[91]

An understanding of the real problem behind the numbers requires a look at the types of programs supported as the size of the budget increases. At lower levels of spending, programs tend to include those which facilitate the functioning of the economy and provide a foundation for work, saving, and investment. But those programs expanding most rapidly as government size increases beyond a certain point tend to be those that substitute inefficient government spending for private-sector activities, thereby generating deadweight losses.

THE FISCAL PROCESS AND GOVERNMENT GROWTH

The Fiscal Illusion

The ability of special interests to drive government size beyond effective levels, and much of its energy to the production of narrowly focused benefits, has been made possible by the relatively new tradition of persistent deficit financing. Deficit financing, as an alternative to reducing spending or raising taxes, is attractive in a representative democracy, because it defers the cost to taxpayers of the associated spending. But while the potential penalties are hidden from the electorate, they are no less burdensome from a macroeconomic viewpoint than those generated by direct taxation.

From the fiscal-discipline perspective, the chief procedural problem with deficit financing is the bifurcation of the spending and finance decisions. The ability to obscure the real cost makes the decision to approve spending easier and reduces the pain of analyzing the real need for, or quality of, the expenditure in question. Only when the deficit level reaches significant proportions does the cost of this process become apparent. Reducing a large deficit, however, has the unattractive feature of putting decision makers in the position of cutting programs, all of which now have established constituencies, or raising taxes. On the other hand, by combining spending and tax increase decisions, the responsibility for the cost is placed on the political leaders who are taking

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[91] Gerald W. Scully, *What Is the Optimal Size of Government in the United States?* National Center for Policy Analysis, November 1994.

credit for program benefits. This is the deficit bias in a representative democracy.[92]

One economic penalty of deficit financing, as well as tax financing, is the alternatives foregone in the more efficient private sector. Instead of taking funds from taxpayers who are consumers and savers, debt financing takes funds directly from capital markets and reduces investment in the economy. Even though we know that demand by the Federal Government will "crowd-out" private investment opportunities, this effect is difficult to measure. The "fiscal illusion," or overrating benefits vis-a-vis costs, is promoted because debt financing hinders a comparison between the quality of the spending program and the quality of the forgone alternatives. Not only is dollar cost separated from the decision, but the real cost, the private sector projects that go unaccomplished, is also not identified, even in the most remote manner. This is not the case when individuals can see the taxes withheld from their paychecks, and the cost to them is clear.

Price-level inflation is another potential consequence of debt financing. If the Nation's central bank, the Federal Reserve System, rapidly increases the money supply to offset borrowing in capital markets, inflation will result. There is a fair amount of evidence that the Federal Reserve System responds to the political needs of the moment, leaving the potentially negative consequences to fall beyond the political time horizon of policy makers. For example, during the Kennedy Administration, economic growth, not price stability, was the overriding concern. The Fed responded accordingly, helping to expand the economy more rapidly, but inflation followed soon thereafter.[93]

KEYNESIAN THEORY AND RESULTING SPENDING INCREASES

The chief philosophical change in U.S. fiscal policy came as a result of the introduction of Keynesian economic theory, which suggested that the Federal Government's fiscal process could be used to influence the level of economic activity. According to this theory, deficit financing could be used to stimulate economic growth and increase employment. The

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[92] The seminal work in this area is James M. Buchanan and Richard E. Wagner, *Democracy in Deficit: The Political Legacy of Lord Keynes*, Academic Press, 1977.

[93] The shift in Fed policy in response to changes in administrations is documented in Robert E. Weintraub, "Congressional Supervision of Monetary Policy," *Journal of Monetary Economics* 4 (1978), pp. 341-362.

new philosophy was dominant in academic circles following World War II, but it did not find effective support within the Federal Government until the 1960s. Then the new philosophy was welcomed by fiscal activists in government as an economic justification for increased spending without the need to vote for tax increases. This produced a deficit spending pattern which is with us today.

As a percent of GDP, the deficit itself has increased sharply since 1971, and according to General Accounting Office (GAO) and Congressional Budget Office (CBO) estimates, it will increase at an even greater pace when the baby-boom generation begins to retire around 2010.[94] The Federal debt has already become so large that interest payments have quadrupled over the last 25 years. In 1997 interest payments are estimated to be $357 billion, which is 23 percent of outlays. Longer term trends reveal a more difficult time ahead for the U.S. economy, if deficit spending is not reduced and a surplus restored. Today's deficits are less than 3 percent of GDP, but current spending policies will lead to deficits at the 23 percent level by the year 2025. As the deficit increases to this level, the economy will stagnate as interest rates rise, confidence in the Federal Government weakens, and incentives to invest decrease.

PAST EFFORTS AND NEW PROPOSALS FOR PROCESS REFORM

Since 1974, several initiatives have been taken to change the budget process, but their impact on controlling deficits and spending levels has been negligible for various reasons. Some of the measures have actually thwarted efforts to control spending, because they have reduced the understanding of the process and ignored the value to a representative democracy of keeping decision making visible. Such measures should keep fiscal issues within the political arena and make this venue a more accurate reflection of the will of the people.

Transparency and Accountability

There are several proposals which improve fiscal discipline by increasing the clarity of the decision-making process, fixing responsibility for decisions, and increasing accountability for those decisions. The "transparency" theory suggests that too complex a decision-making process will reduce the ability of taxpayers and voters to hold budget policy makers accountable. If voluminous and byzantine documents are employed or lengthy, repetitious, and overlapping

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[94] United States General Accounting Office, *Federal Fiscal Trends: Fiscal Years 1971-1995,* November 1996.

procedures are part of the budget decision-making process, the public's understanding of the process suffers, and this damages accountability. Policy makers might even promote confusion as part of a plan to assist special interests. In the making of budget policy, this type of intentional ambiguity is evidenced by creative accounting, hiding tax burdens, overestimating program benefits, and providing overly optimistic economic forecasts.[95]

In light of the transparency theory, it is interesting to look at the complaints from congressional observers as they review the current budgetary process. The chief complaints revolve around the complexity, duplication, and time-consuming nature of the budgetary process. For example, spending policy is now made in three distinct phases: budget, authorization, and appropriation. Each requires a separate set of hearings, reports, votes, and procedures, and the Congress must act several times on each spending proposal. The result is a system so confusing that it is difficult to identify responsible individuals, key votes, or actual policy direction. Adding to the complexity are stop-gap measures intended to plug various process loopholes which have permitted evasion of budgetary discipline. The high level of technical detail required in following these rules and calculating fiscal implications resulting from these measures not only complicates decision making, but also pushes the process even further into the hands of unelected technical specialists, both of which reduce transparency.

The 1974 Budget Act and Other Measures

A relatively recent reform in the budget process was the passage of the 1974 Congressional Budget and Impoundment Control Act. Its enactment, according to its legislative history, was intended to gain "control" of the budget. A practical interpretation of this goal was to provide the Congress with additional resources and procedures so that the Legislative Branch could compete with the Executive Branch in the battle of the budget. The Act created a Budget Committee in each House of the Congress to act as a focal point for the consideration of targets for spending in broad functional categories. It also established the Congressional Budget Office to provide technical support and advice independent of the Executive Branch. However, as a fiscal discipline measure, the Act, in its original version, was not effective. Federal

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[95] Alberto Alesina, Ricardo Hausmann, Rudolf Hommes, and Ernesto Stein, *Budget Institutions and Fiscal Performance in Latin America*, Working Paper Series, Number 5586, National Bureau of Economic Research, May 1996.

spending rates increased following enactment, and deficits were still a problem.

Continued high levels of spending and increased deficits in the 1980s led to the passage of two additional key budget reform laws, the Balanced Budget and Emergency Deficit Control Act of 1985, also known as Gramm-Rudman-Hollings (GRH), and the Budget Enforcement Act (BEA) of 1990. GRH's goal was the elimination of the deficit, and it included the unusual disciplinary measure of automatic across-the-board cuts in the budget, "sequestrations," in the event that predetermined targets were not met through the normal budgetary process. The GRH approach was eventually abandoned in the face of massive deficit increases caused by the savings and loan bailout. BEA, on the other hand, was passed in order to enforce the budget agreements concluded by the Congress and the Bush Administration. It provided for pay-as-you-go (PAYGO) rules to ensure that future mandatory spending policy changes were "deficit-neutral" and included spending caps for discretionary programs. BEA remains in force through fiscal year 1998.

The 1974 Congressional Budget and Impoundment Control Act further weakened budgetary discipline. First, it added a third layer of budgetary action, the congressional budget process. Despite the fact that it gave some sense of order to congressional budgeting, the new Act included procedures that actually diminished the ability to understand what direction fiscal policy was taking at the program or committee level. This confusion was created by setting spending targets in functional areas for which no committee or individual felt responsibility. The new process also made more ambiguous the direction of a member's votes on spending policy, making it possible to vote for spending control in the budget phase and to vote later for increased spending in the appropriations process.

Second, this ambiguity was increased by the Act's requirement that "current policy" baselines be used as the starting point for consideration of a new budget. Current policy includes increases for program growth from inflation, increased numbers of program beneficiaries, and increased use of services by incumbent beneficiaries. Confusion was generated by the perception that any proposed spending levels below current policy were program reductions, allowing some policy makers to claim savings while permitting others to claim increases. In any case, these automatic increases biased spending upward.

The 1974 Act was intended as a vehicle for increased congressional control and budgetary initiative, and in accomplishing that purpose, it wrested control at the expense of the Executive Branch. As a process for

maintaining fiscal discipline, however, shifting power from the more centralized executive to a decentralized legislature is a move in the wrong direction. Competition among committees for available revenues under a decentralized budget process will lead to increased spending. For example, there are currently 15 spending committees in the House and 16 in the Senate. These committees have no responsibility for overall budget levels, so they tend to focus their efforts on providing program resources for their individual constituencies.[96] An analogy often employed to make the incentives in this type of situation clear is that of the communal apple tree. The absence of clear ownership leads to overuse as members of the communal group compete to get their share of apples before they disappear. Spending committees are likewise in competition to take advantage of budgetary resources for expanding programs.

The record of Federal budget deficits over the last 200 years provides evidence that a decentralized spending process leads to more spending and greater deficits than a process which is centralized. In testimony before the House Budget Committee, one expert contrasted two periods of centralized spending authority in the Congress with two period of decentralized authority. As a percent of gross national product (GNP), the centralized periods produced deficits of .26 and -.77 percent (a surplus), while the decentralized periods produced deficits of .69 and 3.67 percent of GNP.[97]

In summary, the 1974 Act not only shifted budgeting initiative and power away from the centralized executive to a decentralized legislature, but it also further decentralized the legislative budgetary process, and along with amendments for such controls as PAYGO, made the congressional process more complex and less transparent, and it made individual members and committees less accountable. The PAYGO rules also limit policy options with respect to reducing taxes because they preclude using spending cuts in discretionary programs to offset revenue reductions. This in itself is a bias toward bigger government. To improve the discipline of the spending process, the Congress will need to consider reforms which maintain the advantages of an organized

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[96] Prepared Statement of John F. Cogan, in *How Did We Get Here from There: Reform of the Federal Budget Process,* Hearings before the Committee on the Budget, U.S. House of Representatives, Report No. 104-28.

[97] The centralized periods were 1799-1885 and 1922-1931; the decentralized periods were 1866-1921 and 1931-1995. *Ibid.*

process, but which improve clarity and accountability. This might include allowing the expiration of the PAYGO rules in 1998.

A CONSTITUTIONAL AMENDMENT REQUIRING A BALANCED BUDGET

Given the continuing problems of high spending levels and large deficits, a balanced budget amendment to the Constitution is an important component of a national policy for achieving and maintaining a healthy, growing economy. As one key fiscal-control measure in a strategy for controlling government spending, such an amendment has the potential of reversing a trend of excessive expenditures which have long been a drag on the productive elements of our society. The fiscal illusion would diminish, because policy makers would be dealing with current costs as well as current benefits in their decision calculus. Such comparison of costs and benefits would produce more careful analysis of the need for and quality of the benefits, leading to higher quality programs and lower spending levels.

Experience at the state level shows that balanced-budget requirements do have an effect in producing balanced budgets. Forty-eight of the 50 states have some type of balanced-budget requirement, and, in general, that requirement plays a significant role in forcing policy makers to act with more fiscal discipline. A survey of 49 states by the U.S. General Accounting Office (GAO) suggests that such a requirement, along with a tradition of balanced budgets and concerns over the impact on bond ratings, has been a primary motivation in fiscal discipline.[98]

The chief objection to the current version of the amendment under consideration has been the lack of a tax limitation provision in the amendment, a proviso which requires a supermajority vote to increase revenues, thereby focusing budget-balancing activity on the spending reduction side of the equation. Such a disciplinary measure might be particularly important during the initial transition stage under the amendment, when existing programs with their established constituencies would fight hard to avoid program reductions and encourage policy makers to increase taxes instead. At the national level, recent fiscal history shows that pressure for tax increases can be significant. Experience at the state level suggests, however, that revenue increases are not the chief mechanism for achieving balance. GAO notes in a study of 25 states that half of projected current-year budget deficits were

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[98] U.S. General Accounting Office, *Balanced Budget Requirements: State Experiences and Implications for the Federal Government,* March 1993, pp. 38-39.

achieved by spending reductions.[99] Only a few states have a tax-limitation provision.

An objection to an amendment also has been made on the grounds that capital expenditures should not be subject to a balanced-budget discipline, because payment for investment projects should be made along with their consumption (they should be amortized) and not made out of current revenues. State governments typically use separate capital accounts for long-term investment spending. To create a separate undisciplined account, however, would provide a major loophole for enabling every policy maker to hide favorite programs under the label of "investment." The operative reason to avoid financing large capital projects out of current revenues at the state level is the spike created in revenues to accommodate the investment under a balanced-budget scenario. While spikes may sometimes occur at the state level, at the national level, the aggregated total of investments in infrastructure, research and development, and other capital projects averages out into a smoother pattern and tends not to produce spending spikes. The use of accumulated amounts in trust funds also reduces this problem.

Another reservation about the amendment is generated by viewing the Federal budget as a macroeconomic stabilizer, automatically going into deficit by spending more and receiving less revenue during an economic downturn.[100] This concept is a holdover from the Keynesian activist philosophy which asserts that deficits can help generate recovery. Proponents of this view ignore the negative incentives generated by increased transfer payments during recessions or the drain of increased borrowing on capital markets and the economy. Spending that causes delay in the response of resource markets, regardless of how well-intentioned, slows economic recovery. Also, by increasing the fiscal burden of government, regardless of how it is financed, the rate of economic recovery from recessions is reduced.

The larger portion of the increased deficit during recessions is produced by revenue loss, which may be handled by waiving the balanced budget requirement or reducing spending. If these options are not in order, rather than failing to adopt a balanced-budget requirement, which would entail a far more costly economic burden, policy makers could always elect to change the mix of spending, reducing some

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[99] *Ibid.*, p. 27.

[100] A stable monetary policy will be a much more effective mechanism for reducing excessive amplitude in the business cycle.

programs in order to permit an increase in others. Raising taxes during a recession would not promote recovery, as it may signal a lack of fiscal discipline and an intention to increase spending in the long run, as has often been the result with previous tax increases.[101]

FURTHER PROPOSALS TO INCREASE TRANSPARENCY

Some proposed rules for enforcing fiscal discipline may be only marginally successful. The additional complexity of these rules may be matched only by the tenacity shown in circumventing them, and, if the transparency theory is correct, more complicated rules only permit additional opportunities to shrink from accountability. If accountability is missing from the process, it would probably make little difference to fiscal discipline whether the rule at issue is a constitutional rule or something less; accountability would be circumvented with little political cost. Most analysts would agree that the most effective way for budget issues to be addressed under a democratic system is to keep the decision making a part of the political process. Keeping a representative form of government focused on promoting the general welfare requires an understanding by the represented as to how budgets are made. Improving transparency and accountability should decrease the influence of narrow special-interest constituencies seeking benefits at the expense of the general public.

Several possible reforms are suggested by this analysis, among them changes in congressional rules which would strengthen control of the spending process. Concentrating the spending power in the hands of one committee in each House may seem extreme, but this has been the practice in the past. Alternatively, the Congress may choose to follow its own lead and provide more power to the Executive Branch, as it has in granting line-item veto authority to the President. Centralized power improves accountability in this case because one representative and one party must lead and take responsibility. The record becomes easier to read.

Given the President's visibility, a larger role for him may prove constructive from a transparency perspective. The Senate version of the Balanced Budget Amendment to the Constitution, for example, includes a provision which improves transparency and accountability. Section 3 requires the President to submit a budget that is in balance. This provision may be more important than any requirement imposed on the

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[101] Richard Vedder, Lowell Gallaway and Christopher Frenze, *Taxes and Deficits: New Evidence*, Joint Economic Committee, October 1991.

Congress, because it makes a President and his party's position clearer on tax and spending levels.

A similar argument could be made for the substitution of a joint resolution on the budget for the concurrent resolution instituted by the 1974 Budget Act. A concurrent resolution, one which is a vehicle between the House and Senate only, is employed to finalize their agreement on the budget for the upcoming fiscal year. A joint resolution would require presidential approval, and, thereby, raise the visibility of the President as a politically accountable budgetary official. In the absence of the constitutional amendment with a requirement for the President to submit a balanced-budget provision, a joint budget resolution would be an improvement over the current process. At least one budget reform bill before the Congress includes this feature.

As a further option to improve the budget targeting process by fixing responsibility, the Congress may choose to define spending targets on a committee-by-committee basis, rather than the current functional approach. In doing so, the Congress would establish "ownership" of a spending record and relevant disciplinary successes or failures.

Finally, in the spirit of improving the understanding of actions taken in the budget-making process, the Congress should adopt the previous year's spending level as the baseline for considering the budget. This will provide every member with an opportunity to vote explicitly for increases or decreases in spending, regardless of their programmatic origin.

CONCLUSION

One of the biggest criticisms of proposals to improve transparency in the fiscal process has been that greater understanding of the process is no guarantee that some President, Congress, or political party will not increase taxes, spending, or deficits. This is a possibility. The issue behind improved transparency, however, is not the final course of fiscal policy; it is whether budgets reflect the public will and promote the public welfare, or whether they are fashioned behind a smokescreen which facilitates special-interest goals. Comprehensive reform to improve this accountability is urgently required.

TAX POLICY AND CAPITAL FORMATION

THE ECONOMIC EFFECTS OF CAPITAL GAINS TAXATION

There is broad recognition that the current tax system is systematically biased against saving, investment, and work effort. One form of bias is the multiple taxation of saving and investment under various provisions of the current income tax structure. Proposals to mitigate this tax bias have been offered by the Clinton Administration as well as by Members of Congress on both sides of the political aisle. One proposal that has attracted bipartisan support in the past is the reduction of the capital gains tax rate. In 1989, for example, the U.S. House of Representatives passed a capital gains tax reduction with bipartisan support, though it was not passed in the Senate. This paper weighs the statistical evidence on capital gains tax reduction and finds that such a change would have a positive impact on economic and employment growth. It would also partly abate the unfair effects of taxing inflation-generated gains.

BACKGROUND

A capital gain is the increase in the value of a capital asset realized over its cost basis. For example, an asset purchased for $1,000 and sold for $1,500 generates a capital gain of $500. This nominal gain is subject to the capital gains tax. Because capital gains are not adjusted for inflation, much of the tax is paid on illusory, inflation-generated gains.

The Revenue Act of 1978 allowed taxpayers to exclude 60 percent of capital gains from income taxation (a 50 percent exclusion was allowed since 1942). The Economic Recovery Tax Act of 1981 reduced the top tax rate on regular income from 70 to 50 percent, yielding a maximum effective capital gains tax rate of 20 percent (0.5 x 0.4). The 60 percent exclusion was eliminated under the Tax Reform Act of 1986, thus raising the maximum tax rate on capital gains to 28 percent, a 40 percent increase. The increase was largest for middle income taxpayers whose tax rate increased from 8.7 to 15 percent, a 72 percent increase. The 1986 Act capped the statutory rate for capital gains at 28 percent so that subsequent increases in the income tax rate

rate of 28 percent remains in place, though a variety of proposals have been introduced to lower it below 20 percent.

MACROECONOMIC EFFECTS

Except for a brief recession in 1990-91, the U.S. economy has enjoyed a 15-year expansion that is still underway. However, the growth rates of the economic upswing that began in 1991 have been relatively low compared to other post-war expansions. As a result, American incomes and living standards have been growing more slowly.

These low growth rates can be partly attributed to counter-productive tax policies that undermine long-term growth by discouraging saving and investment. Although broad tax reform is needed to address the deficiencies in the tax code, many economists believe that reducing the capital gains tax rate is an important step in the right direction. A capital gains tax reduction would enhance incentives to save and invest by increasing the after-tax return from investment. The effects of a capital gains tax reduction should not be overstated; nonetheless, its beneficial effects on the economy would make a significant contribution to long-term growth.

Increasing Investment and Economic Growth

Economic growth depends on two factors: the quantities of available inputs, such as capital and labor, and the productivity of those inputs. Economic growth cannot occur unless the quantity of inputs increases, productivity improves, or both. Investment in capital is therefore crucial to economic growth for at least two reasons. First, by contributing to capital formation, investment increases the amount of capital available in the economy. Second, investment enhances labor productivity because capital and labor are productive complements. The critical link between investment and economic growth is a widely accepted economic principle.

Unfortunately, the level of investment in the United States compares unfavorably with that of other countries and with the United States' own history. Annual U.S. investment is only half the level it was in the 1960s and 1970s. In addition, net private domestic investment dropped from an average of 7.4 percent of gross domestic product (GDP) between 1960 and 1980 to an average of only 3.0 percent since 1991.[102] Consequently, the growth rate of the capital stock in the United States has also been declining. Figure 1 shows a clear downward trend in the growth rate of the non-residential stock of capital. This downward trend has serious implications for the economy

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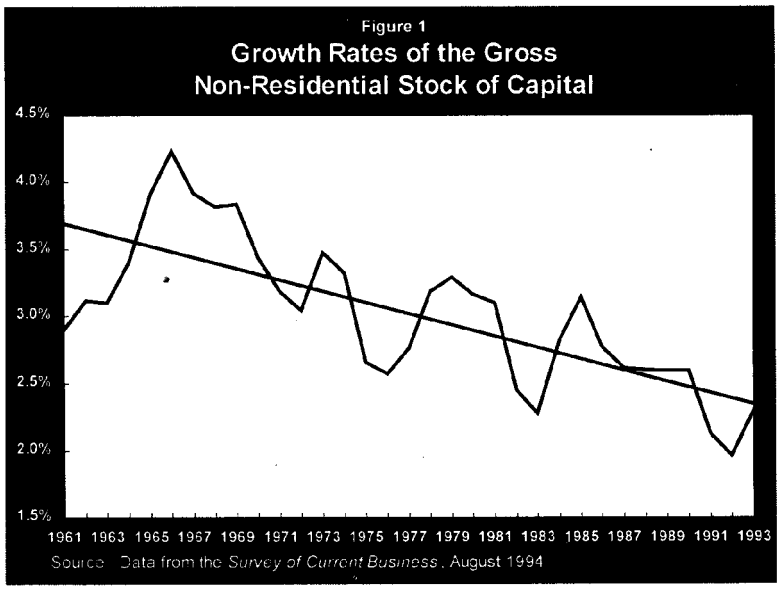
[102] Margo Thorning, "Trends in Investment and Tax Policy: Time for a Change?" *Business Economics* 30 (January 1995), p. 23.

given the strong relationship between investment and economic growth.

The diminishing growth of investment can be partly attributed to high costs of capital. The cost of capital measures the return an investment must yield before a firm or an individual is willing to undertake the investment. High capital gains tax rates lower the return on investment, thus increasing the cost of capital and depressing overall investment in the economy. Conversely, a capital gains tax reduction would lower the cost of capital and stimulate investment.[103] The effects of increased capital formation would reverberate throughout the economy in the form of higher wages, rising living standards, job creation, and economic growth.



Furthermore, the U.S. capital gains tax rate exceeds that of any industrialized nation except that of the United Kingdom and Australia (however, even these countries index gains for inflation, whereas the United States does not). Because the United States must compete internationally for capital, high capital gains tax rates place the United States at a disadvantage relative to its competitors. Some of the United

[103] The cost of capital is also affected by interest rates and depreciation costs. Some of the fluctuations in Figure 3 reflect changes in investment due to fluctuations in these variables.

States' major competitors, such as Germany and Hong Kong, exempt long-term gains from taxation altogether; and other countries, such as Japan, tax capital gains very lightly. As a result, these countries typically experience higher saving, investment, and productivity growth rates than the United States. The data indicate that a lower capital gains tax rate would help improve U.S. global competitiveness.

Statistical Studies

Several studies have attempted to measure the macroeconomic effects of a capital gains tax reduction. Two of the most recent studies were conducted by DRI/McGraw-Hill and by Allen Sinai, chief global economist at Primark Decision Economics, formerly with Lehman Brothers. Both studies estimate the impact of a 50 percent capital gains exclusion for individuals and a 25 percent tax rate for corporations (the existing rate is 35 percent). The studies conclude that a capital gains reduction of this size would benefit the economy.

Allen Sinai[104]

Dr. Sinai estimates that reducing the capital gains tax rate would lower the cost of capital, thus increasing business capital spending by approximately $17.6 billion per year. The higher levels of investment and capital formation would generate increased economic activity, raising the level of real GDP by an average of $51 billion annually. The increase in entrepreneurial activity and productivity would generate close to a half million new jobs by the year 2000.

In addition, the value of the stock market would rise, leading many investors to shift their assets toward equities. This shift would raise household net worth by an average of 2.1 percent per year. Dr. Sinai estimates that the national saving rate would increase by about $44.1 billion per year, partly because of the increased income generated from additional economic activity, and partly because of the increase in personal and corporate saving which occurs when capital gains are taxed at a lower rate. The increased saving would help keep interest rates from rising in the face of increased economic activity. Dr. Sinai concludes that a "Capital gains tax reduction increases savings, capital spending and capital formation, economic growth, jobs, productivity and potential output." He notes that "The increases relative to what might have happened otherwise are definitely significant, but small to modest in magnitude."

Dr. Sinai notes that more targeted capital gains relief, such as an increase in capital gains allowed on home sales, should also stimulate

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[104] Written testimony by Allen Sinai prepared for the Senate Finance Committee, March 13, 1997.

Table 1. Allen Sinai's Estimates of the Effects of a Capital Gains Tax Reduction[1,2] Average per Year, 1997 - 2002

Real GDP		**Employment/ Unemployment**	0.35
level, (in 1992 $ billion)	$51	payroll, millions	6
growth, percentage points	0.1	unemployment rate	0.2
Business Capital Spending		**Productivity Growth**	
total, (in 1992 $-billion)	$17.6	percentage points change	0.1
Hourly Compensation		**S&P 500**	
percentage points change	0.1	percentage change	0.8
National Savings		**Household Net Worth**	
(in $-billion)	$44.1	percentage change	2.1
Federal Tax Receipts[3]		**Cost of Capital**	
change from baseline, OTA	$17.2	pretax equity, % change	-6.8
change from baseline, JCT	$4.5	composite, % change	-2.7

Source: Testimony of Allen Sinai before the Senate Finance Committee, March 13, 1997.

[1] Assumes a 50-percent exclusion of long-term capital gains for individuals and a 25 percent capital gains tax rate for corporations effective January 1, 1997.

[2] Estimates are preliminary and subject to change

[3] OTA - Office of Tax Analysis, U.S. Department of Treasury; JCT - Joint Committee on Taxation.

Estimates with unlocking and macroeconomic feedback effects. Numbers depend on estimates of unlocking effect.

economic activity, but the magnitude of the effects would be drastically reduced. He states that a capital gains reduction targeting the sale of homes would increase housing activity, "but much less benefit would accrue to savings, in general, capital formation, productivity and the maximum sustainable rate of economic growth." The major findings of Dr. Sinai's study are summarized in Table 1.

DRI/McGraw-Hill[105]

The DRI study, summarized in Table 2, estimates that cutting the capital gains tax rate would lower the net cost of capital, thus raising

[105] DRI/McGraw-Hill, "The Capital Gains Tax, Its Investment Stimulus, and Revenue Feedbacks," (April 1997).

Table 2. DRI/McGraw-Hill's Estimates of the Effects of a Capital Gains Tax Reduction Total, 1998 - 2007	
Real GDP (percent change from baseline)	0.4
Real Capital Spending (percent change)	1.5
Capital Stock (percent change from the baseline)	1.2
Productivity (percent change)	0.4
Net Cost of Capital (percent change)	-3.0
Total Federal Tax Receipts (in $-billion)	$7

[1] Based on 50 percent exclusion of long-term capital gains for individuals and 25 percent tax rate for corporations.

the level of business spending by about $18 billion in 2007. Over a 10-year period, the capital stock would rise 1.2 percent above its baseline level, increasing productivity by roughly 0.4 percent. Real GDP could be 0.4 percent higher than in the baseline due to the effects of increased investment. The study notes: "The evidence suggests to almost all economists that a capital gains cut is good for the economy and roughly neutral for tax collections."

These conclusions largely conform to the findings of other studies which have analyzed the macroeconomic effects of a capital gains tax reduction. Most economists now agree that reducing the capital gains tax rate would encourage investment, boost productivity, raise living standards, and stimulate economic growth. However, some analysts argue that the macroeconomic effects of a capital gains tax reduction would be minimal unless the saving rate increases to provide additional resources for investment. It is argued that the saving rate is unlikely to increase as a consequence of a capital gains tax reduction since empirical studies have found only a weak relationship between saving rates and rates of return.

However, empirical studies which seek to measure the response of the saving rate are inadequate for two main reasons. First, saving is taxed at several levels, the capital gains tax being only one of these levels. Most studies analyze only the effects of a reduction in one level of taxation but ignore other taxes which may be rising. As a result, there are offsetting factors which are not included in the models. An example of this occurred in the 1980s when falling income tax rates accompanied a decline in the saving rate. The 1980s, however, marked

a period in which other taxes were rising. For example, the Social Security Amendments of 1983 enacted a phase-in for the taxation of Social Security benefits. Middle-income individuals who earned interest from saving could be pushed into the phase-in level, thus subjecting them to taxation. In these circumstances, this would be a disincentive to saving. In addition, rising payroll tax rates more than offset the reduction in income tax rates. The higher level of payroll taxes reduced most taxpayers' after-tax income, out of which people could save, thus dampening the saving incentives associated with the income tax reduction.[106]

The second reason that empirical studies may be flawed is that they use data from the National Income Accounts which measures saving on an income-flow basis. In other words, they measure how much of an increase in income is saved rather than consumed. Income-flow models cannot measure saving which arises from an increase in wealth. For example, the increase in the value of assets in the stock market is treated as an increase in wealth, not income. Saving which arises from increasing wealth are not captured by many models. This is an important point to note because a capital gains tax reduction is more likely to increase saving through wealth effects as opposed to income effects.

Business Creation and Entrepreneurship

Capital gains taxation further effects economic and employment growth through its impact on entrepreneurial activity and business creation. Entrepreneurship is the driving force of a market economy. It is crucial to job creation, innovation, and productivity. Entrepreneurship is affected by, among other things, the strength of the incentives that motivate entrepreneurs to undertake innovative projects and the ability of the entrepreneur to raise enough capital to finance projects. The taxation of capital gains discourages innovation, risk-taking, and capital investment, thus diminishing entrepreneurial activity in the economy.

Capital gains taxation effects entrepreneurship through its impact on venture capital, an important source of funding for entrepreneurial projects. High capital gains tax rates lower the potential return from backing innovative companies, thus restricting the amount of venture capital available to new firms. Some analysts argue that most venture capital comes from tax-exempt sources such as pension funds and

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[106] Another important reason why saving may have fallen is the 1982-83 recession which lowered individuals' incomes. It is believed that individuals reduced their saving in order to be able to maintain the same level of consumption.

foreign investment; therefore, a capital gains tax reduction would not have much effect on venture capital.

However, several studies indicate that informal venture capitalists are extremely important sources of investment and are especially critical to the formation of new companies. Professors John Freear and William Wetzel, Jr. of the University of New Hampshire found that private individuals are a crucial source of funding for new technology-based firms, accounting for 48 percent of seed capital funds. Their study states that "At the seed stage, private individuals invested more funds, in more rounds, for more firms than any other single source."[107] Formal venture capital becomes more important during later stages of development.

Another study, conducted by Coopers & Lybrand, concludes: "Creating new jobs - especially in young technology companies - requires risk capital...The risk capital invested in technology companies is provided primarily by investors subject to capital gains taxation. [Furthermore,] risk capital investors seek capital gains, not dividends."[108] The importance of informal investors to the venture capital process suggests that a capital gains tax reduction would effect the amount of venture capital available to new companies.

The taxation of capital gains may further limit the amount of entrepreneurial activity in the economy by reducing the incentives to entrepreneurship. Israel Kirzner, a professor at New York University, describes entrepreneurship as a discovery process. In other words, the entrepreneur is an innovative, resourceful, risk-taking individual who discovers otherwise overlooked opportunities. Whereas most individuals are motivated by a known set of economic incentives, such as wages or promotion potential, the entrepreneur is motivated by the potential return that may be earned from entering into a situation with *unknown* outcomes. This is why entrepreneurs are described as risk-takers: they are motivated by the uncertain return that may potentially be earned from discovering a previously unnoticed opportunity.

If the potential returns are taxed heavily, the entrepreneur's motivation is reduced. Hence, high capital gains tax rates may divert innovative, would-be entrepreneurs toward different career paths. The economy is harmed by the reduction in entrepreneurial activity, not

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[107] John Freear and William E. Wetzel, Jr., "Who Bankrolls High-Tech Entrepreneurs?" *American Council for Capital Formation Center for Policy Research,* (undated).

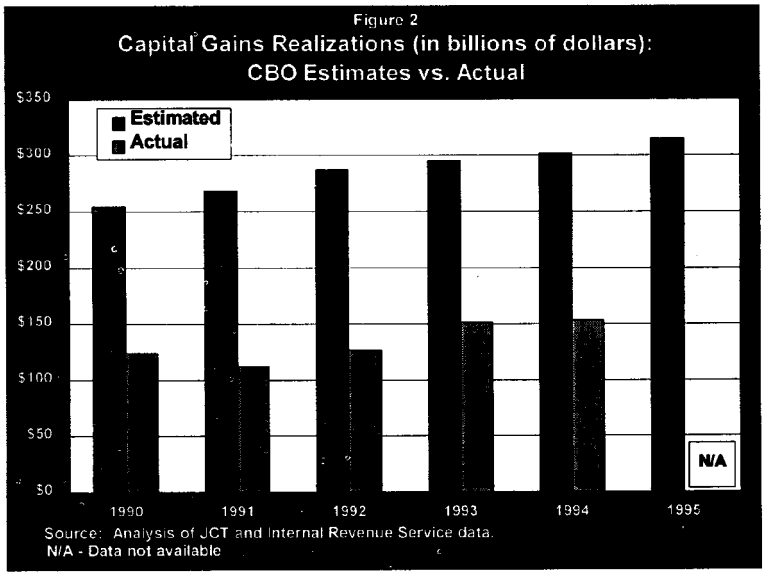
[108] Coopers & Lybrand, "Generating Economic Growth through Young Technology Companies," (undated).

only because business and job creation declines, but also because possible improvements to living standards are left undiscovered.[109]

TAX REVENUE

In an attempt to estimate the revenue effects of a capital gains tax cut, the Joint Committee on Taxation (JCT) used Congressional Budget Office (CBO) estimates of capital gains realizations under the 28 percent tax rate for the 1990-95 period. The JCT concluded that a capital gains tax reduction would cost the government billions of dollars.

This JCT analysis, however, was based on grossly inaccurate data. Figure 2 illustrates the difference between actual capital gains realizations and CBO estimates. For the period 1990-94, CBO overstated capital gains realizations by $737 billion. The use of a massively overstated baseline led forecasters to overestimate the extent of revenue loss associated with a tax cut.



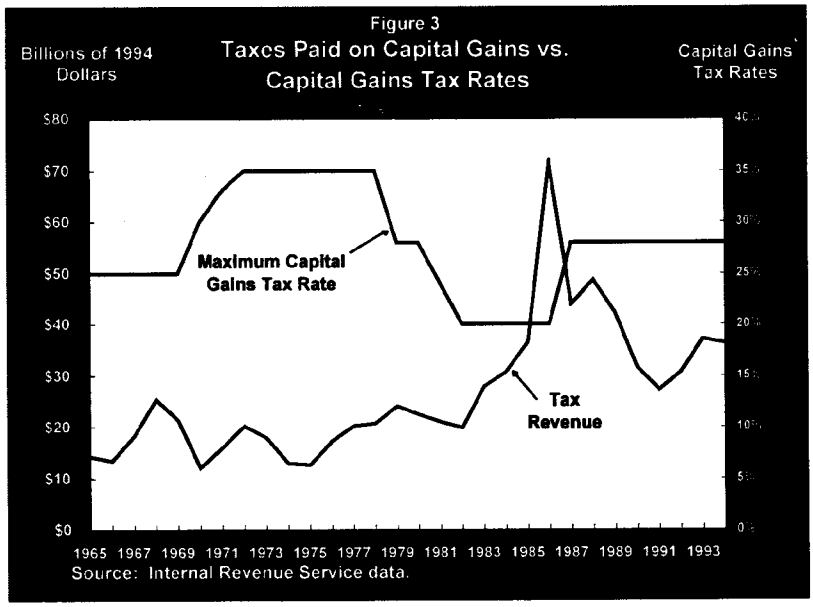
These substantial CBO errors occurred for two primary reasons. First, high capital gains tax rates cause realizations to decline because the penalty associated with selling assets is high. CBO did not adequately account for this behavioral response in its estimation

[109] Israel Kirzner, *Discovery and the Capitalist Process.* (Chicago: University of Chicago Press, 1985), pp. 93-118.

process. Second, the CBO analysis did not account for the macroeconomic effects described in the previous section. In other words, CBO assumed that a change in the capital gains tax rate is neutral in its effect on the economy. For these reasons, CBO massively overstated the projected levels of realization.

Historical Evidence

Historical evidence undermine the claim that capital gains tax reductions lower revenue. Figure 3 shows that, historically, taxes paid on capital gains have tended to *increase* after a reduction in the capital gains tax rate. When capital gains tax rates were lowered in 1978 and again in 1981, revenue climbed steadily despite government forecasters' claims that it would fall. Conversely, when the tax rate increase was enacted in 1987, revenue began declining, although forecasters predicted it would increase.



For instance, capital gains tax revenue equaled $36.2 billion (0.5 percent of GDP) in 1994 (the last year for which finalized IRS data are available). In contrast, $36.4 billion (0.6 percent of GDP) was collected in 1985, after adjusting for inflation. Thus, tax revenue in 1994 was slightly lower than in 1985 even though the tax rate was higher, the economy was larger, and the stock market was stronger in

1994. The historical data suggest that the government could collect more revenue if the capital gains tax rate were reduced

Effects on Tax Revenue

The result that tax revenue tends to increase following a reduction in the tax rate may seem counterintuitive; however, there are many offsetting factors which must be considered. In the static analysis, tax revenue inevitably falls because the same level of realizations is being taxed at a lower rate. In addition, tax receipts may fall if taxpayers reclassify regular income as capital gains in order to take advantage of the lower rate.

On the other hand, a reduction in the capital gains tax rate creates three effects which tend to increase tax revenue. The first is the unlocking effect, which expands the tax base because realizations increase in response to the lower tax rate. The magnitude of the unlocking effect is quite controversial and will be discussed in greater detail in the next section. The second is the dynamic effect, which measures the increase in tax revenue generated from the impact of lower tax rates on economic growth. The third effect measures the increased tax revenue resulting from an increase in the value of existing assets. When capital gains tax rates are lowered, the value of existing assets necessarily increases. Tax revenue rises as owners of stock pay taxes on the higher value of their assets when realized.

The impact on tax revenue depends on the relative magnitude of each of these offsetting factors. In the past, government forecasters have used a static analysis which does not consider the macroeconomic effects or the effects of an increase in the value of assets. In general, more comprehensive studies find that a reduction in the capital gains tax rate will be revenue neutral, and may even generate small revenue gains. The DRI/McGraw-Hill study finds that the positive revenue effects outweigh the negative, and therefore federal tax revenue should increase by approximately $7 billion over 10 years. The results of the DRI study are summarized in Table 3.

Table 3. Estimated Impact of Capital Gains Tax Reduction on Federal Tax Revenue for Select Years (billions of 1997 dollars)[1]

	1998	2002	2007	**1998 - 2007**
Static Effect	-14	-16	-20	**-168**
Unlocking Effect[2]	15	2	2	**47**
Asset Prices	13	9	8	**95**
Income	-2	-2	-2	**-21**
Reclassification	0	4	11	**54**
Macroeconomic Effect	12	-3	-1	**7**
Total				

Source: DRI/McGraw-Hill, "The Capital Gains Tax, Its Investment Stimulus, and Revenue Feedbacks," Table 1, (April 1997).
[1] Effects of a 50 percent exclusion of capital gains for individuals and a 25 percent tax rate for corporations.
[2] DRI uses a conservative estimate of 5 percent additional unlocking over the 10-year period.

Unlocking Effect

When capital gains tax rates are high, investors avoid paying the tax by holding onto assets they would have otherwise chosen to sell. This creates a "lock-in effect," which lowers capital gains realizations by shrinking the tax base. CBO failure to adequately account for this behavioral response caused it to underestimate the extent of lock-in and overestimate capital gains realizations as shown in Figure 2 above. Economists estimate that trillions of dollars in equity are currently locked into assets because investors refuse to pay a high tax on their profits. Reducing the capital gains tax rate would unlock a portion of this capital, allowing the government to tax the increased realizations.

Although analysts agree on the existence of the unlocking effect, its magnitude and duration are controversial. Estimates of the unlocking effect depend on assumptions made about taxpayer responsiveness to changes in the tax rate. CBO estimates have found a low level of responsiveness, leading some analysts to conclude that the unlocking effect is insignificant. However, other studies have found a high degree of taxpayer responsiveness. An analysis by economists at the Office of Tax Analysis (OTA) at the U.S. Department of Treasury states that while no study can provide definitive conclusions:

> ...we find strong evidence of responsiveness to capital gains tax rates. [Our findings] show that the marginal tax rate on long-term gains has a significant powerful negative impact both on the proportion of taxpayers realizing gains and on the value of capital gains declared by realizers. That is, despite theoretical misgivings that many analysts have expressed, the data continue to imply that the realizations response would be sufficient to yield revenue increases from capital gains reductions.[110]

The results of various studies differ due to divergent methodologies. CBO uses an approach which estimates aggregate responsiveness, while OTA focuses on individual taxpayer behavior. Many analysts believe that the former approach understates the unlocking effect and the latter overestimates it; the true measure may be somewhere in between. The important point to note is that all studies find some evidence of unlocking, suggesting that capital gains realizations do increase when the capital gains tax rate is reduced. Furthermore, a study by economists Robert Gillingham and John Greenlees analyzed both methods and concluded: "Existing analyses do not provide conclusive evidence on the revenue effects of changes in the taxation of capital gains...The weight of the evidence from both [approaches] does not suggest, however, that a reduction in the capital gains rate from existing levels would decrease tax revenue."[111]

A study by the National Bureau of Economic Research indicates that when the unlocking effect is taken into account, the revenue-maximizing capital gains tax rate falls somewhere between 9 and 21 percent. This rate does *not* account for the increased revenue generated from the asset value and dynamic effects discussed previously.[112]

WHO WOULD BENEFIT?

Earlier legislation to reduce the capital gains tax rate was defeated in large part because opponents of a tax cut portrayed it as a windfall for

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[110] Robert Gillingham, John S. Greenlees, and Kimberly D. Zieschang, "New Estimates of Capital Gains Realization Behavior: Evidence from Pooled Cross-Section Data," *Department of Treasury OTA Papers,* (May 1989), p. 27.

[111] Robert Gillingham, and John Greenlees, "The Effect of Marginal Tax Rates on Capital Gains Revenue," *National Tax Journal* 45 (June 1992), p. 167.

[112] Testimony by Mark A. Bloomfield prepared for the Senate Finance Committee, February 15, 1995, p. 10.

the rich. It is obvious that affluent investors would benefit from a capital gains tax reduction, but benefits would also accrue to individuals across the income spectrum. The DRI/McGraw-Hill study notes: "Often overlooked benefits flow to all workers and middle income citizens, and the overall economy wins. The middle class will benefit from greater appreciation in their pensions...Small businessmen will gain from more generous tax treatment of the gains on their enterprise. And all employees will see wage gains tied to investment-driven higher productivity."[113] DRI's research director, David Wyss, notes that "The capital gains cut helps most people and hurts no one."[114]

Furthermore, the notion that all investors are affluent gentlemen coupon-clippers is no longer true. Over the past decade, the stock market has seen a surge of middle income investors. A survey released earlier this year by the NASDAQ Stock Market found that stock ownership among Americans has doubled in the past seven years to 43 percent of the adult population. The survey also found that:[115,116]

⇒ 47 percent of the investors are women;

⇒ 55 percent are under the age of 50; and

⇒ 50 percent are not college graduates.

Mutual funds have become especially popular with middle income Americans as a source of investment for pension funds and as an alternative to traditional bank accounts and government securities, which generally yield lower returns. According to the survey, the proportion of American adults investing in mutual funds has tripled over the past seven years from 13 to 40 percent. Another study conducted for the mutual fund industry found that 29 percent of mutual fund shareholders have household incomes below $40,000; 38 percent

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[113] DRI/McGraw-Hill, "The Capital Gains Tax, Its Investment Stimulus, and Revenue Feedbacks," (October 1995), p. 3.

[114] Testimony by David Wyss prepared for the House Committee on Ways and Means, March 19, 1997.

[115] Marcy Gordon, "Stock Market Looks More Like Face of America, Survey Says," *The Associated Press Business News,* February 21, 1997.

[116] The survey, conducted by Peter D. Hart Research Associates, was based on 20-minute interviews with a national sample of 1,214 investors. The margin of error is plus or minus 3.2 percentage points.

have incomes between $40,000 and $75,000; and 33 percent have household incomes over $75,000.[117]

These results suggest that a capital gains tax reduction would directly benefit many Americans across the income spectrum. A stronger economy also would generate indirect benefits for individuals who do not participate in the stock market. However, these indirect gains are much more difficult to quantify. Consequently, it is important that the capital gains debate is not relegated to a discussion of numbers and distributional tables.

Shortcomings of Distributional Tables

Policy makers have become heavily reliant on distributional tables which illustrate the effect of a proposed tax change on the tax liabilities and tax burdens of different income groups. As mentioned earlier, past legislation to reduce the capital gains tax rate was defeated largely on the basis of distributional analysis. Distributional tables must be interpreted with great caution.

Michael Graetz of Yale University, formerly the Deputy Assistant Secretary at the Treasury Department's Office of Tax Policy, warns that distributional tables should not guide tax policy.[118] Distributional tables are necessarily based on many assumptions and over simplifications that cannot capture the wide variety of behavioral and economic responses which occur in reality. For instance, most distributional tables only represent tax payments, but do not reflect the fact that low and middle income individuals are the major recipients of government transfer payments. Thus, the numbers overstate the true tax burden on these individuals. Consequently, the assumptions and simplifications used to construct the tables often lead to misleading results.

Graetz points out that the three government agencies responsible for constructing distributional tables (CBO, JCT, and OTA) implement divergent methodologies based on their own judgments and interpretations of the theoretical issues. The divergent methodologies produce conflicting tables which confuse the policy-making process and can significantly skew the results to bolster a particular political

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[117] The 1996 study, conducted by the Investment Company Institute, was based on telephone interviews with a randomly selected sample of 1,165 mutual fund shareholders in mid-1995. The survey data does not include individual households that only own mutual funds in 401(k) employer sponsored retirement plans.

[118] Michael J. Graetz, *Distributional Analysis of Tax Policy,* edited by David F. Bradford. (Washington D.C.: The AEI Press, 1995), pp. 15-78.

view. The inaccuracies are not necessarily a consequence of intent, but of the elusive nature of the impact of tax changes on the economy.

Graetz suggests that distributional analysis is best explained through words, not numbers, and heavy reliance on these imperfect tables may compromise the soundness of the affected tax legislation. Distributional tables should not be ignored -- they do contain important information when interpreted properly. However, it is extremely important to recognize that they do not relay a complete or perfectly accurate analysis.

TAX FAIRNESS

Opponents of a capital gains tax reduction argue that capital gains are already subject to preferential treatment, and a further rate reduction would only motivate many taxpayers to reclassify regular income as capital gains in order to take advantage of lower tax rates. However, there are many provisions in the tax code which discriminate against saving and investment and outweigh the preferential treatment of capital gains.

First, taxpayers purportedly benefit from a provision which allows them to defer tax payment on capital gains until the gains are realized. Whereas most interest income is taxed as it accrues, a capital gain is not taxed until the asset is sold and the gain is realized. However, the benefit of deferral is at least partially offset since the money associated with capital gains is subject to several levels of taxation: it is taxed when earned as individual income, when claimed as corporate income, when realized as a capital gain, and if held until death, it may be subject to estate taxes.

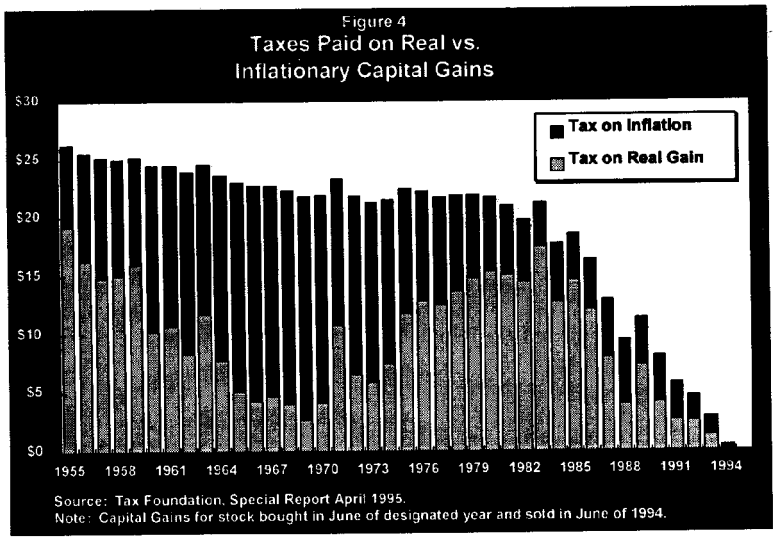
Second, many claim that capital gains are awarded preferential treatment because the tax is forgiven if the asset is held until death. This provision benefits a relatively small portion of the population since most people save to finance their retirement, to guard against unforeseen mishaps, or to achieve a desired goal such as purchasing a home or college education. These individuals save because they plan to realize their earnings during their lifetimes, and accordingly, they are unlikely to benefit from the death provision. Even those who do hold their assets until death may not escape taxation entirely if their assets become subject to the estate tax.

Third, capital gains are supposedly given preferential treatment since the statutory capital gains tax rate is capped at 28 percent, as opposed to regular income, which is capped at a rate of 39.6 percent. This benefit is diminished since the effective tax rate often exceeds 28 percent due to various phase-out provisions in the tax code. In addition, the realization of a capital gain may push individuals into a higher income tax bracket, thus further increasing their tax liability.

Finally, the most inequitable provision of capital gains taxation is the failure to index gains for inflation. Since capital gains are not adjusted for inflation, individuals often pay taxes on inflation-generated gains. As a result, the effective tax rate may exceed the statutory maximum. In years of particularly high inflation, the effective tax rate exceeded 100 percent; consequently, many individuals have paid capital gains taxes on capital *losses*.

Figure 4 illustrates the undue burden created by taxing inflationary gains. It shows the total tax paid on an average stock purchased in June of different years and sold in June of 1994. The bottom region of each bar reflects the portion of the tax paid on real gains, while the top region shows how much tax was paid on inflation.

The taxing of inflationary gains is unfair and counter-productive because it intensifies the lock-in effect. Many investors choose to hold onto their assets, not only to avoid paying high capital gains taxes, but also to avoid paying taxes on illusory gains. If capital gains were indexed, much of this capital would become unlocked, allowing the government to tax the increased realizations.



Finally, it should be noted that the concern over income reclassification (classifying regular income as capital gains) is misplaced. Income reclassification would not be the consequence of lower capital gains tax rates; it is already the consequence of a complicated tax system which treats various types of income differently depending on their source and who receives them.

Taxpayers already have an incentive to take advantage of tax loopholes to avoid paying high taxes on their earnings. Possibly the only solution that would eliminate tax arbitrage is the transition to a flatter, less complicated tax structure which closes loopholes and reduces individuals' ability to exploit the system.

CONCLUSION

Saving and investment are crucial to economic growth and rising living standards. However, high costs of capital, double and triple taxation of saving, and taxation of inflationary gains discourage these activities, thus lowering economic efficiency and long-term growth prospects. While broad tax reform is needed to address the deficiencies of the existing tax code, many economists believe that reducing the capital gains tax rate is the single most effective policy measure which can be enacted immediately to promote efficiency and economic growth.

In the past, attempts to stimulate long-term economic growth through a capital gains tax reduction were thwarted by inaccurate estimates of revenue losses and misleading distributional tables. This discussion should focus on the macroeconomic effects of cutting the capital gains tax rate rather than on the questionable distributional effects. It has been estimated that reducing the effective capital gains tax rate would add $51 billion per year to real GDP, raise productivity growth by 0.1 percentage points per year, and create a half million new jobs over the next three to four years. A capital gains tax cut would also stimulate business creation and help equalize the inequities that prevail under the current tax code.

A meaningful debate should therefore incorporate the macroeconomic effects of a capital gains tax reduction and concentrate on the positive growth effects of a tax cut. When these effects are taken into account, it becomes increasingly apparent that a capital gains tax reduction would benefit the government as well as taxpayers in all income brackets

EXPANDING IRA BENEFITS

The current tax code is biased against saving and investment activities that are important to economic expansion and to our quality of life. This bias discourages families from saving for future expenses and unforeseen needs. It also impedes economic progress by limiting the amount of domestic resources available for investment.

Providing new saving incentives to raise the U.S. saving rate is a primary goal for many policy makers. One of the most important saving incentives under current law is the Individual Retirement Account (IRA). IRAs offer families attractive tax benefits that encourage them to save for retirement, but restrictions on their use prevent or discourage many families from taking advantage of these benefits. Liberalizing these restrictions could substantially increase IRA participation and boost personal saving in the United States, thereby creating new incentives for financial empowerment and economic growth.

WHAT IS WRONG WITH THE CURRENT TAX SYSTEM?

An ideal tax code would be completely neutral, it would neither encourage nor discourage any type of activity. (Of course, perfect neutrality is impossible to achieve because taxes necessarily affect individuals' decisions by distorting relative prices in the economy.) The current tax code seriously violates the principle of neutrality by favoring current consumption relative to saving (i.e., future consumption).

The disparity between the treatment of current consumption and saving occurs because the existing tax system is primarily an "income-based" system. The problem arises because the definition of income used to define the tax base generally includes both saving and the income earned from saving (i.e., interest, dividends, etc.). Thus income that is saved is taxed at two different levels. This double taxation raises the price of saving relative to the price of consumption.

For instance, consider a worker who receives a $2,000 bonus at work and is deciding between using the funds to start a saving account for graduate school or to pay for a vacation. If the worker chooses to save the bonus, the $2,000 is taxed as wage income, leaving $1,700 to deposit in the saving account (assuming a marginal tax rate of 15 percent). Any interest or dividends earned in the saving account are also taxed as income. In contrast, if the worker chooses to spend the bonus on a vacation, the $2,000 is taxed once as wage income, but any benefit derived from the vacation is not taxed. In other words, income used for consumption is taxed only once at the time the income is

earned, but income used for saving is taxed twice, once when the income is earned and again when the saving generates any earnings.

This additional burden penalizes families who save. However, saving is important to a family's quality of life and to the potential for economic growth. Saving helps families finance education, home purchases, retirement and other important expenses. It also guards families against financial uncertainties, such as unemployment or medical emergencies. Moreover, a high level of saving provides the business sector with the resources it needs to invest in human capital (such as worker education and training) and physical capital (such as plants and equipment that enhance worker productivity). Saving and investment also provide new, start-up firms with the capital they need to grow and create new jobs. In brief, saving and investment are key determinants to economic growth and productivity improvements. A larger, more productive economy generates new jobs, higher wages and better living standards.

Switching to a Consumption-Based Tax

Because saving is important to future economic prosperity, many policy makers have proposed restructuring the tax code to reduce or eliminate the bias against saving. Most tax reform proposals have one element in common: they would transform the current income-based tax system into one that is consumption based. Consumption-based taxes only tax the portion of income that is spent, they do not tax the portion of income that is saved. Thus, the main difference between the two types of taxes is that income-based systems tax the resources that people put into the economy, whereas consumption-based systems tax the resources that people take out of the economy. Murray Weidenbaum of Washington University in St. Louis notes: "Under a consumption-based tax, the basic way to cut taxes legally is for individuals and families to save more and for companies to invest more. To minimize tax liability under the existing tax structure, taxpayers have to earn less."[119]

Numerous studies have found that switching to a consumption-based tax would boost private saving and long-term economic growth. For instance, Eric Engen of the Federal Reserve Board and William Gale of the Brookings Institution found that moving from the existing system to a flat-rate consumption tax would raise the long-term saving rate by one-half percentage points and increase gross domestic product

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[119] Murray L. Weidenbaum, "True Tax Reform: Encouraging Saving and Investment," *Business Horizons*, May 1995, Volume 38, No. 4.

(GDP) by 1 to 2 percent in the long run.[120] Although these numbers are small in magnitude, they would make a significant contribution to future living standards.

The existing tax system is not a pure income-based system because it contains some provisions to shelter saving from taxation. One of these is the IRA. Contributions to an IRA are deducted from income and then taxed when the proceeds are withdrawn from the account and spent. Thus, the portion of income that families save in an IRA is taxed only once. IRA expansion would, therefore, be a simple way to begin the transformation toward a fairer, more efficient consumption-based tax. Expanding IRAs would not require a major overhaul of the current tax code and could, therefore, be implemented immediately, laying the foundation for broad-based reform in the future.

How IRAs Work

IRAs are available to all individuals with earned income and to their spouses, but different individuals receive different tax benefits depending on their situation. If neither spouse is an active participant of an employer sponsored retirement plan, then each spouse can establish an IRA and contribute $2,000 to the IRA annually. The contribution is deducted from taxable income, and the interest earned in the account is not taxed while it accrues.

When funds are withdrawn from the IRA, the entire amount of the withdrawal is subject to income tax. If funds are withdrawn before the individual reaches the age of 59½, the distribution is subject to a 10 percent penalty. Premature withdrawals are allowed without penalty in the case of the individual's death or disability, to pay for medical expenses that exceed 7.5 percent of adjusted gross income (AGI), or to purchase health insurance while unemployed. In addition, distributions are not penalized if they are withdrawn in the form of a lifetime annuity. Minimum distributions are required each year when the individual reaches the age of 70 ½, and contributions are not allowed after this age.

If either spouse is an "active participant" of an employer plan, the couple still can make fully tax deductible contributions to their IRAs as long as their combined AGI does not exceed $40,000 ($25,000 for single filers). Partial deductions are allowed for taxpayers with AGI between $40,000 and $50,000 ($25,000 and $35,000 for single filers).

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[120] Eric M. Engen and William G. Gale, "Consumption Taxes and Saving: The Role of Uncertainty in Tax Reform," *The American Economic Review*, May 1997, 87: 114-155.

Couples who do not qualify for tax deductible contributions based on their incomes can still benefit from IRAs because their savings accumulate on a tax deferred basis.[121] The benefit of tax deferral is quite substantial and is discussed later.

Expanding IRAs

Recent changes in the tax laws have liberalized the restrictions on IRA participation. The Taxpayer Relief Act of 1997 gradually doubles the income limits at which fully deductible contributions are allowed. For couples filing jointly, the income limit will increase from $40,000 to $80,000 with a phase-out range of $80,000 to $100,000. For single tax filers, the income limit will increase from $25,000 to $50,000 with a phase-out range of $50,000 to $60,000. In addition, a spouse who is *not* an active participant of an employer plan will be allowed to make a fully tax deductible contribution to an IRA even if his or her spouse *is* a participant of an employer plan provided that their joint AGI does not exceed $150,000 (phase-out range of $150,000 to $160,000). Finally, the 10 percent penalty on early withdrawals will not apply if the proceeds are used to finance higher education expenses or "first-time" homebuyer expenses.[122,123] A more detailed outline of the new IRA provisions is contained in the Appendix.

The new legislation has made important progress in the expansion of IRAs. Increasing the income limits and changing spousal rules will make deductible contributions available to a large majority of middle-income families; liberalizing the restrictions on early withdrawals will encourage IRA participation. However, the contribution limit of $2,000 is too low and cannot allow families the opportunity to increase their saving significantly. The maximum contribution must be raised in order to provide new incentives for financial empowerment and economic growth.

In February 1997, Congressmen Jim Saxton (R-NJ), Richard Armey (R-TX) and Tom DeLay (R-TX) introduced H.R. 891, a bill

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[121] For individuals who make non-deductible contributions, only the earnings generated by the savings are taxed upon withdrawal because the principle is taxed at the time the contribution is made.

[122] Penalty-free withdrawals for first-time homebuyer expenses are subject to a $10,000 lifetime cap. A "first-time" homebuyer is defined as someone who has not had a property interest in a principle residence for at least two years.

[123] The new tax laws also created two new types of IRAs: Roth IRAs and Education IRAs. Contributions to these accounts are not tax deductible, but the proceeds are not subject to income tax when withdrawn as long as certain conditions are met. The benefits discussed throughout this paper mainly apply to traditional tax deductible IRAs.

that would gradually increase the maximum deductible contribution from $2,000 per year to $7,000 per year.[124] Raising the contribution level to this amount would generate significant benefits for middle-income families and for the economy.

BENEFITS FOR MIDDLE-INCOME FAMILIES

IRAs were established in 1974 to encourage individuals to save for retirement if they were not covered by employer sponsored retirement plans. In 1981, IRA participation was expanded to include all workers regardless of their participation in an employer pension plan. The Tax Reform Act of 1986 limited IRA participation so that workers with employer plans could make tax-deductible contributions only if they met certain income limits. As a result, most of the tax benefits from IRAs are now directed toward low- and middle-income families who otherwise might not save without the appropriate incentives. IRAs provide several important tax benefits that would be augmented if the maximum contribution were increased above $2,000.

Tax Deductible Contributions.

Individuals who qualify for tax deductible contributions can lower their tax liabilities for the year in which a contribution is made. If a married couple invests the maximum amount of $2,000 each, they would lower their taxable income by $4,000. This would result in a tax cut of up to $600 for families in the 15 percent tax bracket and $1,120 for families in the 28 percent tax bracket. If the maximum contribution were increased, the savings would be much higher. For instance, if the contribution were raised to $7,000, as proposed in H.R. 891, a family in the 15 percent tax bracket could lower their tax bill by as much as $2,100, and a family in the 28 percent tax bracket could lower their tax bill by $3,920.

Tax Deferred Contributions.

The benefit of tax deferral allows individuals to potentially lower their tax liabilities over time. Many workers often have higher incomes during their working years than during their retirement years, thus they may fall into a lower tax bracket when they retire. IRAs allow individuals to potentially lower their tax liabilities by deferring their taxes to a time when their marginal tax rates are lower. Consider an individual who contributes $60,000 to an IRA during his or her working years when he or she falls in the 28 percent tax bracket. The

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[124] The bill is also co-sponsored by Spencer Bachus (R-AL), Steve Chabot (R-OH), Jo Ann Emerson (R-MO), Mark Foley (R-FL), Martin Frost (D-TX), Dan Miller (R-FL), Christopher Smith (R-NJ), Bob Stump (R-AZ), James Talent (R-MO), and Dave Weldon (R-FL).

contri-butions allow the individual to defer up to $16,800 of taxes. If the individual's marginal tax rate falls to 15 percent during retirement when the funds are withdrawn, the $60,000 contributions generate a maximum tax liability of only $9,000. Deferring taxes thus allows the individual to save $7,800.

Conversely, tax liability will increase if an individual falls into a higher tax bracket when distributions are made. However, the individual can choose to make non-deductible contributions if this is believed to be the case so that the distributions are taxed at the lower marginal tax rate. Even if distributions are taxed at a higher marginal tax rate, the benefit of tax deferred saving (discussed next) often outweighs the cost associated with moving into a higher tax bracket.

Tax Deferred Saving.

Not only are contributions to IRAs tax deferred, but income earned in an IRA, or "inside build up," is also tax deferred. In other words, the interest earned in the account is not taxed while it accrues. Therefore, more money can be reinvested in the account each year. This allows assets to grow at a much faster rate.

The benefit of tax deferred saving generates significant gains for families that will often outweigh the tax increase associated with moving into a higher tax bracket. Consider an individual who contributes $2,000 per year to a tax deductible IRA that earns 10 percent annually. Table 1 shows that the individual would accumulate $126,005 after 20 years. If the savings are withdrawn at the end of the 20th year and taxed at 28 percent, the individual would be left with $90,724. If an equivalent amount of dollars were contributed to a non-deferred account (such as a saving account at a financial institution) under the same rate assumptions, the individual would have only $64,683 after 20 years.[125] Thus, the benefit of tax deferral is worth $26,041 in this example. The income tax rate for a middle-income individual would have to increase to over 48 percent to equalize the value of the two accounts (the highest tax rate under current law is 39.6

[125] A $2,000 contribution to a regular saving account generates a tax liability of $560, assuming a 28 percent marginal tax rate. A $2,000 contribution to an IRA generates no tax liability. In order to equalize the values of the two contributions, one must assume that the $560 tax liability generated by the former is deducted from the contribution. Thus, this example assumes $2,000 annual contributions to the IRA and $1,440 annual contributions to the saving account. In other words, $2,000 pre taxes equal $1,440 after taxes. Upon withdrawal, the entire IRA distribution is subject to income tax, but only the earnings from the saving account are taxed.

Table 1.
VALUE OF TAX DEFERRED SAVING

	After 5 Years	After 10 Years	After 15 Years	After 20 Years
IRA Balance (10% growth)	$13,431	$35,062	$69,899	$126,005
IRA Balance, after tax (28% tax bracket)	$9,670	$25,245	$50,328	$90,724
Non-Deferred Balance, after tax (28% tax bracket)	$8,913	$21,531	$39,394	$64,683
Equalizing Tax Rate	33.64%	38.59%	43.64%	48.67%

Source: Joint Economic Committee calculations.

percent).[126] This demonstrates that even if the individual is in a higher tax bracket during retirement years, the benefit of tax deferral would probably outweigh the tax increase associated with the higher tax bracket.

Tax deferred saving also makes IRAs attractive to individuals who do not qualify for tax deductible contributions. Table 2 below shows that if an individual contributes $2,000 after taxes to an IRA earning 10 percent annually, he or she would have $126,005 after 20 years. If the savings are withdrawn at the end of the 20th year, the earnings would generate a tax liability of $24,081 (only investment earnings are taxed when distributions are withdrawn), leaving the individual with $101,924. If after-tax contributions of $2,000 were made each year to a non-deferred account, the individual would have only $89,838 after 20 years. In this case, the benefit of tax deferred saving is worth $12,086.

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[126] This is a modified example from Wallace F. Helin, "Deferring Tax is Good Financial Planning," *Management Accounting (USA)*, December 1994.

Table 2.
VALUE OF TAX DEFERRED SAVING WHEN CONTRIBUTIONS ARE NOT TAX DEDUCTIBLE

	After 5 Years	After 10 Years	After 15 Years	After 20 Years
IRA Balance (10% growth)	$13,431	$35,062	$69,899	$126,005
IRA Balance, after tax (28% tax bracket)	$12,470	$30,845	$58,727	$101,924
Non-Deferred Balance, after tax (28% tax bracket)	$12,379	$29,904	$54,714	$89,838
Difference	$91	$941	$4,013	$12,086

Source: Joint Economic Committee calculations

This benefit would be even more valuable if the annual contribution were raised above $2,000. For instance, if an individual contributed $7,000 per year to an IRA earning 10 percent annually, he or she would have $356,733 after taxes at the end of 20 years. If the contributions were made to a non-deferred saving account, the individual would have $42,300 less.

Financial Independence.

The personal saving rate in the United States averaged only 4.9 percent during the 1990s compared to 7.4 percent in the 1960s and 8.1 percent in the 1970s.[127] The low rate of personal saving indicates that American families are not saving enough for future expenses and unforeseen financial needs. In 1992, the median value of all assets

[127] Council of Economic Advisers, *Economic Report of the President*, (Washington, DC: Government Printing Office) 1997, Table B-28.

held by families who owned assets was only $13,000[128] (excluding home equity)—hardly enough to ensure a family's financial security. Raising the limit on deductible contributions would provide families with the opportunity and incentives they need to save more.

The $2,000 ceiling on IRA contributions has been in place since 1981. This limit does not reflect changes in the economy and in the role of IRAs that have taken place. For instance, the $2,000 limit does not reflect the increase in economy-wide prices and wages. It does not reflect the fact that individuals may need more money during retirement because of longer life expectancies, rising medical costs, and the deterioration in the financial status of Social Security. Moreover, a wider variety of expenses have been given penalty-free status so that the role of IRAs has expanded beyond that of a saving vehicle for retirement only. The $2,000 limit may have been adequate in the early 1980s, but it now needs to be increased to reflect the changes that have taken place since then.

Raising the contribution limit would make IRAs an important saving vehicle for middle-income families. A family that contributes $7,000 per year to an IRA earning 8 percent annually would have $249,092 after taxes (assuming a 28 percent marginal tax rate) after 20 years. A nest egg of this size could be used to finance retirement, children's education, a home purchase, and other important expenses. It would also guard families against future financial uncertainties, such as unemployment or unforeseen medical expenses. A higher contribution limit would, therefore, allow families to become financially independent and less reliant on the federal safety net.

Furthermore, since IRAs are self-directed, families have the freedom to invest their savings as they see fit. This allows them the opportunity to increase their incomes relative to what the government can provide for them through social spending programs.

Benefits for Low-Income Families

A common argument against IRA expansion is that low-income families would not benefit because they do not have enough disposable income from which they can save. However, low-income families would benefit from IRA expansion regardless of whether they participate in IRA saving. Any policy that boosts the level of saving will generate significant benefits for low-income families. A higher saving rate provides more resources for investment. A higher level of

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[128] Arthur B. Kennickell and Martha Starr-McCluer, "Changes in Family Finances from 1989 to 1992: Evidence from the Survey of Consumer Finances," *Federal Reserve Bulletin*, October 1994.

invest-ment stimulates productivity improvements and economic growth. As mentioned earlier, a larger, more productive economy generates new jobs, higher wages and better living standards. Expanding IRA benefits would, therefore, benefit everyone in the economy, even if they do not participate in IRA saving.

BENEFITS FOR THE ECONOMY

IRA expansion would benefit the economy by enhancing the incentive to save and, in turn, the incentive to invest. Investment is important to the economy because it increases the domestic stock of capital, thereby promoting productivity improvements that lead to higher wages and better living standards.

Investors have two sources of funds available to them: national saving (the sum of private and government saving) and foreign investment. If national saving falls short of investment demand, then investors must compete for scarce resources, thereby driving up the interest rate. Higher interest rates, in turn, attract foreign capital. The inflow of foreign capital allows investment to increase even if national saving is low. However, relying on foreign capital has several drawbacks. First, the profits from the investment flow overseas so that less benefit accrues to the U.S. economy. Second, the foreign borrowing has to be repaid with interest so that future generations inherit a less wealthy, more burdened economy. Third, high interest rates increase the cost of capital, thus preventing investment from increasing as much as it otherwise would. A high national saving rate is, therefore, desirable because it reduces investors' reliance on foreign capital and places downward pressure on long-term interest rates.

Would IRA Expansion Increase National Saving?

Personal Saving

There are some analysts who contend that IRA expansion would not increase personal saving. These analysts argue that expanding IRA benefits would merely encourage families to shift their existing savings into IRA investments, so that net saving would be unaffected. Although this argument may have theoretical appeal, the weight of the evidence suggests that asset-switching does not occur to any great extent in reality.

Some of the most compelling evidence against this argument has been provided by James Poterba of MIT, Steven Venti of Dartmouth College and David Wise of Harvard University. Poterba, Venti and Wise have analyzed saving data for families who contributed to IRAs after participation rules were expanded in 1981. The data show that the increase in IRA saving far outweighed the decrease in the holdings of non-IRA assets. The data also show a low level of substitution

between IRAs and other retirement plans, such as 401(k) plans. The authors conclude that the increase in IRA saving that occurred in the 1980s largely represented new saving.[129] Several other studies concur with this conclusion.

It is reasonable to believe that some degree of asset switching takes place, especially in the first two or three years in which taxpayers establish new IRAs. However, most families save very little and have not accumulated enough assets to shift into IRA investments for more than a few years.[130] As mentioned earlier, the median value of assets held by families in 1992 was only $13,000. This amount could fund IRA contributions for a married couple for only three years (and even less if IRA contribution limits are raised). Thus, asset switching is thought to be negligible beyond the transition period.

Overall, the evidence strongly suggests that expanding IRA benefits would generate new saving. However, the contribution limit needs to be raised above $2,000 in order for IRAs to have a significant impact on new saving. The studies discussed above analyze IRA contributions made in the 1980s when the maximum tax rate on income was higher than it is now. Because tax rates are lower than they were prior to 1987, the tax benefit from IRAs is smaller now than it was in the 1980s. Thus, IRA expansion in the current tax environment may not generate the same incentives as it did in 1981 unless the contribution limit is raised to enhance the tax benefits.

Government Saving

A rise in personal saving would not necessarily raise the national saving rate. Some critics admit that expanding IRAs would raise personal saving rates, but argue that IRA expansion would generate large revenue losses that would adversely affect the federal deficit (i.e., government dis-saving). Government dis-saving may offset the increase in personal saving so that national saving is unchanged.

However, the loss in government revenue is not as large as many forecasters portray. IRA savings are merely tax deferred, not tax exempt. Consequently, government revenue falls in the short run when contributions are made, but increases in the long run when distributions are withdrawn. For instance, in Table 1 above, tax deductible

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[129] James Poterba, Steven Venti and David Wise, "Personal Retirement Saving Programs and Asset Accumulation: Reconciling the Evidence," *National Bureau of Economic Research*, May 1996.

[130] Martin Feldstein, "The Effects of Tax-Based Saving Incentives on Government Revenue and National Saving," *National Bureau of Economic Research*, March 1992.

contributions of $40,000 are made over 20 years. These contributions generate earnings of $86,005 that are not taxed while they accrue. Overall, government revenue falls by $35,281 (126,005 x 0.28) over the 20 years that contributions are being made. However, when the funds are withdrawn after 20 years, the individual pays income taxes equal to $35,281 on the entire distribution so that the government recovers the lost revenue when the distribution is made. Some individuals may end up in lower tax brackets when distributions are made, but others will end up in higher tax brackets so that, on average, the revenue effect of expanding IRAs should be roughly neutral in the long run. Many forecasters only estimate the effect on revenue for a five-year period. Such short-term estimates are important because of their impact on current operating expenses, but they are misleading because they do not capture the large revenue gains that occur in the long term when IRA funds are withdrawn.

The real loss in revenue occurs because income saved in IRAs is taxed only once instead of twice.[131] However, this decline in revenue is offset by at least two factors. First, as shown in Tables 1 and 2, investment earnings in an IRA are not taxed while they accrue. As a result, the savings appreciate at a faster rate relative to savings in a non-deferred account with the same interest rate. When the higher level of income is withdrawn and taxed, the government collects more revenue than it otherwise would. For instance, in Table 2, the IRA generates earnings of $86,005 whereas the regular saving account generates earnings of only $61,924. Thus, the earned income in the IRA generates a higher tax liability than the earned income in the non-IRA account. As a result, IRA expansion can potentially generate revenue gains in the long run.

Second, economist Martin Feldstein notes that it is inappropriate to concentrate on the loss in personal tax revenue while ignoring the gain in corporate tax revenue.[132] An increase in private saving increases the capital stock, and the return on this additional capital increases corporate tax payments. The increase in corporate tax payments should be sufficient to offset the loss of personal income tax revenue. Dr. Feldstein concludes that:

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[131] Some analysts argue that IRA expansion does not reduce government revenue at all because the increase in saving is new. In other words, the income would have been consumed instead of saved without the enhanced IRA incentives. Since consumption is taxed only once, there is no loss in revenue.

[132] *Op. Cit.,* "The Effects of Tax-Based Saving Incentives on Government Revenue and National Saving."

Recognizing the important effect of IRA plans on corporate tax revenue changes previous conclusions about the revenue effects of IRA plans in fundamental ways. The revenue loss associated with IRAs is either much smaller than has generally been estimated or is actually a revenue gain, depending on time horizon and key parameter values.[133]

Overall, it is reasonable to expect that IRA expansion will not result in large revenue losses and may even generate small revenue gains in the long run. As a result, it is likely that IRA expansion will increase the national saving rate, thereby generating long-run economic gains that raise wages and living standards.

CONCLUSION

Saving is essential to a family's financial security and to the potential for economic growth. However, the existing tax code discourages saving by taxing the income used for saving at two or three different levels. Several proposals have been introduced to reduce or eliminate this bias in order to encourage more saving. One proposal that would enhance saving incentives is the expansion of IRAs.

Recent changes in the tax laws have made important progress in expanding IRAs. The income limits at which deductible contributions begin to phase out will gradually double; spouses without employer pension plans will be allowed to deduct their contributions even if their spouses are covered by employer plans; and penalty-free withdrawals will be allowed for first-time homebuyer and higher education expenses. These changes will make IRA benefits available to more middle-income families and encourage IRA participation. However, the current contribution limit of $2,000 is too low and does not provide families with sufficient opportunities to significantly increase their savings.

Raising the maximum contribution limit above $2,000 would enhance the tax benefits of IRAs, thereby encouraging more families to save. Families that contribute to their IRAs could amass a significant amount of savings from which they could finance important expenses and unforeseen needs. Moreover, an increase in personal saving would promote economic growth and productivity improvements. Low-income families who do not participate in IRA saving would benefit from productivity-driven increases in wages and living standards.

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[133] *Ibid.*

APPENDIX

CHANGES IN IRA PROVISIONS		
	Existing Rules	**New Rules**
Maximum contribution allowable	$2,000	$2,000
Income limit for fully tax deductible contributions	$40,000 $25,000	$80,000[1] $50,000[2]
Joint tax filers Single tax filers	$40,000 - $50,000 $25,000 - $35,000	$80,000 - $100,000[1] $50,000 - $60,000[2]
Phase out for tax deductible contributions Joint tax filers Single tax filers		
Penalty-free withdrawals[3]	Death or disability Health insurance if unemployed Lifetime annuity Catastrophic medical-expenses	Death or disability Health insurance if unemployed Lifetime annuity Catastrophic medical expenses Qualified college expenses "First-time" homebuyer expenses ($10,000-lifetime cap)
Rules applying to uncovered spouses[3]	An individual who *is not* an active participant of an employer sponsored plan cannot make a deductible IRA contribution if his or her spouse *is* an active participant of an employer plan unless their joint AGI is $40,000 or less (partial deduction allowed for AGI between $40,000 and $50,000).	An individual who *is not* an active participant of an employer sponsored plan will be allowed to make a deductible IRA contribution even if his or her spouse *is* an active participant of an employer plan as long as their joint AGI is less than $150,000 (partial deduction allowed for AGI between $150,000 and $160,000).

[1] Phase in as follows: $50,000-$60,000 in 1998: $51,000-$61,000 in 1999; $52,000-$62,000 in 2000; $53,000-$63,000 in 2001; $54,000-$64,000 in 2002; $60,000-$70,000 in 2003; $65,000-$75,000 in 2004; $70,000-$80,000 in 2005; $75,000-$85,000 in 2006; and $80,000-$100,000 in 2007 and after.

[2] Phase in as follows: $30,000-$40,000 in 1998; $31,000-$41,000 in 1999; $32,000-$42,000 in 2000; $33,000-$43,000 in 2001; $34,000-$44,000 in 2002; $40,000-$50,000 in 2003; $45,000-$55,000 in 2004; $50,000-$60,000 in 2005 and after.

[3] Changes effective in 1998

In addition to the changes made to traditional IRAs, two new types of IRAs have been created: Roth IRAs and Education IRAs.

Roth IRA

Beginning in 1998, taxpayers will be allowed to make an after-tax contribution of up to $2,000 per year to a Roth IRA. Contributions are *not* tax deductible, but income earned in the account accrues tax free. The key benefit of the Roth IRA is that qualified distributions are tax free. In other words, the income earned in the account is never taxed. Qualified distributions include withdrawals made: (1) after the age of 59 ½; (2) in the case of death or disability and (3) for the purpose of paying first-time homebuyer expenses. Qualified distributions must be made five years after the first contribution is made to the account. All other distributions are subject to a 10 percent early withdrawal penalty, and the earned income is subject to income tax. Penalty-free withdrawals are allowed for qualified college expenses, catastrophic medical expenses, or to purchase health insurance if unemployed. Although the 10 percent penalty is waived for these distributions, income tax still applies to the earnings. Individuals can continue contributing to a Roth IRA after reaching reach the age of 70 ½, and there are no required minimum distributions at this age. Contributions to Roth IRAs begin to phase down for single tax filers with AGI between $95,000 and $110,000 and for joint tax filers with AGI between $150,000 and $160,000. It is important to note that the total contribution between a Roth IRA and a regular IRA cannot exceed $2,000 annually. Any contribution made to either account in excess of $2,000 is subject to a 6 percent penalty.

Education IRA

Beginning in 1998, taxpayers will be allowed to make an after-tax contribution of up to $500 per year to an Education IRA for each qualifying child. This contribution can be made in addition to the $2,000 contribution to a Roth IRA or a regular IRA. Contributions are *not* tax deductible, but income earned in the account is tax free for qualified higher education expenses. All other distributions are subject to a 10 percent penalty, and earned income is subject to taxation. The contribution income limits are identical to those of the Roth IRA. Before the account's beneficiary reaches the age of 30, any funds remaining in the account must be rolled over into another Education IRA for a qualifying child, or they must be liquidated. The liquidated funds are subject to the 10 percent penalty and to income tax (to the extent of earned income).

REDUCING MARRIAGE TAXES: ISSUES AND PROPOSALS

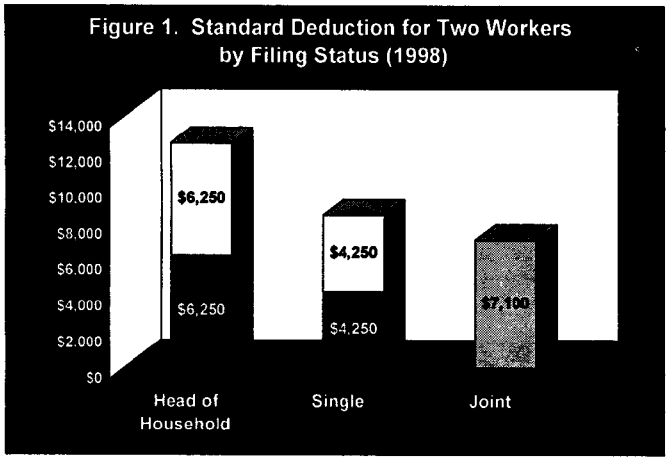
Marital status may affect a couple's federal income tax liability. Couples who pay more taxes when they are married than they would pay if they were single are said to incur "marriage penalties." Couples who pay less taxes as a consequence of marriage are said to receive "marriage bonuses." This paper discusses the sources of marriage taxes and their economic effects. It then examines some of the proposals that have been offered to reduce marriage penalties.

SOURCES OF MARRIAGE TAXES

The federal income tax code treats married couples as a single economic unit by taxing their combined incomes on a joint return.[134] Marriage penalties and bonuses occur because many provisions in the tax code treat joint filers differently than two single filers with the same total income. The tax code contains 66 provisions that can affect a married couple's tax liability.[135]

Tax Rate Schedules

The two most common sources of marriage taxes are the standard deduction and the widths of the tax brackets. Figure 1 shows that the



[134] Spouses are allowed to file separately, but doing so usually results in a combined tax liability that is at least as great as their tax liability under joint filing.

[135] American Institute of Certified Public Accountants, "Marriage Penalty/Divorce/Domestic Relations Tax Issues," February 13, 1998.

combined standard deduction for two individuals filing single returns is $8,500, but the standard deduction for a married couple filing a joint return is only $7,100. Thus, joint filing increases a couple's taxable income by $1,400. Two single parents filing as heads of households would increase their taxable income by $5,400 if they were to marry. (This provision does not affect couples who itemize.)

Table 1 below shows that the tax brackets for joint filers are not twice as wide as those for single filers or heads of households. As a result, more of a couple's combined income may be taxed at a higher marginal tax rate under joint filing, and in some cases, a couple's combined income may push them into a higher tax bracket.

Table 1. Federal Income Tax Brackets, 1998

Taxable Income			Marginal
Joint	Single	Head of Household	Tax Rate
$0 – 42,350	$0 – 25,350	$0 – 33,950	15%
$42,350 – 102,300	$25,350 – 61,400	$33,950 – 87,700	28%
$102,300 –155,950	$61,400– 128,100	$87,700 – 142,000	31%
$155,950– 278,450	$128,100– 278,450	$142,000 – 278,450	36%
$278,450 +	$278,450 +	$278,450 +	39.6%

These features of the tax code can create marriage penalties or bonuses for a particular couple depending on the division of income between spouses. Examples are provided in Appendix 1.

The Earned Income Tax Credit (EITC)

At low levels of income, marriage taxes primarily arise because of the standard deduction and the EITC, a tax credit for low-income workers. Table 2 shows that three different EITC schedules exist for households with no children, households with one child, and households with two or more children. For each schedule, the size of the credit increases over a phase-in range of income up to a maximum amount; the maximum credit is awarded over a specified range of income; the size of the credit then decreases over a phase-out range of income until it reaches zero.

The EITC can affect a couple's tax liability for at least two reasons. First, the size of the credit does not depend on a household's filing status. In other words, eligibility for the credit is the same for singles, heads of households, and married couples. Thus, combining

two incomes on a joint return may push a couple into the phase-out range of the EITC and reduce the size of their credit. Second, the size of the credit does not increase for households with more than two children. Combining more than two children into one household may, therefore, result in a smaller tax credit. The size of the credit may also be reduced if two unmarried individuals each bring one child to a marriage. In this case, each child brings rise to a smaller credit because the maximum credit available to households with two children is less than twice the maximum credit available to households with one child.[136]

Table 2. EITC Schedules, 1998

	Maximum Credit	Income Phase-In Range	Maximum Credit Range	Income Phase-Out Range
No children	$341	$0 - 4,460	$4,460 - 5,570	$5,570 - 10,028
One child	$2,271	$0 - 6,680	$6,680 - 12,260	$12,260 - 26,470
Two or more children	$3,756	$0 - 9,390	$9,390 - 12,260	$12,260 - 30,095

These features of the EITC can create large marriage penalties or bonuses for low-income couples. An example of how the EITC creates marriage penalties is provided in Appendix 1.

Means-Tested Tax Provisions

Marriage taxes can also arise because of many provisions in the tax code that provide credits, deductions, and exemptions on the basis of income. In many cases, the income limit at which a tax break phases out for joint filers is not twice as high as the income limit applicable to single filers. In such cases, a couple's combined income may disqualify them from claiming a tax break that they are eligible for as singles.

For example, the child tax credit allows taxpayers to claim a $400 tax credit in 1998 for each of their dependent children. The full credit is available to single tax filers with adjusted gross incomes (AGI) less than $75,000 and to joint tax filers with AGI less than $110,000.

[136] Joint Committee on Taxation, *Impact on Individuals and Families of Replacing the Federal Income Tax,* Joint Committee Print JCS-8-97 (Washington, DC: Government Printing Office) 1997, pp. 37-38.

Consider two workers, each with one child and each earning $65,000. If both workers were single, each could claim the maximum credit. However, if the workers were married to each other, they would be ineligible for the credit because their combined income of $130,000 would exceed the income threshold for joint filers. The phase out of the credit would, therefore, create an $800 marriage penalty for the couple.

Phase-out provisions can also create marriage bonuses in some cases. For instance, a worker earning $80,000 would not qualify for the maximum child tax credit when single, but would qualify for it when married to a spouse who earns less than $30,000.

Other means-tested provisions that may affect a couple's joint tax liability include the reduction of personal exemptions and itemized deductions at high levels of income, the taxation of Social Security benefits above certain levels of income, and the phase out of deductible contributions to Individual Retirement Accounts.

Division of Income

Whether a particular couple receives a marriage penalty or bonus (or neither) depends primarily on their division of income.[137] Marriage penalties can only occur if both spouses have earned incomes. Couples with one earner almost never pay penalties and usually receive bonuses. In general, marriage penalties are more likely to occur if a couple's income is evenly divided between husband and wife, and marriage bonuses are more likely to occur if a couple's earnings are largely attributable to one spouse. For a given level of income, the largest penalties are usually paid by two-earner couples with a 50-50 income split, and the largest bonuses are usually received by one-earner couples (100-0 income split).

It is very difficult to quantify the average size of marriage taxes or the number of couples affected by them because many assumptions must be made about each couple's financial characteristics. A recent study by the General Accounting Office (GAO) found that the current data was insufficient to make such an assessment.[138]

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[137] Other factors such as level of income, number of children, and allowable deductions are also important.

[138] United States General Accounting Office, *Income Tax Treatment of Married and Single Individuals*, Report No. GAO/GGD-96-175, (Washington, DC: Government Printing Office) September 1996.

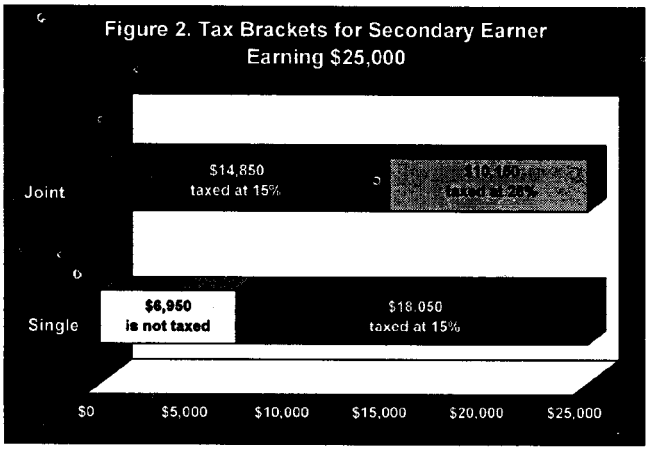
THE ECONOMIC EFFECTS OF JOINT TAX FILING

The Second-Earner Bias

Joint tax filing creates a "second-earner bias" in the federal income tax code. The bias occurs because the income of the secondary earner is stacked on top of the primary earner's income. As a result, the secondary earner's income may be taxed at a relatively higher marginal tax rate.

To elaborate, consider a married couple in which the husband works outside the home earning $40,000 per year, and the wife is a homemaker who earns no taxable income. If the couple claims the standard deduction and two personal exemptions, their taxable income would be $27,500, and they would fall in the 15 percent tax bracket. Their tax liability would reflect a marriage bonus of $1,834. If the wife decides to enter the labor force earning $25,000 per year, her income would be added to her husband's income to yield a combined taxable income of $52,500. The wife's additional income would push the couple into the 28 percent tax bracket and create a marriage penalty of $529.

Figure 2 shows that if the wife were allowed to file a single tax return, the first $6,950 of her income would not be taxed, and the remaining $18,050 would be taxed at 15 percent. However, under joint filing, the first $14,850 of her income is taxed at 15 percent, and the remaining $10,150 is taxed at 28 percent. Thus, joint filing reduces the wife's after-tax income by $2,362 relative to single filing.



Joint tax filing essentially treats the incomes of the primary and secondary earners differently. In this example, the primary earner enters the work force at a zero percent tax rate, and the last dollar of

income he earns is taxed at 15 percent. The secondary earner enters the labor force at a 15 percent tax rate, and the last dollar of income she earns is taxed at 28 percent. Even if the wife's income did not push the couple into a higher tax bracket, she still would be affected by the second-earner bias because she still could not take advantage of a zero tax bracket. Thus, more of her income would be taxed at a higher rate.

The second-earner bias is a consequence of joint tax filing and, therefore, affects all couples regardless of whether they incur marriage penalties or bonuses. However, the effect of the bias is more severe if the secondary earner's income creates a marriage penalty.

Effect on Labor Supply

Married women are typically the secondary earners of their households for at least two reasons. First, wives, on average, earn less than their husbands. Thus, their incomes are usually less essential to their families' economic well being. Second, married women tend to move in and out of the work force, between full-time and part-time jobs, depending on their families' needs.[139] As a result, they are often less attached to the work force relative to their husbands. A great deal of research indicates that the labor supply of secondary earners is highly sensitive to marginal tax rates. Because married women are usually secondary earners, joint tax filing may distort their labor supply decisions.

Several studies have confirmed that married women are more responsive to high marginal tax rates relative to other demographic groups.[140] One study by Barry Bosworth and Gary Burtless of the Brookings Institution estimates that female labor supply increased by an average of 61 hours per year between 1981 and 1989 in response to the marginal tax rate reductions of the 1980s.[141] This gain represents a 5.4 percent increase above previous trends. The largest gains occurred among married women in high-income families.[142]

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[139] Howard V. Hayghe and Suzanne M. Bianchi, "Married Mothers' Work Patterns: the Job-Family Compromise," *Monthly Labor Review*, Vol. 117, June 1994, pp. 24-30.

[140] See for example, Michael J. Boskin and Eytan Sheshinski, "Optimal Tax Treatment of the Family: Married Couples," *Journal of Public Economics*, Vol. 20, No. 3, 1983, pp. 281-287.

[141] Barry Bosworth and Gary Burtless, "Effects of Tax Reform on Labor Supply, Investment, and Saving," *Journal of Economic Perspectives*, Vol. 6, No. 1, Winter 1992, pp. 3-25.

[142] High-income households experienced the largest reductions in marginal tax rates during the 1980s.

Another study by Nada Eissa of the University of California in Berkeley concludes that the labor supply of high-income married women "increased dramatically" in response to the marginal tax rate reductions of the Tax Reform Act (TRA) of 1986.[143] Eissa estimates that a 10 percent increase in the after-tax wage increased the labor supply of high-income married women by approximately 8 percent. At least half of the increase is believed to represent labor force participation.

The research suggests that once married women enter the labor force, they are less likely to exit in response to work disincentives. In other words, high marginal tax rates may not induce women to leave the work force to the same extent that low marginal tax rates encourage them to enter. For married women already in the labor force, high marginal tax rates may have a larger impact on decisions regarding how many hours to work and the form in which compensation is taken (e.g., cash wages or non-taxable fringe benefits).

The distortions in labor supply created by the second-earner bias may impose considerable costs on the economy in terms of lost economic output and reduced efficiency. Estimates indicate that the economic cost of taxing wives at relatively higher marginal tax rates outweighs the associated increase in revenue.[144] An optimal tax system should, therefore, tax the secondary earner at a relatively lower marginal tax rate in order to maximize economic efficiency.[145]

HISTORY OF MARRIAGE TAXES[146]

When the individual income tax was established in 1913, all individuals filed their taxes separately under an individual tax schedule. As a result, the tax code was marriage neutral—individuals paid the same income tax whether they were single or married. Because the tax code was also progressive, one-earner couples often paid higher taxes than two-earner couples with identical incomes. For

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[143] Nada Eissa, "Taxation and the Labor Supply of Married Women: The Tax Reform Act of 1986 as a Natural Experiment," National Bureau of Economic Research Working Paper No. 5023, February 1995.

[144] Martin Feldstein and Daniel Feenberg, "The Taxation of Two-Earner Families," National Bureau of Economic Research Working Paper No. 5155, June 1995.

[145] *Op. Cit.*, Bosworth and Sheshinski

[146] Historical discussion draws from Gregg A. Esenwein, "The Federal Income Tax and Marriage Neutrality," Congressional Research Service, January 31, 1997; and Edward McCaffery, *Taxing Women*, (Chicago: University of Chicago Press) 1997.

instance, a couple with one wage earner making $100,000 per year was taxed at a higher rate than a couple with two wage earners making $50,000 each.

Couples with the same incomes could also pay different taxes depending on their state of residence. States with community property laws allowed couples to split their incomes evenly between two tax returns regardless of who actually earned the income. The benefit of income splitting lowered the tax liabilities of married couples in community property states. In contrast, couples residing in common law states were not allowed to split their incomes for tax purposes and often paid higher taxes.

As the size and scope of federal income taxation grew during World War II, Congress set out to equalize the treatment of similarly situated married couples. In 1948, Congress established joint filing, thus extending the benefit of income splitting to all married couples regardless of their state of residence. The 1948 law effectively created marriage bonuses for the majority of couples.

The 1948 law was perceived by many as a singles penalty because single workers paid substantially higher taxes than one-earner couples with the same incomes. In 1969, Congress responded to the concerns of single workers by narrowing the tax brackets for joint filers, thus reducing the discrepancy in tax liabilities between singles and their married counterparts. The narrowing of the tax brackets created the marriage penalty that exists in today's laws. The creation of the EITC in 1975 increased marriage penalties for some low-income couples who reduced their EITC eligibility by marrying.

As more women entered the work force during the 1970s, more couples were subject to the marriage penalty and opposition to the 1969 tax changes grew. Congress responded by including a provision in the Economic Recovery Tax Act (ERTA) of 1981 that granted two-earner couples a tax deduction of up to $3,000. The deduction reduced the size of the marriage penalty for most couples incurring a penalty and entirely eliminated it for some. The deduction also increased the marriage bonuses received by many two-earner couples.

Five years later, the second-earner deduction was repealed in TRA 1986 and replaced with broad-based tax reform. The standard deduction for married couples was increased, and the 14 bracket tax schedule was reduced to only two tax brackets. In addition, the maximum marginal tax rate on income was lowered from 50 percent to 28 percent. TRA 1986 sharply reduced or eliminated the marriage penalty for the majority of two-earner couples. The law also reduced

the severity of the second-earner bias because the flatter tax code allowed fewer opportunities to be pushed into a higher tax bracket.

The Omnibus Budget Reconciliation Act (OBRA) of 1990 created a third marginal income tax rate of 31 percent, thus slightly increasing the size of marriage taxes for high-income couples. Two years later, OBRA 1993 added two more tax brackets of 36 and 39.6 percent to the tax schedule. OBRA 1993 also expanded the size and coverage of the EITC. Together, these changes significantly increased marriage taxes for couples at the low and high ends of the income scale.

In 1995, Congress once again tried to grant tax relief to two-income families. The U.S. Senate considered a proposal to increase the standard deduction for joint filers to twice that of single filers; and the U.S. House of Representatives passed a bill that would have provided a tax credit to any couple who paid a marriage penalty. The Senate proposal was included in the Balanced Budget Act of 1995, but the entire bill was vetoed by President Clinton.

Trends among Married Couples

The federal income tax code was largely structured when one-earner couples represented the traditional family, and earnings equality between husbands and wives was rare. Thus, the large majority of married couples benefited from marriage bonuses, and relatively few were affected by the creation of marriage penalties in1969. However, changes in social attitudes, demographic patterns, and labor markets have contributed to a growth in marriage penalties.

For instance, the labor force participation rate of married women increased by 49 percent between 1970 and 1996, from 41 to 61 percent.[147] This increase led to a rise in the proportion of two-earner couples. Between 1970 and 1996, the proportion of married couple families with both spouses in the work force increased by nearly one-third, from 46 to 60 percent, and the proportion with only one spouse in the work force fell by almost 40 percent, from 36 to 22 percent.[148]

Moreover, married women's median income increased by 42 percent between 1974 and 1996, after adjusting for inflation. However, the median income of married men fell by approximately 4 percent over the same time period.[149] The relative increase in married women's incomes has led to greater earnings equality between

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[147] U.S. Bureau of the Census, Internet, *Statistical Abstract of the United States 1997*, Table No. 631.

[148] U.S. Bureau of Labor Statistics, unpublished data.

[149] U.S. Bureau of the Census, Internet, *Current Population Survey (CPS): 1947-1996*, Table P-7.

husbands and wives. The proportion of working-aged married couples in which each spouse earned at least one-third of the couple's income doubled between 1969 and 1995, from 17 to 34 percent.[150]

The trend toward more two-earner couples with greater income equality means that more married couples are potentially subject to larger penalties. As a result, several proposals to reduce or eliminate the burden on two-earner couples have been introduced.

REDUCING MARRIAGE PENALTIES

Changes in the tax laws relating to married couples have tried to balance three different principles of tax equity:

- the principle of *horizontal equity* requires couples with the same ability to pay taxes to incur the same tax liabilities;
- the principle of *marriage neutrality* requires a couple's tax liability to be the same whether they are married or single; and
- the principle of *progressivity* requires tax liability to increase as a percentage of income as income rises.

A tax system can achieve any two of these principles simultaneously, but it cannot achieve all three. The existing tax code achieves the principles of horizontal equity and progressivity, but it is not marriage neutral.

The inconsistency among the three goals of tax equity poses a difficult problem for policy makers seeking to reduce or eliminate the marriage penalty. Any proposal to alleviate the burden will necessarily entail trade-offs between different groups of taxpayers and different goals of tax policy. As a result, subjective decisions must be made regarding the proper unit of taxation, the appropriate measure of a household's ability to pay, the equitable treatment of married versus single taxpayers, and the extent to which the tax code should promote social policy goals at the expense of economic efficiency.

The Proposals

Several proposals to reduce the marriage penalty have been introduced by Members of Congress. All of the proposals would maintain marriage bonuses and none would eliminate all marriage penalties for all couples. (Marriage neutrality can only be achieved by reverting to a system of individual filing or though fundamental tax reform.) Although, the effect of any proposal depends on how revenue losses would be offset, some observations can be made about the

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[150] Congressional Budget Office (CBO), "For Better or for Worse: Marriage and the Federal Income Tax," (Washington, DC: Government Printing Office) June 1997, p. 38.

different proposals. A summary of the proposals is provided in Table 3 at the end of this section.

Optional Filing Status

The Marriage Tax Elimination Act (H.R. 2456), introduced by Congressmen Jerry Weller (R-IL) and David McIntosh (R-IN), would allow couples the option of filing jointly, as they do now, or filing as two singles on the same tax return.[151] Thus, couples could choose the filing status that provides them with the lower tax liability. The Joint Committee on Taxation (JCT) estimates that optional filing would reduce federal government revenue by $101 billion over five years. The legislation has been cosponsored by 236 Members in the House.

Optional filing would eliminate most marriage penalties and maintain marriage bonuses. Thus, the tax code would be marriage neutral for couples who choose to file as singles, and it would favor marriage for most other couples.

The proposal would eliminate penalties arising from the standard deduction and the widths of the tax brackets. A reduced penalty could exist for couples with children. If single, these couples could take advantage of the relatively wider tax brackets and higher standard deduction under the head of household filing status. The head of household tax schedule would not be available to married couples under the optional filing proposal.

In addition, a reduced penalty could exist for EITC-eligible couples because eligibility for the EITC would be based on joint income regardless of which tax schedule a couple chooses to use. If EITC eligibility were based on individual income, then low-income spouses would qualify for the EITC even if they were married to wealthy spouses. This would result in a redistribution of income from low- and middle-income households to high-income households. Under optional filing, the marriage penalty for EITC-eligible couples would be reduced by a maximum of $210 (reflecting the reduced penalty in the standard deduction).

Finally, a reduced penalty could exist for middle- and high-income couples because eligibility for various tax breaks would be based on joint income. As a result, the penalties arising from the phase-out provisions of the tax code would remain because a couple's

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[151] Similar bills have been introduced by John Kasich, R-OH (H.R. 2462); Sheila Jackson-Lee, D-TX (H.R. 3059); and Kay Bailey Hutchison, R-TX (S. 1314).

combined income could push them beyond the phase-out threshold of a particular tax break.[152]

Optional filing would only lower the tax liabilities of couples who incur marriage penalties under joint filing. The size of a couple's tax cut would equal the size of their marriage penalty (except for the exceptions noted above in which the penalty is not eliminated). Thus, for a given level of income, couples with roughly equal incomes would receive the largest tax cuts because they generally pay the largest penalties. Couples who receive marriage bonuses under current law would not be affected by the proposal—their tax liabilities would remain the same. Examples illustrating the effect of optional filing on various couples are contained in Appendix 2.

Allowing couples to choose their filing status means that couples with equal incomes may not pay the same income tax. Some observers argue that ending horizontal equity would be unfair because couples with the same total income are equally well off and, therefore, should incur the same tax liability. Others believe that income alone is not a good measure of a couple's economic well being.[153] For instance, two couples may not be equally well off if the earners in the first couple work 40 hours a week at a higher wage, and the earners in the second couple earn the same total income by working a greater number of hours at a lower wage. Thus, requiring couples with equal incomes to pay the same income tax may not necessarily satisfy the goal of horizontal equity.

Opponents of optional filing note that the proposal would increase compliance costs relative to current law. Couples would have to calculate their taxes jointly and individually to determine which provides them with the lower tax liability. Furthermore, specific rules would have to be made regarding the division of deductions for couples who choose to file individually.

Income Splitting

Two separate bills would eliminate most marriage penalties by reinstating income splitting. Although the two bills would be implemented differently, both would have the same effect on couples' tax liabilities. The first bill, titled the Marriage Protection and Fairness Act (H.R. 3104), was introduced by Congressmen Bob Riley (R-AL)

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[152] Optional filing eliminates the penalty arising from the limitation of itemized deductions and personal exemptions.

[153] *Op. Cit.*, CBO, p. 9.

and Matt Salmon (R-AZ).[154] The bill would allow each spouse to apply the single tax rate schedule to half of the couple's taxable income. The standard deduction used to determine taxable income would be increased to twice the standard deduction for single returns. The JCT estimates that the proposal would reduce federal government revenue by $153 billion over five years. The legislation has been cosponsored by 83 Members in the House.

The second bill, titled the Marriage Tax Penalty Elimination Act of 1998 (H.R. 3734), was introduced by Congressmen Jerry Weller, David McIntosh, Bob Riley, and Wally Herger (R-CA).[155] (This bill represents a collaborative effort by the primary sponsors of the three major marriage penalty bills to support a single piece of legislation.) The proposal would increase the standard deduction and the widths of the tax brackets for joint filers to twice the applicable amounts for single filers. Revenue estimates are not yet available, but should be similar to those of H.R. 3104. The legislation has been cosponsored by 45 Members in the House.

Income splitting proposals are similar to optional filing because they adjust for differences in the tax schedules between single and joint filers. However, the proposals differ from optional filing because they make no distinction regarding the division of income between spouses. In other words, couples are treated as if each spouse earns half of their total income regardless of which spouse actually generates that income. Income splitting would, therefore, provide all couples with the most favorable tax treatment by effectively treating them like two singles with a 50-50 income split. This favorable treatment would reduce taxes for nearly all married couples. Couples with equal incomes would receive equal tax cuts, thus maintaining horizontal equity.

Moreover, income splitting would create marriage bonuses for most couples and increase bonuses for couples already receiving them, including one-earner couples. Thus, the proposals reduce marriage neutrality by heavily favoring marriage. Examples illustrating the effect of income splitting on various couples are contained in Appendix 2.

As with optional filing, income splitting would only eliminate penalties arising from the standard deduction and the widths of the tax brackets. A reduced penalty could exist for couples with children (who

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[154] A similar bill was introduced in the Senate by Lauch Faircloth, R-NC (S. 1285).

[155] A similar bill was introduced in the Senate by Kay Bailey Hutchison (S. 1999).

would otherwise file as heads of households if they were single), couples eligible for the EITC, and couples subject to the various phase-out provisions of the tax code.

Opponents contend that income splitting has two primary disadvantages. First, some analysts argue that the proposals inefficiently uses scarce fiscal resources because a portion of the large revenue loss would finance bigger bonuses for couples who already receive them. Second, the establishment of income splitting in 1948 was perceived as a singles penalty because single taxpayers paid substantially higher income taxes than one-earner couples with the same total incomes. Complaints from single taxpayers led to the creation of the marriage penalty in 1969. A return to income splitting may bring about the same perceived inequities for single taxpayers who would have to bear a substantially larger share of the total tax burden (although their tax liabilities would remain the same).

Second-Earner Deduction

The Marriage Penalty Relief Act (H.R. 2593), introduced by Congressman Wally Herger and Congresswoman Barbara Kennelly (D-CT), would revive the second-earner deduction that was in the law between 1981 and 1986. Under this proposal, couples with two earners could deduct 10 percent of the income of the lesser earning spouse up to a maximum deduction of $3,000. The deduction would be available to couples whether they itemize or claim the standard deduction. The JCT estimates that the second-earner deduction would reduce federal government revenue by $45 billion over five years. The legislation has been cosponsored by 182 Members in the House.

Under the second-earner deduction, most couples incurring marriage penalties under current law would have their penalties reduced; some would have their penalties eliminated or converted into bonuses. Two-earner couples receiving bonuses under current law would receive larger bonuses. Thus, the proposal increases marriage neutrality for some couples and reduces it for others. One-earner couples would not be affected by the proposal and would continue receiving bonuses.

As with the other proposals, the second-earner deduction does not address the structural penalty in the EITC. However, it would reduce penalties for some EITC-eligible couples by reducing the income stacking problem that can potentially push a low-income couple into the 15 percent tax bracket. For instance, two single parents, each with one child and each earning $10,000, would not pay any federal income tax. However, if they married each other, their combined income would push them into the 15 percent tax bracket and generate a $315

federal income tax liability under current law. If they were allowed to deduct $1,000, their tax liability would fall to $165, thus reducing their marriage penalty by $150. The proposal could reduce marriage penalties for some EITC-eligible couples by a maximum of $450 (reflecting the value of a $3,000 deduction at 15 percent).

A $3,000 deduction would reduce the income tax liability of a two-earner couple by a maximum of $450 to $1,188 depending on their tax bracket. Thus, the dollar value of the deduction would be more valuable at high levels of income, but this may be appropriate because the dollar value of marriage penalties increases substantially with income. The proposal would not affect the tax liabilities of one-earner couples. Examples illustrating the effect of the second-earner deduction on various couples are contained in Appendix 2.

Under a second-earner deduction, two-earner couples would pay less taxes than one-earner couples with the same total incomes. Some observers argue that this would penalize one-earner couples by increasing their share of the total tax burden (although their tax liabilities would remain the same). Others believe that two-earner couples are not as well off as one-earner couples with the same total incomes. For instance, a one-earner couple benefits from the non-earning spouse's work inside the home, the value of which is not taxed. The homemaker's non-taxed services increase the couple's economic well being. In contrast, a couple with two wage earners might have to pay for the services that a stay-at-home spouse provides, thus reducing their economic well being. In this respect, the two-earner couple is worse off and should pay less income tax.

Opponents of the proposal point to two disadvantages. First, the deduction would not eliminate any of the structural penalties in the tax code—it would merely reduces them. Second, part of the revenue loss would finance larger bonuses for couples who already receive them.

Other Proposals

Several other bills aimed at providing broad-based tax relief would also reduce the size of the marriage penalty. Some of these proposals are briefly summarized below.

- H.R. 1584 (Sam Johnson, R-TX) includes a provision that would allow couples affected by marriage penalties to claim a tax credit of up to $145 against their tax liabilities.
- H.R. 2718 (Joe Knollenberg, R-MI) would reduce marriage penalties by increasing the standard deduction for joint filers to twice that of single filers. The bill would also lower marginal tax rates for all taxpayers from 15, 28, 31, 36, and 39.6 percent to 14.25, 26.6, 29.45, 34.2, and 37.62 percent, respectively.

Lowering the marginal tax rates would reduce the size of marriage penalties relative to current law by reducing the tax associated with being pushed into a higher tax bracket.

- H.R. 3151 (John Thune, R-SD) and H.R. 3175 (William "Mac" Thornberry, R-TX) would expand the 15 percent tax bracket. This would provide less opportunity for a secondary earner's income to push a couple into the 28 percent tax bracket, thus reducing marriage penalties for millions of middle-income couples. The proposal would also reduce marriage penalties at higher levels of income relative to current law because more income would be taxed at the 15 percent tax rate.

Table 3. Summary of the Marriage Penalty Proposals

		Effect on:			
		Two-earner couples with penalties	***Two-earner couples with bonuses***	***One-earner couples with bonuses***	***EITC-eligible couples***
Optional Filing	*Marriage tax*	Reduced or eliminated	No effect	No effect	Penalty reduced by maximum of $210
	Tax liability	Reduced	No effect	No effect	Sometimes reduced
Income Splitting	*Marriage tax*	Reduced, eliminated, or converted to bonuses	Bonuses increased	Bonuses increased	Penalty reduced by maximum of $210
	Tax liability	Reduced	Reduced	Reduced	Sometimes reduced
Second-Earner Deduction	*Marriage tax*	Reduced, eliminated, or converted to bonuses	Bonuses increased	No effect	Penalty reduced by maximum of $450
	Tax liability	Reduced	Reduced	No effect	Sometimes reduced

Table. 3 Summary of the Marriage Penalty Proposals (cont'd.)

	Relative effect on goals of tax policy:			*Structural penalties eliminated*	*Relative complexity*	*5-Year revenue loss (billions)*
	Marriage neutrality	*Horizontal equity*	*Progressivity*			
Optional Filing	Increased	Decreased	Maintained	Standard deduction and widths of tax brackets	High	$101
Income Splitting	Decreased	Maintained	Maintained	Standard deduction and widths of tax brackets	Low	$153 (H.R. 3104)
Second-Earner Deduction	No net effect	Decreased	Maintained	No structural penalties eliminated, only reduced	Low	$45

EFFECT ON LABOR SUPPLY OF SECONDARY EARNERS

Eliminating or reducing marriage penalties is likely to increase the labor supply of married women by reducing the second-earner bias. One study estimates that if marriage penalties were eliminated after the 1986 tax reforms (when penalties were less severe than they are today), the labor supply of married women would have increased by an average of 46 hours per year.[156] The effect would have been greater among married women from high-income families and married women who earned substantially less than their husbands.

Reducing marriage taxes will affect two different aspects of the labor supply decision. First, it will affect the decision of a non-working spouse to enter the labor force. Any proposal that reduces a secondary earner's *average* tax rate[157] relative to current law will increase his or her after-tax income. This incentive will encourage a non-working spouse to enter the labor force. Second, reducing marriage taxes will affect the decision of a working spouse to work more hours. Any proposal that reduces a secondary earner's *marginal* tax rate[158] relative to current law will increase the return to extra work. This incentive will encourage a working spouse to work more hours. The various proposals discussed above will either enhance the labor supply incentives of secondary earners or leave them unaffected. Table 6 at the end of this section summarizes the effect of the different proposals on the labor supply of secondary earners.

Optional Filing

Labor Force Participation

If a homemaker's decision to enter the labor force creates a marriage penalty under joint filing, the couple would choose to file as singles under the optional filing proposal. Single filing eliminates the second-earner bias because the income of the secondary earner is taxed separately. Thus, the non-working spouse enters the labor force at a zero tax rate instead of entering at the primary earner's higher marginal tax rate. The elimination of the second-earner bias lowers the secondary earner's average tax rate relative to current law and increases his or her after-tax income. This incentive will always

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[156] Deenie Kinder Neff, "Married Women's Labor Supply and the Marriage Penalty," *Public Finance Quarterly*, Vol. 18, No. 4, October 1990, pp. 420-32.

[157] The average tax rate is defined as tax liability divided by income.

[158] The marginal tax rate is defined as the tax rate imposed on an additional dollar of income earned.

encourage a non-working spouse to enter the labor force *if the couple opts for single filing.*

However, if the non-working spouse is deciding to enter the labor force at an income that is substantially lower than the primary earner's income, then the couple would likely receive a marriage bonus under joint filing. In this case, the couple would not choose to file individually because doing so would increase their combined tax liability. Thus, optional filing would not affect the labor supply decisions of the non-working spouse.

Number of Hours Worked

For second-earner spouses already in the work force, optional filing may encourage more work effort in some cases. Individual filing will either lower the marginal tax rate of the secondary earner or leave it unchanged (it will never increase the secondary earner's marginal tax rate). If the marginal tax rate falls, then an additional dollar of income earned will be taxed at a lower rate. This incentive will encourage the lesser earning spouse to work more hours. If the marginal tax rate remains unchanged, optional filing will not generate any additional benefits at the margin and, therefore, will not affect the labor supply decisions of the secondary earner.

Table 4 provides two examples to illustrate how optional filing might affect a working spouse's decision to work more hours. In the first example, the primary earner earns $75,000 and the secondary earner earns $25,000. Joint tax filing results in a marriage penalty of $329. Thus, the couple chooses to file as singles. Single filing reduces the secondary earner's marginal tax rate from 28 percent to 15 percent.

Table 4. Effect of Optional Filing on Number of Hours Worked

Income of primary earner	$75,000		$60,000	
Income of secondary earner	$25,000		$40,000	
	Joint filing	Single filing	Joint filing	Single filing
Penalty/(bonus)	$329	**$0**	$1,477	**$0**
Second earner's marginal tax rate	28%	**15%**	28%	**28%**

Note: (1) Assumes the standard deduction and two personal exemptions.
(2) Marginal tax rates do not include payroll, state or local taxes.
Source: Joint Economic Committee calculations

In other words, out of an additional dollar of income earned, the secondary earner keeps 72 cents under joint filing and 85 cents under single filing. The reduction in the secondary earner's marginal tax rate increases the value of his or her work at the margin and encourages him or her to work more hours. Hence, optional filing enhances the secondary earner's labor supply incentive relative to current law.[159]

In the second example, the primary earner earns $60,000 and the secondary earners earns $40,000. Once again, the couple can lower their tax liability by filing as singles. However, in this example, using the single tax rate schedule does not lower the secondary earner's marginal tax rate. Thus, there is no additional benefit to working more hours. As a result, optional filing does not enhance the secondary earner's labor supply incentives even though the couple opts for single filing.

Overall, optional filing would affect secondary earners differently depending on each couple's income and division of income. In general, optional filing always encourages a non-working spouse to enter the labor force *if the couple opts for individual filing*. Among working spouses, optional filing encourages a secondary earner to work more hours *if the couple opts for individual filing and if individual filing lowers the secondary earner's marginal tax rate*. The proposal is more likely to increase the number of hours worked by secondary earners in high-income households. It is less likely to increase labor supply among secondary earners in low- and middle-income households unless the couple's combined taxable income is grouped around the marginal tax-rate breakpoints.

According to many analysts, allowing couples to file as singles would be economically more efficient than the current system of joint filing because it would reduce distortions in labor supply that impose economic costs on households (in terms of foregone income) and on the economy (in terms of foregone output).

Income Splitting

Labor Force Participation

Under the income splitting proposals, the higher standard deduction and wider tax brackets allow more of the secondary earner's

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[159] Although the secondary earner's marginal tax rate may fall under single filing, the primary earner's marginal tax rate may increase, thus discouraging work effort by the primary earner. Thus, the net effect on labor supply for the couple is ambiguous in some cases. However, many studies have found that the labor supply of secondary earners is more responsive to marginal tax rates than the labor supply of primary earners. If this is the case, single filing should result in a net increase in total hours worked by the couple.

income to be taxed at a lower rate. This will often (but not always) reduce a secondary earner's average tax rate relative to current law and increase his or her after-tax income. This incentive will encourage many non-working spouses to enter the labor force. Hence, the effect of income splitting is similar to that of optional filing: it will either encourage labor force participation by non-working spouses, or it will have no effect on the incentive to enter the labor force.

Table 5 below provides two examples to illustrate how income splitting might affect a homemaker's decision to enter the labor force. In the first example, the primary earner earns $40,000 per year and the non-working spouse is deciding whether to accept a job at $20,000 per year. Under current law, the secondary earner's new income generates a tax liability of $3,670. Thus, his or her average tax rate is 18 percent. Under income splitting, the secondary earner's income generates a tax liability of only $3,000. Thus, income splitting lowers the average tax rate to 15 percent and increases after-tax income by $670. This incentive encourages the non-working spouse to enter the labor force. Hence, income splitting enhances the incentive to enter the labor force relative to current law.

Table 5. Effect of Income Splitting on Labor Force Participation

Income of primary earner	$40,000		$40,000	
Income of secondary earner	$20,000		$10,000	
	Current law	Income splitting	Current law	Income splitting
Second earner's	$3,670	$3,000	$1,500	$1,500
Second earner's	18%	15%	15%	15%
Second earner's	$16,330	$17,000	$8,500	$8,500

Note: (1) Assumes the standard deduction and two personal exemptions. (2) Average tax rates do not include payroll, state or local taxes.
Source: Joint Economic Committee calculations

In the second example, the non-working spouse is deciding whether to accept a job at $10,000 per year. In this case, income splitting does not affect the secondary earner's average tax rate. All of the secondary earner's income is taxed at 15 percent under either

provision. Hence, income splitting does not affect the non-working spouse's decision to enter the labor force.[160, 161]

Although income splitting and optional filing have very similar effects on labor force participation, it is difficult to determine which proposal would encourage more working spouses to enter the labor force. Optional filing always encourages entry if a couple chooses to file individually, but not all couples will choose to file individually. Income splitting will encourage entry in many cases, but not all. Thus, it is difficult to determine which proposal would have the greater effect on the labor force participation of secondary earners.

Number of Hours Worked

The wider tax brackets and higher standard deduction under income splitting make it more difficult for a secondary earner's income to push the couple into a higher tax bracket. Thus, the proposals will reduce the secondary earner's marginal tax rate in some cases. This incentive will increase the return to working an additional hour and will encourage secondary earners to increase their labor supply. As with optional filing, income splitting is more likely to reduce marginal tax rates among secondary earners in high-income households. It is less likely to reduce marginal tax rates among secondary earner's in low- and middle-income household's unless the couple's taxable income is grouped around the marginal tax rate breakpoints.

Both of the income splitting proposals would be economically more efficient relative to current law because they would reduce distortions in labor supply created by the second-earner bias. The enhanced work incentives created by income splitting would reduce the economic costs imposed on households and the economy. (H.R. 3104 may be more efficient than H.R. 3734 because it imposes the same

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[160] Income splitting almost always reduces a couple's average tax rate regardless of whether a second earner enters the work force. Thus, the couple receives a tax cut (or an increase in after-tax income) even if labor supply does not increase. As a result, the primary earner can work less and maintain the same standard of living. However, income splitting may also lower the primary earner's marginal tax rate, thus encouraging more work effort. Hence, the net effect on the couple's labor supply is ambiguous when the second earner does not increase his or her labor supply.

[161] Although the effect of the two income-splitting proposals on tax liabilities is the same, each proposal is implemented differently. As a result, they may have slightly different effects on labor supply incentives. For instance, H.R. 3104 can reduce the income stacking problem to a greater extent than H.R. 3734. Hence, H.R. 3104 can reduce secondary earners' average tax rates to a relatively greater extent in some cases and generate stronger work incentives.

marginal tax rate on primary and secondary earners. In contrast, H.R 3734 can impose a relatively higher marginal tax on secondary earners As noted earlier, an optimal tax system would impose a lower margina tax rate on secondary earners because they are relatively more sensitiv to labor supply incentives.)

Second-Earner Deduction

The second-earner deduction permits the lesser earning spouse t deduct 10 percent of the first $30,000 of income, thus lowering th couple's taxable income by a maximum of $3,000. The deduction therefore, reduces the marginal tax rate on the first $30,000 of incom earned by the secondary earner. Hence, the proposal is likely t increase labor supply among second-earner spouses who earn less tha $30,000 per year.

For instance, consider a couple in which one spouse earns $30,00 per year, and the other is a homemaker who is deciding whether t enter the labor force at $20,000 per year. Under current law, th $20,000 of income generates a tax liability of $3,000. If a 10 percen deduction is allowed, the secondary earner can deduct $2,000 o income from taxation, thus increasing his/her after-tax income b $300. The increase in after-tax income encourages the homemaker t enter the labor force. Moreover, each additional dollar of incom earned will give rise to a 10 cent deduction. Thus, the secondar earner will continue to receive an additional benefit from workin more hours until his or her income reaches $30,000. However, working spouse who earns more than $30,000 does not derive an additional benefit from working more hours and, therefore, is no affected by the deduction.

CONCLUSION

All of the marriage penalty proposals currently under consideratio would maintain marriage bonuses, and none would eliminate al marriage penalties for all couples. In particular, penalties woul remain for couples with children, low-income couples eligible for th EITC, and middle- and high-income couples subject to the variou phase-out provisions of the tax code.

Moreover, the various proposals would affect couples differentl depending on their level and division of incomes. In general, optiona filing would be most favorable to couples with roughly equal incomes At each level of income, these couples currently receive the larges marriage penalties and, therefore, would receive the largest tax cuts i they were permitted to file as singles. In contrast, income splittin would provide the greatest benefit to one-earner couples, who woul have their marriage bonuses increased.

All of the proposals would be economically more efficient relative to current law because they would reduce the second-earner bias that exists under joint filing. As a result, many non-working spouses would be encouraged to enter the labor force, and many working spouses would be encouraged to work more hours. The increase in labor supply among secondary earners would reduce the economic costs imposed on households (in terms of foregone income) and on the economy (in terms of lost output). The various proposals would affect labor supply differently depending on each couple's income and income split. In general, optional filing and income splitting would enhance work incentives to the greatest extent; the second-earner deduction would have the smallest effect on labor supply. All of the proposals would likely affect labor force participation to a greater degree than hours worked.

Table 6. Effect of Proposals on Labor Supply of Secondary Earners

Optional Filing	*Particip-ation*	Increases	No effect	Eliminates for couples who file individually	More efficient
	Hours worked	Increases or no effect	No effect		
Income Splitting	*Particip-ation*	Increases or no effect	Increases or no effect	Reduces	More efficient
	Hours worked	Increases or no effect	Increases or no effect		
Second-Earner Deduction	*Particip-ation*	Increases	Increases	Reduces	Slightly more efficient
	Hours worked	Increases for spouses earning less than $30,000	Increases for spouses earning less than $30,000		

APPENDIX 1

EXAMPLES OF MARRIAGE PENALTIES AND BONUSES

The standard deduction and marginal tax rate breakpoints can create marriage bonuses for married couples with largely unequal incomes. Table A1.1 shows the tax liability of a couple earning $60,000 when all of the income is earned by one individual. If the worker is single, he/she incurs a federal income tax liability of $11,559. However, if the worker marries a spouse with no earned income, their combined tax liability falls to $7,795—a marriage bonus of $3,764.

The bonus occurs for two reasons. First, when a worker marries a spouse with no earned income, the couple's personal exemptions double and their standard deduction increases by $2,850 (see Figure A1.1). Thus, the couple reduces their taxable income by $5,550 when filing jointly. Second, under joint tax filing, the wage earner's income is subject to wider tax brackets so that less income is taxed at 28 percent and more income is taxed at 15 percent (see Figure A1.2).

Table A1. 1 Sources of the Marriage Bonus

	Unmarried			*Married*
	Worker	**Non Worker**	**Combined**	**Joint Filing**
AGI	$60,000	$0	$60,000	$60,000
- Standard Deduction	(4,250)	0	(4,250)	(7,100)
- Personal Exemption	(2,700)	0	(2,700)	(5,400)
Taxable Income	53,050	0	53,050	47,500
Marginal Tax Rate	28%	0%		28%
Tax Liability	**$11,559**	**$0**	**$11,559**	**$7,795**
Marriage Penalty/(bonus)			**($3,764)**	

Source: Joint Economic Committee calculations

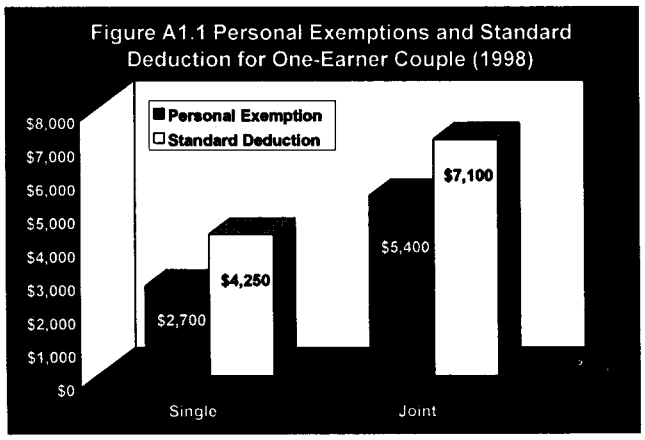


Figure A1.1 Personal Exemptions and Standard Deduction for One-Earner Couple (1998)

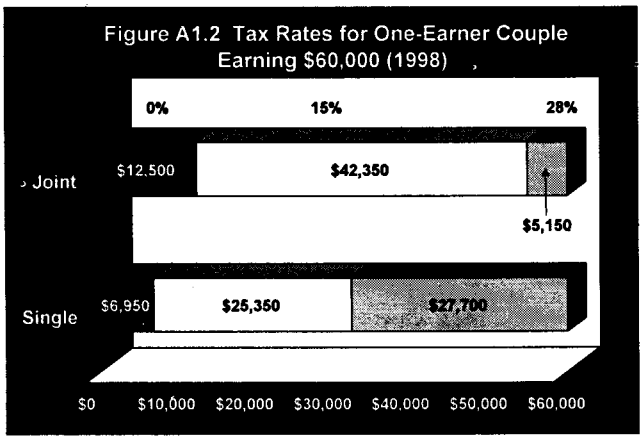


Figure A1.2 Tax Rates for One-Earner Couple Earning $60,000 (1998)

The same features of the tax code can create a marriage penalty when the income is more evenly divided between husband and wife. Table A1.2 outlines the tax liability of a couple earning $60,000 when the income is divided equally between the two individuals. If the two individuals were single, they would file separate tax returns, and each would incur a federal income tax liability of $3,457.50. Their combined tax liability would be $6,915. However, if the two individuals were married, their total tax liability would be $7,795. Thus, the couple's income tax increases by $880 upon marrying.

The penalty occurs for two reasons. First, when two individuals with earned income marry each other, their personal exemptions remain the same, but their standard deduction is reduced by $1,400 (see Figure A1.3). As a result, their taxable income increases by this amount. Second, because the tax brackets for joint filers are not twice as wide as those for individual filers, some of their combined income is pushed out of the 15 percent tax bracket into the 28 percent tax bracket (see Figure A1.4).

Table A1.2 Sources of the Marriage Penalty

	Unmarried			Married
	Worker 1	**Worker 2**	**Combined**	**Joint Filing**
AGI	$30,000	$30,000	$60,000	$60,000
- Standard Deduction	(4,250)	(4,250)	(8,500)	(7,100)
- Personal Exemption	(2,700)	(2,700)	(5,400)	(5,400)
Taxable Income	23,050	23,050	46,100	47,500
Marginal Tax Rate	15%	15%		28%
Tax Liability	**$3,457.50**	**$3,457.50**	**$6,915**	**$7,795**
Marriage Penalty/(bonus)			**$880**	

Source: Joint Economic Committee calculations

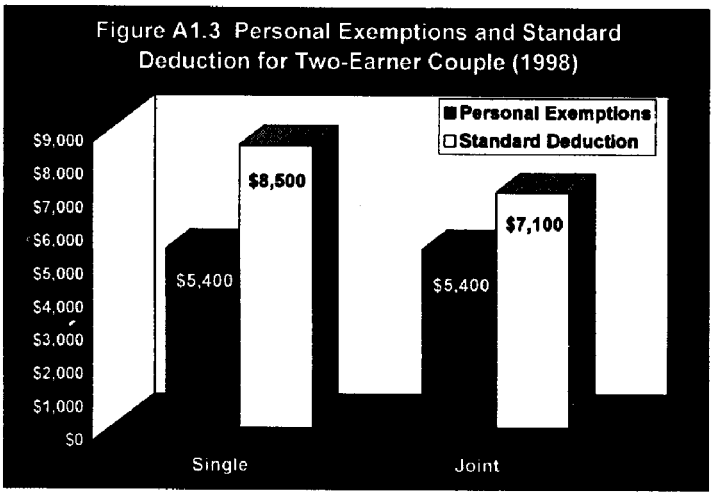


Figure A1.3 Personal Exemptions and Standard Deduction for Two-Earner Couple (1998)

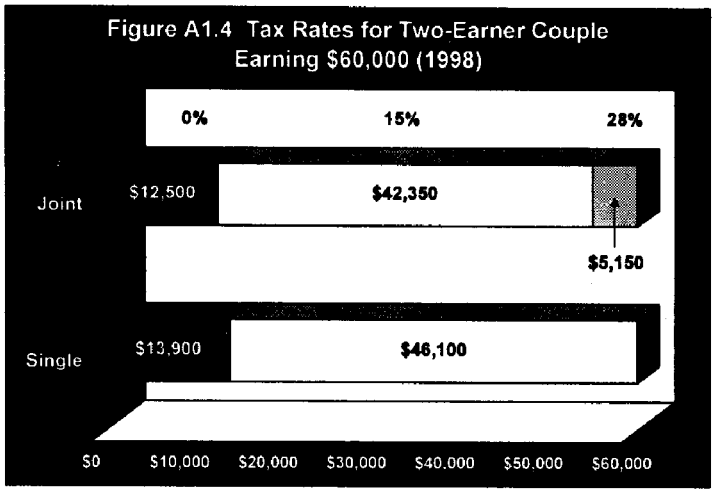


Figure A1.4 Tax Rates for Two-Earner Couple Earning $60,000 (1998)

Consider a couple in which each individual has one child and each earns $10,000. Table A1.3 shows that if the two individuals file as heads of households, they incur no federal income tax liability, and each receives the maximum EITC of $2,271. Their combined income tax liability is negative $4,542. If the two individuals are married, their tax liability is negative $1,811—a marriage penalty of $2,731, or 14 percent of total income.

The penalty occurs for three reasons. First, joint filing reduces the couple's combined standard deduction by $5,400 (see Figure A1.5). Thus, their taxable income increases by this amount and pushes them into the 15 percent tax bracket. Second, eligibility for the EITC begins to phase out at AGI $12,260 regardless of filing status. Thus, each individual qualifies for the maximum credit if single, but if married, their combined income pushes them into the phase-out range of the EITC (see Figure A1.6) and reduces the size of the credit for which they qualify. Third, when the two individuals are single with one child each, they qualify for two separate tax credits worth a combined maximum value of $4,542. However, combining their incomes and children into one household makes them eligible for only one credit worth a maximum of only $3,756.

Table A1.3 EITC as a Source of Marriage Penalties

	Unmarried			Married
	Worker 1	Worker 2	Combined	Joint Filing
AGI	$10,000	$10,000	$20,000	$20,000
- Standard Deduction	(6,250)	(6,250)	(12,500)	(7,100)
- Personal Exemption	(5,400)	(5,400)	(10,800)	(10,800)
Taxable Income	0	0	0	2,100
Marginal Tax Rate	0%	0%		15%
Federal Income Tax	0	0	0	315
Earned Income Tax Credit	-2,271	-2,271	-4,542	-2,126
Total Tax Liability	**-$2,271**	**-$2,271**	**-$4,542**	**-$1,811**
Marriage Penalty/(bonus)			**$2,731**	

Source: Joint Economic Committee calculations

Figure A1.5 Personal Exemptions and Standard Deduction for Two Workers with One Child Each (1998)

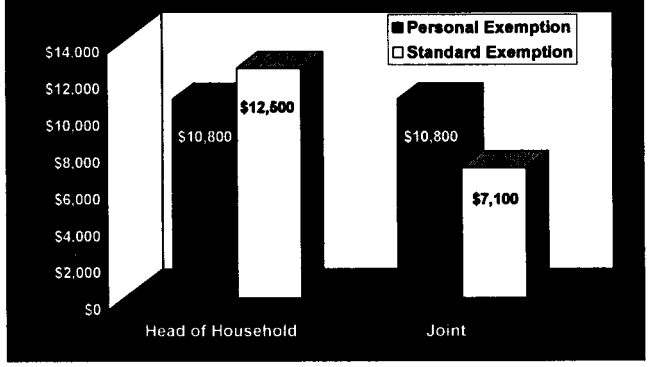
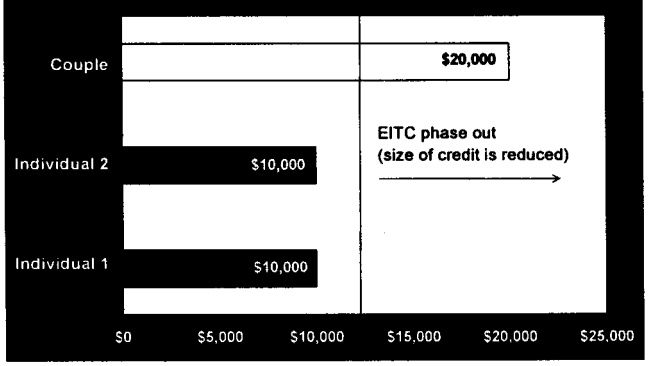


Figure A1.6 Phase Out of the EITC for Households with One or More Children (1998)



APPENDIX 2

EFFECT OF VARIOUS PROPOSALS ON MARRIED COUPLES

The following tables illustrate how the three main marriage penalty reduction proposals would affect hypothetical low-, middle- and high-income couples depending on their division of income. The analysis does not account for behavioral changes that might occur if any of the proposals were adopted.

Table A2.1 shows that none of the proposals would eliminate the structural penalty in the EITC. Therefore, a reduced penalty could exist for many EITC-eligible couples.

Table A2. Effect of Various Proposals on Tax Liability of Couple Earning $20,000

	50-50 Income Split 10,000-10,000	100-0 Income Split 20,000-0	75-25 Income Split 15,000-5,000
Current Law			
Single tax liability	-$4,542	-$182	-$3,031
Joint tax liability	-$1,811	-$1,811	-$1,811
Penalty/(bonus)	$2,731	($1,629)	$1,220
Optional Filing			
Tax liability	-$2,021	-$1,811	-$1,811
Tax cut	$210	$0	$0
Penalty/(bonus)	$2,521	($1,629)	$1,220
Income Splitting (H.R. 3104 and H.R. 3734			
Tax liability	-$2,021	-$2,021	-$2,021
Tax cut	$210	$210	$210
Penalty/(bonus)	$2,521	($1,839)	1,010
Second-Earner Deduction			
Tax liability	-$1,961	-$1,811	-$1,886
Tax cut	$150	$0	$75
Penalty/bonus	$2,581	($1,629)	$1,145

Notes: (1) Assumes each spouse has one child for EITC calculation. (2) Calculations reflect the child tax credit that will be effective in 1998.

Source: Joint Economic Committee calculations

Table A2.2 shows that for middle-income couples, optional filing would eliminate penalties and maintain bonuses. Couples with the same income could pay different amounts of income tax. Income splitting would eliminate penalties and increase bonuses. Couples with the same income would receive equal tax cuts, thus maintaining horizontal equity. The second-earner deduction would reduce or eliminate penalties for two-earner couples. The third example shows that the deduction would increase bonuses for two-earner couples who receive them under current law. One-earner couples would not be affected by the deduction. One-earner couples would continue receiving the largest bonuses under all of the proposals.

Table A2.2 Effect of Various Proposals on Tax Liability of Couple Earning $60,000

	50-50 Income Split 30,000-30,000	100-0 Income Split 60,000-0	75-25 Income Split 45,000-15,000
Current Law			
Single tax liability	$6,915	$11,559	$8,567
Joint tax liability	$7,795	$7,795	$7,795
Penalty/(bonus)	$880	($3,764)	($772)
Optional Filing			
Tax liability	$6,915	$7,795	$7,795
Tax cut	$880	$0	$0
Penalty/(bonus)	$0	($3,764)	($772)
Income Splitting (H.R. 3104 and H.R. 3734)			
Tax liability	$6,915	$6,915	$6,915
Tax cut	$880	$880	$880
Penalty/(bonus)	$0	($4,644)	($1,652)
Second-Earner Deduction			
Tax liability	$6,955	$7,795	$7,375
Tax cut	$840	$0	$420
Penalty/bonus	$40	($3,764)	($1,192)

Note: Assumes the standard deduction and two personal exemptions
Source: Joint Economic Committee calculations

Table A2.3 shows that for high-income couples, a reduced penalty may exist because of the phase-out provisions of various tax breaks. (Certain phase-out provisions can create reduced penalties for middle-income couples as well.) In this example, income-splitting results in a

reduced penalty for the couple with a 50-50 income split. The penalty arises because of the limitation of itemized deductions. (The value of itemized deductions is reduced for taxpayers with AGI more than $124,500 regardless of filing status. Thus, two individuals earning $75,000 each can take full advantage of their deductions when single, but when married to each other, they must limit their deductions because their combined income of $150,000 pushes them beyond the phase-out threshold.) Under optional filing, this particular structural penalty is eliminated, although other phase-out provisions can create penalties for some couples. The second-earner deduction reduces the tax liabilities of the two-earner couples by $930. This amount reflects the value of a $3,000 deduction at the 31 percent tax rate ($3,000 * 0.31).

Table A2.3 Effect of Various Proposals on Tax Liability of Couple Earning $150,000

	50-50 Income Split 75,000-75,000	100-0 Income Split 150,000-0	75-25 Income Split 112,500-37,500
Current Law			
Single tax liability	$26,338	$32,561	$27,183
Joint tax liability	$28,119	$28,119	$28,119
Penalty/(bonus)	$1,781	($4,442)	$936
Optional Filing			
Tax liability	$26,338	$28,119	$27,183
Tax cut	$1,781	$0	$936
Penalty/(bonus)	$0	($4,442)	$0
Income Splitting (H.R. 3104 and H.R. 3734)			
Tax liability	$26,552	$26,552	$26,552
Tax cut	$1,567	$1,567	$1,567
Penalty/(bonus)	$214	($6,009)	($631)
Second-Earner Deduction			
Tax liability	$27,189	$28,119	$27,189
Tax cut	$930	$0	$930
Penalty/bonus	$851	($4,442)	$6

Note: Assumes couples claim itemized deductions equal to 18 percent of AGI when single and when filing jointly.
Source: Joint Economic Committee calculations

THE LINKS BETWEEN STOCKS AND BONDS

SUMMARY

The value of the stock market is heavily influenced by the yield on 10-year Treasury bonds. In conjunction with expected corporate earnings, the bond yield predicts a remarkable 92% of changes in the value of the stock market. When the stock market deviates from the level predicted by bond yields and expected earnings, these deviations have a significant influence on stock-market returns during the following year.

The yield of 10-year Treasury bonds and the "expected earnings yield" of the Standard and Poor's 500 have a very strong relationship. The "expected earnings yield" is not what most people think of as the yield on stocks: annual dividends as a share of current price. Instead, the earnings yield is annual earnings as a share of current price–regardless of whether these earnings are distributed to shareholders in the form of dividends or retained for future use.[162] Furthermore, the *expected* earnings yield refers not to how much companies have earned over the *past* 12 months, but to how much analysts expect companies to earn over the *next* 12 months.

As Figure 1 shows, the expected earnings yield of the S&P 500 and the yield of 10-year Treasury bonds have tracked each other's movements very closely over time. In fact, from January 1981 through December 1997, variations in the yield on 10-year Treasury bonds predicted a remarkable 92 percent of the variation in the expected earnings yield of the S&P 500.

This close link makes intuitive sense. The yield on bonds is the amount of money a bondholder should expect to earn per year, given the amount he's invested. For example, if a bond yields 6 percent, the bondholder should expect to earn $6 per year for every $100 invested. The yield of the S&P 500 is similar. It's the amount of money a shareholder should expect his companies to earn during the next year, given the amount he's invested. For example, an expected yield of 6 percent suggests that an investor foresees his companies earning $6 in income for every $100 in stock price.

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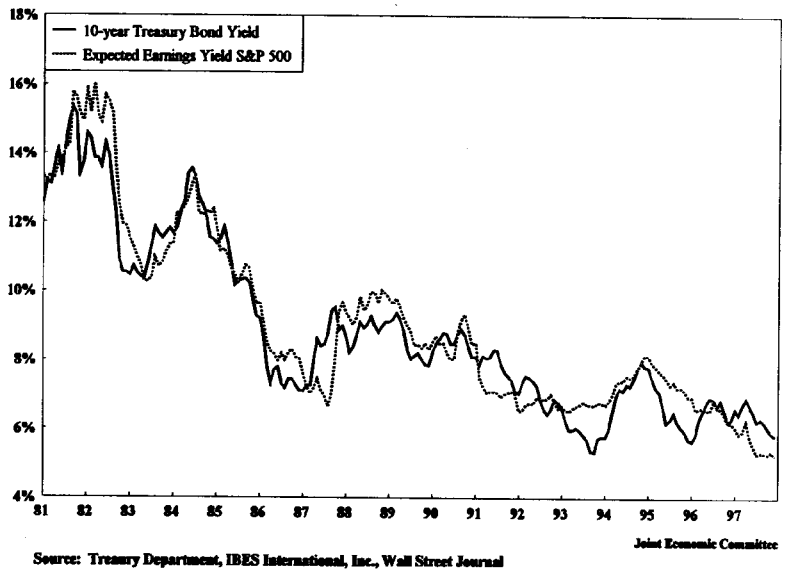
[162] In this paper, "earnings" refers to operating earnings.

Figure 1
STOCK YIELDS VS. BOND YIELDS



Source: Treasury Department, IBES International, Inc., Wall Street Journal

The natural market process of investors chasing higher yields should keep bond yields and stocks yields moving together over time. If the yield on stocks increases–for example, due to an increase in earnings expectations–investors should chase this extra yield by shifting their portfolios toward stocks and away from bonds. By bidding-up the price of stocks, this portfolio shift should reduce the excess stock yield caused by the increase in earnings expectations. Meanwhile, the shift away from bonds should bid-down bond prices, thereby raising their yield. Similarly, if the yield on stocks falls–for example, due to a decrease in earnings expectations–investors may bid-down the price of stocks (raising the stock yield back up) and bid-up the price of bonds (lowering the bond yield), thereby resulting in an overall decrease in both the stock yield and the bond yield.

In addition, stocks and bonds may tend to move together over time because they're similarly effected by certain macroeconomic developments. For example, a decrease in the expected future inflation should increase the price people are willing to pay for bonds, which promise fixed payments in the future. Why does this happen? Because lower inflation means that fixed future payments will be worth more, in

terms of the amount of goods and services they can buy. Similarly, a drop in inflation expectations should make any given level of expected corporate earnings more valuable.[163]

At least one study suggests that changes in inflation are actually a better gauge of the stock market than interest rates are. This study, however, uses past earnings rather than expected earnings in making its calculations. When bond yields are used in conjunction with expected earnings, they show that bond yields do have a greater influence on stock prices than inflation does. Using expected earnings makes more theoretical sense than using past earnings. Bonds look forward to future payments. Past earnings are not a future-looking indicator; expected earnings are.[164]

Figure 2 shows the extent to which differences between the yield on stocks and the yield on bonds have influenced subsequent stock-market performance. The Figure consists of 192 points, each representing a month from January 1981 through December 1996. The horizontal axis measures the extent to which, during each month, the yield on stocks differs from what's predicted by the yield on bonds. The vertical axis measures the percentage change in the S&P 500 during the following 12-month period. As Figure 2 shows, the greater the yield on stocks, relative to the yield predicted by bonds, the greater the subsequent 12-month return on the S&P 500.[165]

Despite the close long-term link between the two yields, they don't necessarily tend towards equality. At least three key differences between the yields on stocks and bonds may affect their relative yields.

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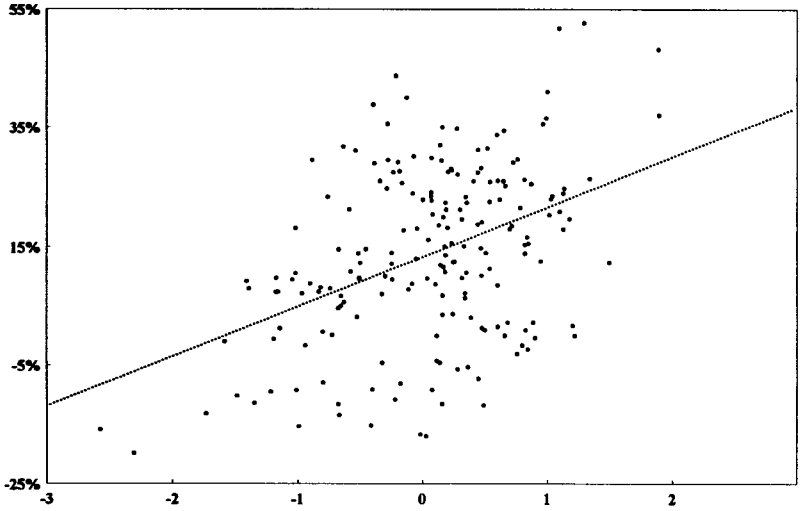
[163] A decrease in expected inflation should increase both stock prices and bond prices. However, because the tax code fails to index either depreciation schedules or capital gains for inflation, stocks may respond more to changes in inflation than bonds do. A drop in inflation should not only decrease the extent to which stock-market investors discount expected future earnings, but also raise both the *amount* of expected future earnings and their value, after-tax.

[164] "Do Stock Prices Follow Interest Rates or Inflation," John E. Golob and David G. Bishop, December 1996, RWP 96-13, Federal Reserve Bank of Kansas City.

[165] From January 1981 through December 1997, variations in the difference between the actual stock yield and the stock yield predicted by 10-year Treasury bonds predicted 18 percent of the variation of stock-market returns during subsequent 12-month periods.

Figure 2
EXCESS STOCK YIELDS VS. FUTURE CHANGE OF S&P 500



Source: Treasury Department, IBES International, Inc., Wall Street Journal

Joint Economic Committee

- First, stocks are riskier than government bonds, meaning investors may demand a "yield premium" when they invest in stocks. This yield premium should be fairly consistent over time.
- Second, the yield on stocks is determined by using earnings expected during the next twelve months, a period of time much shorter than investors' potential time horizons. If corporate-earnings growth is expected to be relatively high in the next 12 months (compared to future years), investors may demand an additional premium from the yield on stocks, to compensate them for low expectations about future earnings. On the other hand, if corporate-earnings growth is expected to be unusually low over the next 12 months (compared to future years), investors may be willing to accept a lower yield from stocks than they otherwise would, as they foresee much better times ahead.

- And third, differences in how these earnings are taxed may affect how much investors value them. This difference may change greatly over time. For example, allowing companies to deduct dividends paid to shareholders or stock-market investors to index their capital gains for inflation could lower the yield on stocks that investors demand, relative to the yield on bonds.

The formula that describes the link between the percentage yield on the S&P 500 and the percentage yield on 10-year Treasury bonds, during the period from 1981 to 1997, is:

$$S\&P\ Yield = .037 + 1.0175\ (Treasury\ Yield)$$

We can then use this formula to get an implied fair-market value for the S&P 500.

Given that:

$$S\&P\ Yield = (100)\ (Expected\ Earnings)\ /\ S\&P\ Price$$

Therefore,

$$S\&P\ Price = (100)(Expected\ Earnings)\ /\ [.037 + 1.0175\ (Treasury\ Yield)]$$

For example, in January 1998 the S&P 500 were expected to earn $50.70 over the following 12 months.[166] So if the yield on 10-year Treasury bonds was 5.5 percent, the implied fair-market value of the S&P 500 was 900.

The S&P 500 has exceeded its implied fair-market value since April 1996. There are at least four different ways that the actual value of the S&P 500 can be reconciled with its implied fair-market value.

- Investors may shift their portfolios toward bonds, driving-down bond yields until these securities no longer offer a yield unusually high in relation to the yield on stocks.
- Investors may shift their portfolios away from stocks, driving-up the yield on the S&P until it's commensurate with the yield offered on bonds.
- Analysts may raise their expectations about future corporate earnings, which would also drive up the yield on stocks.

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[166] IBES International, Inc.

- The long-term relationship between stock yields and bond yields may change, so that the current gap in yields becomes consistent with the future preferences of investors. In other words, investors may increase their appetite for stocks versus bonds, irrespective of the yields they offer.

CONCLUSION

The yield on 10-year Treasury bonds and the expected earnings yield of the S&P 500 tend to move together over time. The lower the yield on bonds, the more that stock-market investors are willing to pay for earnings expected during the next twelve months. For the 20-month period ending December 1997, the stock market was consistently overvalued compared to its usual relationship with bond yields and expected earnings. Based on the past relationship between overvalued stocks and subsequent stock-market performance, stocks should underperform in 1998. On the other hand, we may be witnessing a change in the long-term relationship of stocks and bonds, based on the changing preferences of investors. If so, this may mitigate the risk of the stock market underperforming during the next year.

INTERNATIONAL ECONOMICS

IMF FINANCING: A REVIEW OF THE ISSUES

INTRODUCTION

The 1999 budget proposal submitted by President Clinton calls for an $18 billion appropriation for the International Monetary Fund (IMF). This $18 billion appropriation request consists of two parts: $14.5 billion for a quota increase, and $3.4 billion for a new IMF credit line called the New Arrangements to Borrow (NAB).[167] The proposed quota increase and NAB commitment represent the U.S. share of a larger package of the proposed IMF expansion. The great majority of IMF lending activities are financed out of the quotas provided by member countries.

The quota increase and NAB are not needed to complete the Asian bailouts already underway; current IMF funds are sufficient to complete this assistance. The new funding would be used to finance future loans in addition to those already announced. Even after the completion of the Asian bailouts, the IMF would hold $30 billion in gold, retain some quota resources, and have access to an unused $25 billion IMF credit line known as the General Arrangements to Borrow (GAB).

The key issue before Congress is whether the IMF should be expanded through government-financed contributions and credit lines. The IMF was established in 1945 to finance temporary balance of payments problems under the fixed exchange rate system in place for most of the post-WWII period through 1973. However, under the flexible exchange rate system existing during the past three decades, IMF objectives have become less clear and focused. To an increasing extent, longer term financing is used for purposes other than short-term external adjustment problems. Recent IMF loan packages, for example, have required long-term restructuring of major sectors of national economies and significant adjustments to economic policy.

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[167]Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1999*, 1998, p. 129.

This alteration in IMF lending underlines an important change in the nature of IMF objectives. According to Columbia University Professor Charles W. Calomiris, who has served as an IMF economist and World Bank consultant:

> In the 1990s, the IMF has stretched the notion of liquidity assistance beyond any reasonable definition. IMF programs in Mexico and Asia are now *microeconomic bailouts that restore the solvency of clearly insolvent financial institutions*. That objective has nothing to do with bank or government liquidity, or with temporary imbalances in the balance of payments.[168]

Recently, IMF operations have been the center of growing controversy. Points of contention include:

- **Moral hazard:** IMF bailouts encourage investors to assume additional risk in pursuit of extra-normal returns in the expectation that losses will be absorbed by the IMF and ultimately the taxpayers of affected countries.
- **Exposure of taxpayer funds:** U.S. government funds are used directly and indirectly in subsidized bailouts that promote perverse incentives leading to a more vulnerable financial system.
- **Inappropriate conditions:** Counterproductive policies that undermine economic performance are sometimes imposed by the IMF as loan conditions.
- **Transparency**: The IMF is a closed and secretive organization that operates in a manner inconsistent with openness, as well as U.S. performance and accountability standards.

The lack of transparency makes analysis of the IMF and its performance problematic. As former World Bank Chief Economist (Latin America) Sebastian Edwards has noted:

> For any outsider it is extremely difficult–utterly impossible some would even say–to fully evaluate the functioning of the IMF. Many of its decisions are confidential, as are most of the key documents

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[168]Testimony of Charles Calomiris before the Joint Economic Committee, Congress of the United States, February 24, 1998, p. 20.

> that set the Fund's policy position. Moreover, the details of specific programs, including... memoranda of understanding, and other documents are also confidential. This makes the evaluation of programs' performance very difficult.[169]

IMF PERFORMANCE AND RESULTS

Under the Government Performance and Results Act (GPRA), government programs are to be planned and reviewed using objective and measurable criteria whenever possible. Under the Act, the IMF's appropriation must be evaluated on the basis of its objective contribution to U.S. international economic policy. As the first quota increase to be considered after the GPRA went into effect, Congress has an important responsibility to review the current IMF appropriation with a focus on the performance and results of IMF activities.

The size of the current and future bailouts will reduce available IMF resources and ultimately lead to yet another request for more funding. The IMF has already suggested that an even greater quota increase will be needed relatively soon.[170] The magnitude of the recent bailouts, as well as the pending quota increase, suggest that a fundamental reevaluation of the IMF, its operations, goals, as well as its financing, is needed. In recent months, a threshold has been reached in IMF lending that raises basic questions about IMF decision-making, openness, policy advice, performance, and over- reliance on direct government funding.

One diversion in an IMF performance review is the dubious contention that under existing budget rules the IMF appropriation is not a net outlay and therefore involves no taxpayer cost. Although current accounting rules mask the cost of the IMF quota increases to the U.S., economic analysis clarifies the true nature of the transaction: real economic resources are transferred at subsidized interest rates from the U.S. economy to other nations. It is doubtful that these resources will ever be fully recovered. The U.S. may hold a paper IOU or an IMF computer entry, but the nature of the IMF quota increase entails a

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[169]Edwards, Sebastian, "The International Monetary Fund and the Developing Countries: A Critical Evaluation," Carnegie-Rochester Conference Series on Public Policy 31, 1989, p. 9.

[170]Chote, Robert, "IMF Chief Calls for $160 Billion Increase," *Financial Times*, December 13/14, 1997.

transfer of economic resources from the U.S. economy. If this were not so, there would be no point in an appropriation in the first place.

Additional costs of these IMF bailouts were delineated by Professor Charles Calomiris in recent testimony before the Joint Economic Committee:

> Three kinds of cost figure prominently: (1) undesirable redistributions of wealth from taxpayers to politically influential oligarchs in developing economies; (2) the promotion of excessive risk taking and inefficient investment; and (3) the undermining of the natural process of deregulation and economic and political reform which global competition would otherwise promote.[171]

One additional reason for concern about IMF intervention is IMF's operations, which are based on below-market funding costs and below-market lending rates. As Sir Alan Walters has indicated:

> By its very nature, IMF assistance [has been] given at a subsidized interest rate, in the sense that the rate charged was below that which the country could obtain on the international capital markets. The subsidies have both widened and deepened over time.[172]

Economic analysis indicates such taxpayer subsidies to IMF borrowers lead to inefficient results and a misallocation of economic resources. Part of the reason for this inefficiency was identified in the testimony of former Federal Reserve Governor Lawrence Lindsey before the Joint Economic Committee. As Lindsey argued:

> ... there is no real assessment of credit worthiness [in IMF lending]. Quite the contrary, an apparent requirement to get an IMF loan is that the borrower

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[171]Testimony of Charles Calomiris before the Joint Economic Committee, Congress of the United States, February 24, 1998, p. 2.

[172]Walters, Alan. "Do We Need the IMF and The World Bank?," Current Controversies, No. 10, Institute of Economic Affairs, London 1994, p. 11 [brackets added].

is not creditworthy, in that the borrower could not obtain private sector funding.[173]

The IMF's practice of loan subsidies and the resulting misallocation of resources raises serious policy concerns. The recent orientation of IMF lending towards subsidizing loans to insolvent entities is troubling and qualitatively marks an important departure from past practices. Given this change and the significant increases in IMF loans, its compatibility with the objectives of U.S. international economic policy must be considered by Congress. Specific reforms of the IMF are discussed in a later section of this paper.

THE IMF AND ASIA

Important questions have been raised by the recent IMF bailouts of South Korea, Indonesia, and Thailand. These IMF loans are tied to a number of conditions in the form of policy changes, some of which involve improved supervision of financial institutions and efforts to eliminate corruption. Additional loan conditions often include tax increases, tight monetary policies, and other guidelines that foster austerity.

On November 20, 1997, a high U.S. Treasury Department official was reported to have designed a framework for future Asian bailouts referred to as the "Manila plan," named for the location of the formative meeting and modeled after the structure of the Indonesian bailout.[174] The Manila plan calls for IMF loans to provide the initial lending support to a distressed economy, supplemented by backup funds contributed by major nations such as the United States. Almost immediately, the Koreans requested IMF assistance that quickly grew into the largest bailout package ever made by the IMF. The Treasury Department had a very public role not only in the general design of the bailout framework but also in the specific components of the Korean bailout.

Both the Korean government and the IMF have agreed to the bailout terms. An IMF package of loans amounting to $21 billion will be supplemented by the World Bank, the United States, and others for a total of $57 billion. Unfortunately, the first Korean bailout failed to restore confidence, and a second bailout based on debt restructuring was implemented. The IMF has enough resources on hand to cover the $21

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[173]Testimony of Lawrence Lindsey before the Joint Economic Committee, Congress of the United States, February 24, 1998, p. 2 [brackets added].

[174]Davis, Bob and G. Pierre Goad, "Asia Reaffirms U.S. Primary on Bailouts," *Wall Street Journal*, November 20, 1997.

billion committed in the first bailout, and congressional action will have no bearing on whether these funds are disbursed. However, the Asian crisis does provide a useful point of departure for analysis of the major issues.

Brief Background

In recent years, a number of Asian economies experienced rapid capital inflows brought about by the region's fast growth, high returns on investment, and desire for diversification on the part of investors in developed countries. Perceived exchange rate risk was minimized because many of these countries tied their currencies to the U.S. dollar. This capital, in turn, was often allocated by centralized, bureaucratic, and sometimes corrupt government-controlled banking systems into questionable long-term (e.g., real estate) projects. [175] In other words, poorly regulated financial institutions in these countries made long-term loans that were financed by short-term foreign liabilities. The result was large amounts of short-term dollar denominated debt together with maturity and currency mismatches.

Risk Reassessment

For a number of reasons, lenders began to reassess risk. Dollar appreciation against the yen not only forced these economies to tighten monetary policy to defend their currencies but also significantly hurt their export markets. These developments encouraged speculation against the pegged exchange rate. Rapid disinflation, asset price deflation, and declines in collateral value further weakened poorly regulated financial sectors. Heightened exchange rate risk, capital outflows, and eventually exchange rate depreciation resulted.

Possible Contagion

As the exchange rate in these countries depreciates, debt denominated in dollars instantly becomes more burdensome (because the debt now must be repaid in dollars that are more valuable) and financial sector weakness is exacerbated. As a result, risk assessment worsens, leading to an increased demand for limited dollar reserves.

At this point, proponents of IMF intervention argue that if no assistance is provided in the form of short-term dollar loans, further capital flight will occur, resulting in accelerated currency depreciation, interest rate increases, and further asset price deflation. If the trend

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[175] At this earlier stage, the IMF and World Bank should have criticized the banking practices of these countries and made recommendations for reform.

continues, they argue, these problems may spread: contagion can occur and capital flight can accelerate. The result may be competitive devaluations and the possible adoption of protectionist measures in affected countries that are export markets for the United States. Consequently, there may be a severe slowdown in the local economy and a sharp decrease in living standards. Additionally, the U.S. economy's investors, equity market, export sector, and employment could also be impacted.

IMF ASSISTANCE

Advocates of IMF intervention maintain that prompt IMF assistance in the form of short-term hard currency loans can temporarily bolster confidence by providing assurance that back-up lending or emergency liquidity provision is readily available. According to proponents of IMF bailouts, this can work to restore investor confidence and prevent worsening capital flight by guaranteeing a reliable source of foreign exchange reserve loans. IMF lending can temporarily stabilize the situation and stem contagion. In short, the case for immediate IMF lending is to keep the problem from getting worse and to reduce the size of the calamity.

PROBLEMS WITH THE IMF BAILOUTS

Despite potential stabilizing effects in the short run, there are a number of major problems with current IMF bailout practices:

- **IMF Lending Creates Moral Hazard.**

  IMF bailouts not only fail to change incentives to correct reckless lending behavior, but also embody incentives encouraging this behavior. Existing lending practices persist because both borrowers and lenders recognize that if loan problems should occur, a bailout will readily materialize.[176] To

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[176]Some economists argue that the Mexican bailout created incentives for future IMF bailouts and, consequently, is partly responsible for current problems in Asia. For example, Allan Meltzer said: "The IMF's programs drive a large wedge between the social risk – the risk borne by the troubled country – and the private risk borne by bankers. This is one source of moral hazard, and one reason we have a crisis-generating system. A common argument in its defense is that Mexico repaid its loans to the U.S. government and the IMF. That argument misses the point. If banks and financial institutions had taken losses in Mexico, they would have exercised elementary judgment about risks in Asia." Testimony of Allan Meltzer before the Joint Economic Committee, Congress of the United States, February 24, 1998, p.3.

change such incentives, some lenders and borrowers should suffer losses and shoulder some of the risks of their poor decisions. Insolvent institutions should be allowed to fail. Necessary adjustments should be allowed to occur. Lending at market-determined, non- subsidized interest rates would also work to minimize moral hazard.

- **U.S. Taxpayer Funds Are Overly Exposed.**

  Current IMF (and Treasury) bailout practices often expose U.S. taxpayer funds. The Exchange Stabilization Fund (ESF) has been used to provide back-up financing for several IMF bailout packages. Since U.S. taxpayers do not participate in emerging market lending/borrowing decisions, the case for using their funds for these purposes is problematic. This use of the ESF circumvents the congressional appropriations process so that taxpayers have no voice regarding the Treasury's use of their funds. The IMF and Treasury have not seriously considered alternative sources or mechanisms of funding to minimize taxpayer exposure, such as IMF borrowing from the market (like the World Bank and other development banks) or IMF gold sales.[177] At a minimum, Treasury and the IMF should clearly explain why taxpayer-financed lending may be necessary.

- **The IMF Often Attaches Inappropriate Lending Conditions to Its Loans.**

  The IMF ties several forms of conditions to its loans Austerity conditions involving tax increases are often part of these lending programs, and these conditions are sometimes applied indiscriminately to countries facing different sets of circumstances. Critics argue that these conditions result from inappropriate use of economic models focusing principally on aggregate demand management and not on supply conditions Despite rhetoric to the contrary, less emphasis is placed on government restructuring or downsizing as the important element of this conditionality. Additionally, IMF condition ality often impedes the necessary adjustment process, i

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[177]Proposals for IMF borrowing from capital markets have been made before See, for example, The Brandt Commission, *Common Crisis North-South Cooperation for World Recovery*, MIT Press, Cambridge, Mass., 1983, p. 14.

frequently reactive rather than pro-active, and often involves an unspecified timetable, allowing loan recipients to backslide on required adjustments.

- **IMF and Treasury Policies Should Be More Transparent.** Both IMF and U.S. Treasury bailout policies remain overly secretive, ambiguous, and ill-defined. Because these policies are seldom explained to the public, unnecessary misunderstanding, resentment, and opposition often result. A good deal more transparency is called for from both of these taxpayer-financed institutions. Explicit specification of the IMF's objectives, for example, should be accompanied by clarification of the procedures and practices by which it accomplishes these objectives. At a minimum, full explanations of the conditions, lending terms, subsidies involved, and the rationale as to why such lending is necessary are essential. Additionally, those entities actually receiving taxpayer subsidies should be identified.

The notion that IMF policies can be counterproductive is not limited to IMF critics. A recent IMF internal study found that elements of its conditions imposed on Indonesia sparked a bank crisis that deepened the financial crisis in other Asian nations. This IMF analysis underscores the counterproductive potential of IMF policies and highlights its lack of transparency.[178]

OVERVIEW OF POLICY IMPLICATIONS

The Administration's IMF appropriation request may result in a number of alternative outcomes. The entire $18 billion appropriation could be approved without any significant conditions being attached. Alternatively, the entire appropriation could be rejected due to concerns about the effects of IMF expansion, as well as IMF reforms required for continued U.S. funding. Intermediate alternatives could include a range of incremental funding options probably tied to a variety of conditions on the IMF.

Regardless of the status of new funding for the IMF, the recent transition of IMF lending from provision of short-term liquidity to subsidization of insolvency is troubling. Lack of transparency has

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[178]Sanger, David E., "IMF Reports Plan Backfired, Worsening Indonesia Woes," *New York Times*, January 14, 1998.

permitted the IMF to make this transition without much public recognition in the United States.

The adoption of more transparent practices by the IMF is necessary if Congress is to be adequately informed about this important element of U.S. economic policy. Minutes of IMF board meetings should be publicly released (after appropriate editing of any proprietary and intelligence information), loan program documents and staff reviews of loan programs should be made public, and an independent advisory board should be established to annually review IMF activities.

Furthermore, the subsidization of IMF lending at below-market interest rates exposes the fallacy that there is no cost associated with quota contributions. Base IMF lending rates, currently under 5 percent, are, after all, below the rate at which the U.S. government can borrow. Although some IMF loans are made at higher rates, artificially low borrowing and lending rates characterize IMF lending operations. These below-market borrowing rates do not adequately reflect the potential risk posed by insolvent borrowers, and thereby exacerbate the moral hazard problem discussed above. The Congress must decide whether this policy of subsidized loans for insolvent entities is a desirable objective of U.S. international economic policy.

As Walter Bagehot, eminent former editor of *The Economist*, explained in his classic formulation more than a century ago, a lender of last resort should lend freely at a penalty interest rate. Subsidized loans are not necessary to assist illiquid borrowers and are counterproductive for insolvent entities. Economic efficiency would be promoted by IMF lending at market interest rates determined in international financial markets.

Accordingly, Congress could stipulate that U.S. funds should not be used to provide subsidized loans. This would help contain the moral hazard problem and encourage the IMF to operate on a more economically efficient basis. Another market-oriented reform would encourage IMF issuance of securities in the financial markets instead of relying so heavily on government funds.

RECOMMENDATIONS

In view of these many problems, any continued or additional U.S. financial support of the IMF should be accompanied by guarantees that the IMF itself meets certain conditions. In particular, to receive U.S. financial support, the IMF should:

- Work to minimize the moral hazard problem both by ensuring that some costs are borne by those lenders and borrowers initiating the ill-fated loans and lending more in accordance with market-determined interest rates.
- Explore alternative funding sources or mechanisms to minimize U.S. taxpayer exposure.
- Promote lending conditions that work to attract capital as well as to foster private sector economic growth, free markets, and smaller public sectors.
- Become significantly more transparent in a number of specific ways. Clearly identifying policy objectives as well as the procedures and practices used to achieve these objectives is essential.

CONCLUSION

This paper has reviewed some of the major issues on both sides of the debate over IMF funding. The concerns raised regarding moral hazard, transparency, taxpayer exposure, and conditionality are widely recognized. For example, the Treasury has acknowledged the validity of the moral hazard problem, the IMF has recognized the damage perverse conditionality may cause, and such IMF loan conditions are widely criticized from various points of view. Furthermore, almost all analysts recognize the benefits of a more transparent IMF. Consequently, it appears likely that any congressional action on IMF funding will include conditions intended to mitigate these concerns.

IMF reforms are needed irrespective of what happens to the Administration's IMF appropriation proposal now before Congress. Two IMF reforms are especially needed at this time: improved transparency and increased use of market interest rates. Improved transparency would require the public disclosure of IMF decision-making meetings as well as program documents and related material. Future IMF loans should employ market interest rates, not subsidized rates that exacerbate the moral hazard problem.

FINANCIAL CRISES IN EMERGING MARKETS: INCENTIVES AND THE IMF

INTRODUCTION AND SUMMARY

This paper argues that perverse economic incentives are an important factor contributing to recent financial crises increasingly plaguing many of today's emerging market economies. These incentives, in turn, are spawned by a pernicious combination of conditions, which all too often frequent these developing economies. In particular, the combination of overly generous public safety nets (e.g., implicit or explicit public, uncircumscribed deposit insurance), risk-enhancing structural change in the financial system, and inadequate levels of owner-contributed bank capital often promote excessive risk taking. These conditions contributed to producing the severe financial crisis in the U.S. thrift and banking industries in the 1980s and are increasingly present in an even more virulent form in today's emerging economies.

Recent IMF lending and prospects for future lending not only reinforce existing risk-promoting incentives in emerging economies but also create incentives for additional risky lending by international financial institutions.

These arguments highlight a number of interesting implications and suggest important policy recommendations to limit such adverse incentives.

THE U.S. EXPERIENCE

In the 1980s, the U.S. financial sector experienced changes that allowed more risk taking in the face of expanded public deposit insurance. As the financial sectors' equity capital diminished, this combination ultimately resulted in financial crises involving both banks and savings and loan associations (S&Ls). More specifically, U.S. financial markets changed in a number of ways. The elimination of most interest-rate ceilings and limited product deregulation, together with the subsequent erosion of geographic restrictions, enabled lenders to seek higher returns in new, unfamiliar, and higher-risk ventures. These risk-enhancing changes, together with generous, expanded public deposit insurance guarantees and diminished capital bases, created the (perverse) risk-taking incentive structure cited above.[179] Deregulation per se is not a problem.[180] It is

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[179] Lenders could reap the rewards of successful high-risk ventures and be assured depositors would be backstopped with taxpayer-supported funds in case such ventures failed. These perverse incentives are worsened when banks suffer

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only when risk-enhancing changes are combined with overly generous public deposit insurance (or other public guarantees), and depleted capital, that the perverse incentive structure becomes especially relevant.[181] Most analysts now agree that this pernicious combination was largely responsible for severe U.S. financial problems experienced in the 1980s and early 1990s.[182]

EMERGING MARKETS EXPERIENCE

These same forces are largely responsible for the pervasive and unprecedented increase in both the frequency and severity of financial crises in the world's emerging economies.[183] Conditions promoting

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losses and their capital base shrinks. Such banks then have little to lose by gambling.

[180] As Charles Calomiris has eloquently stated, financial deregulation and liberalization are not inherently destabilizing. "Partial bank liberalization - where profits are private and losses are public - is the threat to stability. Privatization of both profits and losses produces very stable banking systems." Charles W. Calomiris, " The IMF as Imprudent Lender of Last Resort," May 20, 1998, p.6. For an excellent overview of this problem, see also Charles W. Calomiris, Testimony before the Joint Economic Committee, Hearing on the International Monetary Fund and International Policy, February 24, 1998; and Charles W. Calomiris, The Post Modern Bank Safety Net, American Enterprise Institute Press, Washington, D.C., 1997.

[181] Deposit insurance is not necessarily a problem if it is narrowly circumscribed and (properly) limited. Otherwise, it can promote significant moral hazard.

[182] Caprio and Klingebiel (1996) indicate that while "fewer banks failed in the 1980s than during the Depression ... depositor losses per dollar of deposits were higher." Gerald Caprio, Jr. and Daniela Klingebiel, "Bank Insolvency: Bad Luck, Bad Policy, or Bad Banking: Annual World Bank Conference on Development Economics," 1996, p. 82. Barth and Litan document that the savings and loan resolution costs in recent years exceeded the losses borne by all uninsured depositors in the 1920s and early 1930s. See James Barth and Robert Litan, "Preventing Bank Crises: Lessons From Bank Failures in the United States," paper presented at conference co-sponsored by the Federal Reserve Bank of Chicago and the Economic Development Institute of the World Bank, Chicago, June 11-13, 1997, p. 3.

[183] Documentation of this significant worsening of financial crises can be found, for example, in Carl-Johan Lindgren, Gillian Garcia, and Mathew I. Saal, Bank Soundness and Macroeconomic Policy, IMF, 1996, p. 20; and Morris Goldstein and Phillip Turner, " Banking Crises in Emerging Economies: Origins and Policy

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perverse (risk-taking) incentives, however, are even more potent in modern emerging economies than in developed economies for a number of important reasons. Financial market risk-enhancing structural change in emerging economies, for example, is especially pronounced because it not only embodies the types of financial market change occurring in developed economies, but also takes on additional forms as well. Conventional structural change, such as the liberalization of interest rate ceilings, lowered reserve requirements, and lessened product restrictions, is quite common. But liberalization of capital controls and moves to privatize heretofore government-controlled financial structures make such structural change even more important in modern emerging economies than in developed economies. All of these changes have taken place in an environment with low levels of owner-contributed equity capital due in part to previous state ownership and restrictions on both domestic and foreign ownership of financial institutions.[184]

Combining this pervasive structural change with the widespread adoption of generous government-sponsored risk subsidies or public safety nets (such as explicit or implicit uncircumscribed deposit insurance), often without an adequate supervisory framework, provides all the ingredients for a substantial increase in perverse incentives promoting both excessive risk-taking and crisis-prone financial systems.[185]

Options," B.I.S. Economic Papers no. 46, October 1996, p.5. Caprio and Klingebiel (1996) conclude that financial crises are "more costly in the developing world - losses tend to be larger relative to income than in the industrial world." Gerald Caprio and Daniela Klingebiel, "Bank Insolvencies: Cross Country Experience," World Bank Policy Research Paper 1620, July 1996, p. 10.

[184]See James R. Barth, R. Dan Brumbaugh, Jr., Lalita Ramesh, and Glenn Yago, "The Role of Governments and Markets in International Banking Crises: The Case of East Asia," paper presented at Sixth Conference on Pacific Basin Business, Economics, and Finance, Hong Kong, May 28-29, 1998, pp. 25-28.

[185] Alexander Kyei documents that most IMF member countries surveyed began to establish deposit protection schemes in the 1980s. See Alexander Kyei, "Deposit Protection Arrangements – A Survey," IMF Working Paper, WP/95/134. See footnote 3 (above) for references documenting the worsening incidence of financial crises in emerging economies. Papers by Demirguc-Kunt and Detragiache show that (1) the presence of deposit insurance in emerging economies tends to increase the probability and severity of systemic banking

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Further exacerbating this situation is the fact that emerging economies' banking sectors are usually larger as a share of financial intermediation simply because their bond and equity markets are relatively underdeveloped. This absence of developed equity markets also works to foist more risk on bank-based intermediation. Factors causing banking crises in these countries, therefore, likely will create broader financial havoc than would otherwise be the case. And because emerging economies tend to be smaller, more open, relative to larger economies such as the U.S., the potential impact of perverse incentives on mobile, international capital and foreign exchange rates in these economies can be significant.[186]

THE ROLE OF THE IMF

IMF bailouts work to solidify and fortify these perverse incentive structures in a number of ways. Since the IMF lends to countries promoting risk-taking incentives, IMF lending often supports and encourages the proliferation of these incentives. This is especially the case when, as currently, IMF lending works to help insolvent rather than illiquid banks. Moreover, by effectively creating another (international) layer of government guarantees, IMF lending serves to foster additional risk taking, particularly by large international financial institutions. IMF bailouts, after all, importantly shield these institutions from the high risk of lending to emerging economies with vulnerable banking systems. What emerging-market economies are left with, therefore, is a highly vulnerable, risk-subsidized financial system particularly exposed to foreign exchange risk. In short, IMF lending promotes both risk-taking incentive structures and foreign exchange mismatches in emerging economies.

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problems, and (2) banking crises are more likely to occur in liberalized financial systems of emerging economies. See Asli Demirguc-Kunt and Enrica Detragiache, "The Determinants of Banking Crises: Evidence From Industrial and Developing Countries," World Bank Policy Research Paper No. 1828, September 1997, and Asli Demirguc-Kunt and Enrica Detragiache, "Financial Liberalization and Financial Fragility," unpublished, March 1998.

[186] In this case, perverse incentives can work to encourage an additional form of excessive risk taking, involving betting on the foreign exchange rate.

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It is now well known that the IMF (perhaps inadvertently) promotes such perverse incentives.[187] This recognition is illustrated, for example, by recent statements of Federal Reserve Chairman Alan Greenspan, Bundesbank President Hans Tietmeyer, as well as members of the G-10, and others. Greenspan recently asserted, for example, that:

> ...an important contributor to past (financial) crises has been moral hazard....interest rate and currency risk-taking, excess leverage, weak financial systems, and interbank funding have all been encouraged by the existence of a safety net. The expectation that national monetary authorities or international financial institutions will come to the rescue of failing financial systems and unsound investments clearly has engendered a significant element of excessive risk-taking.[188]

Similarly, Tietmeyer recognized the IMF's moral hazard problem:

> The IMF should reevaluate its policies and should question itself on how far its policy generates moral hazard. The IMF should consider whether it is better to tackle problems with large sums of bailout money or whether it might be better to involve private sector creditors at an earlier stage.[189]

The seriousness of the IMF's moral hazard problem also has been recognized in the recommendations of the G-10 countries' 1996 report as well as in other recent studies.[190]

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[187] Most analysts recognize that IMF monies inevitably find their way to assist politically influential entities. As these entities come to expect this assistance, their risk-taking behavior is altered, resulting in moral hazard. The IMF also provides political cover for affected governments to impose taxes on innocent parties (i.e., the middle class) in order to finance repayment of IMF loans. By enabling the initial risk-takers to importantly circumvent the costs of their miscalculations, this IMF cover helps to further solidify moral hazard.

[188] Alan Greenspan's remarks before the 34th Annual Conference on Bank Structure and Competition of the Federal Reserve Bank of Chicago, May 7, 1998, p. 3. (parenthesis and emphasis added).

[189] Hans Tietmeyer, as quoted in *The Financial Times*, March 23, 1998.

[190] See Group of Ten (G-10), 1996, The Resolution of Sovereign Liquidity Crises: A Report to the Ministers and Governors. Basle and Washington, D.C.,

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IMPLICATIONS

Since a root cause of recent international financial problems is perverse incentives created by a combination of overly generous public safety nets, risk-enhancing changes in financial structures, and depleted capital bases, a number of important policy implications merit attention:

- Financial change fostering risk taking in the presence of both generous public safety nets and low levels of owner-contributed equity capital is a reliable leading indicator of financial crises.[191]
- Banking crises are a symptom and leading indicator of additional problems in the financial sector. Empirical studies of emerging economies show that banking crises are leading indicators for currency or balance-of-payments crises rather than the reverse.[192] Recent studies also find that variables heretofore considered "fundamental," such as fiscal and current account deficits, seem not to be associated with crises.[193]

Bank for International Monetary Fund, May. See also Morris Goldstein's recent study which argues that finding a way to reduce moral hazard created by such international lending should top the agenda. Morris Goldstein, The Asian Financial Crisis: Causes, Cures, and Systemic Implications, Institute for International Economics, Washington, DC, June 1998; p. 46.

[191] See references in footnote 7 for empirical evidence supporting this argument.

[192] See Graciela Kaminsky and Carmen Reinhart, "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems," International Finance Discussion Papers 1996-544 (March 1996), for evidence supporting this argument. See also Roberto Chang and Andres Velasco, "Financial Fragility and the Exchange Rate Regime," NBER Working Paper No. 6469, March 1998; and Jeffery Sachs, Aaron Tornell, and Andreas Velasco, "Financial Crises in Emerging Markets: The Lessons from 1995," NBER Working Paper No. 5576, May 1996, for additional evidence supporting this argument.

[193] See, for example, Michael P. Dooley, "A Model of Crises in Emerging Markets," NBER Working Paper No. 6300, December 1997, pp. 6, 7 and references cited therein. It is "on budget" fiscal deficits that seem unrelated. If contingent liabilities (including expected bailout costs) were properly factored in and accounted for, measured fiscal deficits would likely be significantly larger.

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- Studies have shown that international capital mobility is not necessarily a principal cause of recent financial crises.[194] Rather, sharp changes in capital flows are often symptoms or reflections of perverse underlying incentive structures facing financial institutions. Accordingly, policy recommendations to prevent financial crises by slowing capital mobility through taxing financial transactions, for example, may be inappropriate.
- Similarly, foreign exchange speculators are not the cause of recent financial crises. Rather, speculators recognize underlying unhealthy incentives, banking problems, and unsustainable financial conditions and take advantage of them.[195]
- Exchange rate systems of one sort or another do not necessarily cause financial (banking, currency, or balance-of-payments) crises. Rather, sharp foreign exchange rate movements often reflect underlying perverse risk incentive structures (as described above). Stable exchange rate systems require stable underlying risk-taking incentive structures. Thus, successful exchange rate or international monetary reform must be preceded by (or at least accompanied by) reform of public safety net systems so as to minimize perverse incentives for risk taking.
- The proper ordering of economic liberalization or the sequencing of financial reform is important in many emerging economies. Structural reform of the financial system, for example, should only be undertaken once an efficient,

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contingent liabilities (including expected bailout costs) were properly factored in and accounted for, measured fiscal deficits would likely be significantly larger.

[194] See Graciela Kaminsky, Saul Lizondo, and Carmen Reinhart, "Leading Indicators of Currency Crises," IMF Working Paper WP/97/79, July 1997, p. 13; Frederic Mishkin, "International Capital Movements, Financial Volatility and Financial Stability," NBER Working Paper No. 6390, January 1998, p. 28.

[195] A recent study found no empirical evidence to support the notion that hedge funds were responsible for the Asian currency crisis of 1997. See Stephen Brown, William Goetzmann, and James Park, "Hedge Funds and the Asian Currency Crises of 1997," NBER Working Paper No. 6427, February 1998.

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competent supervisory/ regulatory framework is in place to contain moral hazard. Similarly, the domestic financial system should be strengthened prior to capital account liberalization.[196]

POLICY RECOMMENDATIONS

There are alternative ways to limit the above-cited ingredients creating perverse incentives for risk taking. One approach is to improve supervision of the banking system while maintaining public safety nets. Such enhanced supervision is often favored by the domestic and international regulatory bureaucracies because it increases their budgets and influence. To some extent, this approach is embodied in some forms of IMF conditionality. An unavoidable problem is that such an approach takes years to properly implement and would likely create a permanent, bureaucratic supervisory structure.

Another way to limit these perverse incentives is to restrict or circumscribe the public safety net (or public deposit insurance) in the face of a structurally changed financial system. Over the years there have been a number of such recommendations involving, for example, proposals for co-insurance, narrow banking, subordinated debt, risk-priced deposit insurance, and mechanisms for rapid closure and resolution of insolvent banks (to minimize regulatory forbearance). The IMF has not actively promoted this alternative. Like improved supervision, such proposals would take a substantial amount of time to implement.

Another institution promoting these perverse incentives, of course, is the IMF. Accordingly, restricting additional funding to the IMF would be one way to curtail expectations of future IMF financial assistance in financial crises and hence to limit these perverse incentives. Minimizing additional, redundant layers of moral-hazard-producing public subsidization of risk is an appropriate response to this problem. Clearly, limiting additional IMF funding and additional permanent expansions of the IMF is a viable policy option. But constructive IMF reform proposals that can work to modify these perverse incentives should also be considered. Proposals to minimize IMF interest rate subsidies, for example, can work to constrain risk-promoting incentives. And provisions to promote IMF transparency can help to foster better

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[196] See, for example, Ronald I. McKinnon and Huw Pill, "Overborrowing: A Decomposition of Credit and Currency Risks," unpublished paper, November 1997, p. 25.

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risk-subsidizing activities. These features are central to the IMF Transparency and Efficiency Act of 1998 (HR 3331).

THE ECONOMIC SITUATION IN JAPAN

SUMMARY

Japan is in an economic crisis. Increasing spending on public works and lowering taxes–without permanently changing tax rates–will not only fail to create a sustainable economic recovery but will aggravate the perilous long-term fiscal problems that Japan has to face. Despite very low interest rates, Japanese monetary policy is tight, not loose. Until the Bank of Japan loosens enough to end expectations of deflation, a sustained economic recovery will remain difficult, even if Japan manages to cleanse its banking system of its large problem with non-performing loans.

JAPANESE ECONOMIC GROWTH

Japan has not been the same since the stock-market collapse of 1990-92. Its economy grew at an average annual rate of less than 1 percent from 1992 through 1995, expanded 3.9 percent in 1996, but fell back down to less than 1 percent growth in 1997. This year the economy is back in recession: GDP fell at a 5.3 percent annual rate in the first quarter, the second straight quarterly drop. The unemployment rate is 4.1 percent, a 45-year high; industrial production is 11.2 percent lower than the same time last year. In the first quarter of 1998, the Bank of Japan's (BOJ) quarterly Tankan survey, which measures business confidence, recorded its steepest decline since the first oil crisis in the 1970s. The second quarter's Tankan survey reported further declines: inventories are piling-up and businesses are cutting investment in plant and equipment.

Worse, this may be just the tip of the iceberg. A recent Working Paper from the BOJ implies that Japan's long-term growth potential may be zero. That study presents a reasonable case that, in coming decades, increases in productivity will be overwhelmed by a demographic shift toward a smaller working-age share of the population and a decline in investment capital as people draw-down their assets to finance their retirements.[197]

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[197] Matsumura, Watanabe and Uemura; Chu-choki teki na Nihon Keizai no Seicho Ryoko–Koreika To ni Tomonau Rodo Tonyuryo Gensho no Eikyo wo Chushin ni; Working Paper 98-4; analysis by Robert Alan Feldman, Chief Economist and Managing Director, Morgan Stanley Dean Witter (Japan). Another recent research paper suggests that if Japan successfully embarks on structural reforms and manages to increase the rate of growth in technology and fertility that it may increase its long-term growth rate to 1 percent per year. Yutaka Kosai, Jun Saito, Naohiro Yashiro; Declining Population and Sustained

CURRENT JAPANESE POLICY

Japan's most recent $120 billion (16.65 trillion yen) stimulus package is unlikely to lead to sustained growth. It consists of:

- $55 billion in public works,
- $30 billion in temporary income-tax rebates this year and next ($210 per taxpayer and $105 per dependent),$5 billion in incentives for business and housing investment,
- $15 billion to increase liquidity in the real-estate market
- $15 billion for government lending to small- and medium-size businesses, and
- vague pledges to lower marginal tax rates on business and workers.

This package offers only very small gains for the economy. In addition, most of the gains that do materialize would detract from Japan's future growth potential, as the fiscal stimulus won't change the incentives to work, save or invest, but would leave future Japanese taxpayers with a higher level of government debt to finance.

A much more effective fiscal policy would focus on reducing marginal tax rates, particularly the excess capital-gains tax on transfers of land. A recent survey of sixty countries' tax rates on corporate profits distributed to shareholders found Japan's to be the highest. The central government's marginal tax rates on family income and corporate profits, including capital gains, range up to 50 percent. Corporations that sell real estate face both the normal corporate tax rate plus an additional levy of up to 15 percent.

Since 1992, the Japanese government has spent almost 80 trillion yen ($600 billion) on a variety of measures to try to stimulate the economy–so far, without lasting success. Last year's budget deficit was 3.4 percent of GDP. That's the equivalent of the U.S. running a deficit of about $275 billion. If a stimulative Keynesian-style fiscal policy were the key to recovery, Japan's economy would be booming already.

In addition, Japan's demographic position makes temporary tax rebates and public-works spending particularly dangerous. At present, Japan has 4 working-age people to support each retiree; by 2015, it will have only 2.3; by 2050 the ratio will be down to 1.6. A group of economists recently performed a "generational accounting" of many of

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Economic Growth: Can They Coexist?; Papers and Proceedings of the American Economic Association (May 1998).

the world's leading economies. This kind of analysis measures the extent to which tax and spending policies would have to change so that future generations won't have to pay higher net taxes during their lifetimes than current newborns have to pay. Of all the countries in the study, Japan's fiscal situation was the worst. Japan would have to immediately and permanently cut total government spending or raise tax revenue by about 15 percent to bring its generational accounts into balance. And the longer it waits the greater the changes it will eventually need.

MONETARY POLICY

The Japanese economy is deflating. The GDP deflator was negative in 1995 and 1996, slightly positive in 1997 and now poised to fall again in 1998. Tokyo real-estate prices have dropped about 70 percent since 1990. Wages and prices at both the wholesale and retail level also appear headed downward.

This deflation is due to a tight monetary policy. The attached chart shows just how restrictive the BOJ has been. Under the Bretton-Woods agreement the dollar was pegged to $35 per ounce of gold. The yen was pegged to about 360 per dollar, effectively pegging the yen to 12,600 per ounce of gold. As the chart shows, the dollar price of gold went up to about 20 times its Bretton-Woods level by 1980, before eventually settling down to around 8 to 12 times this level. The yen price of gold started out by following a similar path to the dollar. Except, unlike the dollar, which eventually stabilized, once the yen started recovering it never stopped getting stronger.

Imagine if starting in the mid-1980s, the Federal Reserve had started tightening monetary policy so much that today it only took $100 or $150 to buy an ounce of gold, rather than about $300. The wrenching changes our economy would have undergone would have been devastating. Rather than accepting the price increases of the 1970s and trying to keep prices stable from there, the economy would have been thrown hard into reverse. Prices throughout the economy would have had to adjust downward: first real estate, then producer prices and ultimately, consumer prices, wages and salaries. This is what has been going on in Japan. A monetary policy that has paid too little heed to the importance of a fixed standard in reaching long-term price stability has been forcing the economy to deflate.

The BOJ's lending rate has been a mere 0.5 percent for almost three years; long-term rates have fallen as low as 1.1 percent. That's the lowest long-term interest rate anywhere since the early 1600s. Conventional wisdom is that with interest rates so low, monetary policy must be loose. However, what conventional wisdom misses is that

interest rates are low because people expect deflation, not because monetary policy is loose. If monetary policy were really loose, expectations of inflation would be driving long-term interest rates *up*, not down.

In times of high inflation–when money is literally losing its value versus goods and services–people scramble to convert cash into goods and services before these items get even more expensive. People will also rush to borrow, thinking that they'll be able to pay their loans back with cheaper money. Deflation can have the opposite effects. Consumers sit on their money as it will be able to buy more goods and services in the future than it can today.

That's happening in Japan. Department-store sales in March were more than 20 percent below sales in March 1997. This was not only the 12th straight monthly drop but the biggest decline since 1965, when they started collecting this data. Deflation can lead to a pileup of inventories and a slowdown in business–like in the U.S. during the Great Depression. Japan's inventories have been up 7.3 percent since last year and its inventories-to-sales ratio has hit its highest level since May 1975.

Also, the demand for credit can dry-up, as people fear having to pay back their loans with money that's more valuable than when they borrowed. The result: abnormally low interest rates. Meanwhile, those who do seek credit often get turned away, as banks can't trust collateral –like real estate–to hold its value over the term of the loan. This April, bank lending in Japan was down 2.5 percent from last year, the biggest drop on record. To put this in perspective, in the past 25 years U.S. bank lending has *never* decreased compared to the previous year, the worst performance being a 2.5 percent *increase*.

In Japan, the deflationary environment may be so strong that it outweighs any progress the country makes on other economic matters. In a deflationary environment even a healthy banking system might not lend–not to mention a system with perhaps $600 billion in non-performing loans. Also, although cutting marginal income-tax rates would help increase Japan's long-term growth, in the short-run it might exacerbate the deflation–unless the BOJ stood ready to meet an increase in the demand for yen with a higher rate of growth in the money supply.

The way to get around this problem is to end expectations of deflation and move the economy back to long-term price stability. This will require the BOJ to stop targeting interest rates (an often-ineffective policy tool during periods of deflation) and start pumping yen into the economy by buying Japanese Government Bonds (JGBs). It should do this until the yen is so plentiful that people no longer expect deflation.

An end to expectations of deflation would get consumers buying and borrowing again and banks willing to lend.

RISK FACTORS

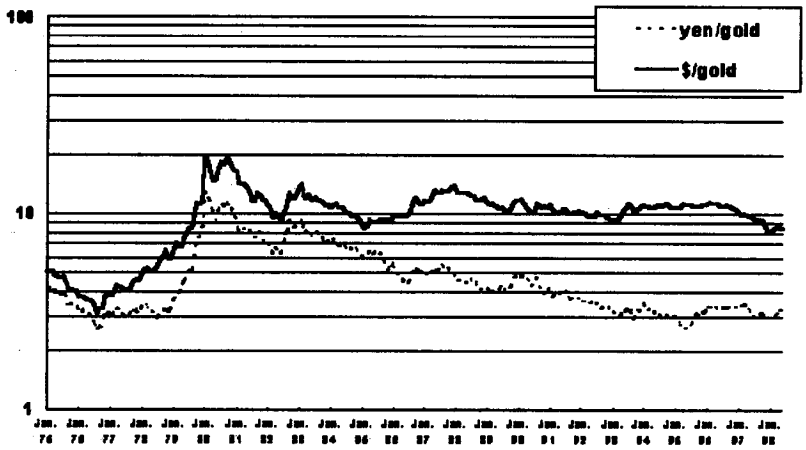
An effort to end expectations of deflation by pumping yen into the economy could at least temporarily weaken the yen. This, in turn, could raise concerns about setting off another round of devaluations in southeast Asia–a round that might even include China and Hong Kong –as these countries fear being unable to export to Japan.

This fear is overblown. Here's why.

- Japan's trade surplus is a function of the fact that it saves more than it invests. A monetary policy loose enough to end expectations of deflation would decrease saving and increase investment, as both consumers and businesses stopped postponing purchases. The resulting reduction in excess Japanese saving would lead to smaller Japanese trade surpluses.
- By boosting the Japanese economy, a sufficiently loose monetary policy would lead to increased spending–on both domestic goods and those from abroad. Japanese consumers have huge amounts of accumulated wealth. Expectations of deflation will keep this wealth from being spent, as consumers wait for prices to drop further. Price stability would "unlock" this buying power.
- As Japanese interest rates rose in response to the end of deflation expectations, the yen would rise too, at least partially countering the initial drop in its exchange value.
- If Japan both ended expectations of deflation *and* cut marginal tax rates, investment capital would flow in, leading to a growing Japanese economy, a *higher* yen and *greater* Japanese demand for foreign goods.

U.S. businesses may also be concerned about a decline in the yen due to a Japanese monetary policy that focused on ending deflation. But they shouldn't be. The yen is twice as strong against the dollar as it was in 1985; U.S. unemployment has fallen as low as 4.3 percent–a 28-year record. If the U.S. can't live with the yen weakening now, when can we? In addition, a looser monetary policy in Japan may actually increase U.S. exports, as Japanese consumers open-up their wallets, purses and bank accounts in response to an end to deflation. Also, more imports from Japan may make it easier for the Federal Reserve to avoid raising interest rates, as it would keep U.S. inflation low even as some fear the strength of our labor market.

Index of U.S. Dollar and Japanese Yen vs. Gold
(1 = Bretton-Woods' Era Peg)



CONCLUSION

Japan is in a deflationary recession. At present, it's fighting this problem with public-works and Keynesian-style tax rebates. Supply-side solutions would include a monetary policy that focuses on price stability by ending expectations of deflation and a tax policy that encourages people to work, save and invest. Ending deflation is particularly important. Without price stability, banking reforms alone might not be able to get people to borrow and banks to lend. And, with the exception of cutting the capital gains tax, lower marginal tax rates might aggravate deflation in the short term–unless done in combination with a new monetary policy. If combined, however, a new monetary policy and lower tax rates would truly stimulate Japan's economy.

RANKING MINORITY MEMBER'S VIEWS AND MINORITY STAFF REPORTS

U.S. Economy Continues to Prosper Despite Global Financial Instability

Over the last year, the U.S. economy experienced another year of strong economic growth. The current economic expansion, which began in March 1991, is soon to surpass the previous expansion, which lasted from November 1982 to July 1990, and become the longest peacetime recovery. Economic performance, as measured by traditional indicators, posted several historic records over the last year.

- The unemployment rate has remained below 5 percent during every month since July 1997. This is the first time in 25 years that the unemployment rate has been that low.
- This low level of unemployment has not translated into higher prices within the economy. Inflation, as measured by changes in the Consumer Price Index (CPI), has been relatively stable, increasing by a little over 1½ percent over the last year. Except for one year, 1986, inflation has not been this low since the beginning of the 1960s.
- The "misery index," which is a combination of the unemployment rate and changes in the CPI, is at its lowest level in over 30 years.
- The economy continued impressive job growth over the last year. Payroll employment grew by more than three million, almost twice the 40 year average of annual net job growth.
- After 20 years of stagnation, real average weekly earnings rose by 3½ percent over the last year, thereby representing an improvement in living standards for American workers.
- The improvement in wages was coupled with productivity gains of 2 percent in the non-farm business sector and 4 percent in the manufacturing sector. This recent pick-up in productivity growth has enabled workers to enjoy larger wage gains without putting upward pressure on inflation.
- Over the last four years, real nonresidential fixed investment has been more than 10 percent of gross domestic product (GDP). This investment grew by more than 13 percent just in the last year. Strong improvements in investment contributed to lifting productivity growth.
- A key domestic economic development over the past year was bringing the Federal budget into surplus for the first time in 40 years. This achievement was a result of policy changes–both

reductions in government expenditures and increases in taxes–over the last decade. In addition, higher than expected tax revenues, due to the strong economy, brought the budget into surplus earlier than projected.

Although there is a lot to celebrate in the current economic expansion, there remain several areas of concern.

- Despite the fact that the national average unemployment rate is at an historic low, there remain significant pockets of high unemployment around the country. Between 15 and 20 percent of the more than 3,000 counties in the United States experienced unemployment rates above 8 percent during the first half for 1998.
- Economic prosperity in the United States over the last year occurred against the backdrop of global financial market instability and economic crises throughout the world. What began as a liquidity shortage in Thailand turned into a series of financial crises, spreading from East Asia to Russia and possibly Latin America. The consequences of these financial crises are just beginning to be felt in the United States.
- In the past, rising Federal budget deficits have diverted capital away from productive investment in the private sector. Although the Federal budget ended Fiscal Year 1998 in surplus, this improvement was more than offset by further declines in private saving, due in part to the recent rise in wealth accumulation. The personal saving rate–the share of personal income which is not consumed–in now at an historic low level. This shortage of saving translates into insufficient resources available for robust domestic investment, thereby increasing the demand for foreign capital. This helps explain why real interest rates remain high, even as nominal interest rates continue to fall.
- The rising gap between domestic saving and investment is reflected in the worsening current account deficit. Despite strong domestic economic performance, the current account deficit grew by more than $180 billion over the last year. This represents the largest deficit, in absolute terms, in U.S. history.
- Improvements in the trade of services helped prevent a larger current account deficit. On the other hand, much of the increase in the deficit was concentrated in an increase in the

merchandise trade deficit, which grew to close to $135 billion over the same period. The financial crisis in East Asia and the strengthening of the U.S. dollar against other major trading currencies, seriously weakened crucial U.S. export markets abroad and reduced import prices domestically. As a result, U.S. exports to the Pacific Rim countries dropped by 15 percent over the last year while imports from that region grew by 5 percent. The trade deficit is expected to further deteriorate over the next year, as the full impact of the global financial crisis begins to be felt.

- The initial impact of the financial and economic crises abroad on the U.S. economy is already being felt and is expected to worsen over the next year. Economic growth is beginning to show some indication of weakening. U.S. financial markets are already experiencing the insecurity being felt abroad. And deterioration of the trade deficit has already begun to place pressure on those workers employed in import-competing and export industries. The global financial and economic crisis is expected to have a significant impact on the distribution of jobs, income and wealth of American workers over the coming year.

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Senator Jeff Bingaman, Ranking Democrat

Pockets of High Unemployment in a Low Unemployment Economy

Robert Gibbs
October 1998
preliminary draft

This series of papers, offered to the Democratic members of the Joint Economic Committee, addresses the major economic issues related to raising living standards for American workers and their families.

Pockets of High Unemployment in a Low Unemployment Economy

Robert Gibbs[1]

I. Introduction

The U.S. unemployment rate stood at 4.5 percent in June, 1998, one of its lowest points in 28 years. The decline in the national rate since 1992, coupled with reports of scattered labor shortages in occupations ranging from computer programmers to sales clerks, has dampened debate about workforce preparation and local mismatches between worker skills and job requirements. Implicit in the current complacency about unemployment is the assumption that a low national rate translates into low rates across the country.

In fact, the national rate masks considerable variation in local unemployment rates. Wheeler and Sioux counties in Nebraska experienced a 1.0 percent rate in the first quarter of 1998, while the rate in Luna county, New Mexico, topped 35 percent. Almost 100 counties nationwide had rates below 2 percent and roughly one-third were below 4 percent, a reflection of extremely tight labor markets for workers in those areas.

At the other end of the spectrum, some 320 counties in the first quarter of 1998 had rates above 10 percent. That means that 1 in every 10 U.S. counties was experiencing severe unemployment at a time when the national unemployment situation was being watched suspiciously for signs of an overheating economy. If the net is cast just slightly more widely to include counties with unemployment rates above 8 percent, the number of counties jumps to 617, or about 1 in 5 U.S. counties. These counties all had 1st quarter-1998 rates above the peak national unemployment rate following the 1990-91 recession, and so comprise an "unrecovered" group.[2] Most of these high unemployment counties are experiencing unemployment rates at least *twice* as high as the current national average.

But does it matter that a certain number of counties lie at the upper end of the unemployment rate distribution? Are these counties really important to the national economy? Although many counties with unemployment rates above 8 percent (henceforth called "high unemployment

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[1] Visiting regional economist at the Joint Economic Committee of the U.S. Congress, Minority Office.

[2] This threshold is based on the national 1990-91 recession high of 7.6 percent. Because the quarterly county employment statistics provided by BLS are not seasonally adjusted, however, using 7.6 as a threshold would probably overstate the number of counties above the threshold. On average, unadjusted 1st-Quarter national unemployment rates are .4 percentage points higher than the seasonally adjusted rates.

Table 1. U.S. County Unemployment Rates, 1998-Q1

Unemployment rate	*Number of counties*	*Percent of counties*
2 percent or lower	97	3.1
2.1 - 4 percent	904	28.8
4.1 - 6 percent	955	30.4
6.1 - 8 percent	567	18.1
8.1 - 10 percent	297	9.5
10.1 - 15 percent	238	7.6
Higher than 15 percent	82	2.6
	3140	100.0

counties") have small populations, a sizable number are major population centers, such as 4 of the 5 New York boroughs.[3] Collectively, high unemployment counties had a population of **30 million** and a workforce of **over 13 million** in 1997, about 11 percent of the national total. These counties are therefore not merely small, isolated pockets impervious to economic prosperity, but include some of the great employment centers of the United States. Nor are these counties found in only a few regions: 43 states have at least 1 county with high unemployment. In 8 states, more than 20 percent of the workforce resides in high unemployment counties. In West Virginia and New York, more than a third live in high unemployment areas.[4]

By definition, unemployment is the loss of *unrecoverable* human resources. The portion of a worker's life spent unemployed cannot be regained and the idle skills and abilities are lost permanently. Unemployment represents a double jeopardy for the economy, because it not only involves the loss of productive capacity, but it also requires the increased disbursement of public funds to those unemployed. National effects aside, high unemployment counties face depressed demand for local private goods and services, additional demands on public services, and possibly increased social pathology. Furthermore, few of them are likely to realize the goal of providing self-sustaining work to all who need it, as embodied in current welfare reform policy. For these places, a low national unemployment rate is an irrelevant statistic that says little about the experiences of local residents.

This paper explores the possibilities for improving conditions in high unemployment counties by identifying local and regional characteristics that affect the unemployment rate. The character of high unemployment counties is diverse in terms of location, population, and economic base. But they also share a number of important characteristics, many of which are sensitive to direct or indirect public policy. In brief, high unemployment counties generally have *higher* levels of the following attributes than other counties: employment in agriculture and retail trade, state unionization rates, share of residents who belong to a racial or ethnic minority, share of adults without a high school diploma, average AFDC payments prior to 1996 welfare reform legislation, remoteness from cities, physical amenities, and location in the West. These same counties have lower levels of manufacturing and wholesale trade employment, lower employment growth, smaller shares of college graduates, smaller urban populations, and are less likely to be located in the South, once other attributes have been controlled for.

It is important to keep in mind that for most of the 617 counties under discussion, unusually high rates are persistent, indicative of a much larger problem of long-term economic and social stress. Temporarily high unemployment resulting from a plant closing, for instance, affects a significant number of counties each year, and most U.S. counties are subject to this type of event at some

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[3] Manhattan's unemployment rate in the first quarter of 1998 was 7.5 percent.

[4] The eight states and the percentage of workers living in high unemployment counties are as follows: West Virginia (36.4), New York (35.3), Alaska (27.9), Montana (26.1), New Mexico (25.8), Idaho (23.5), Mississippi (23.4), and Oregon (22.5).

time or another. For the majority of high unemployment counties, however, such short-term events are an *additional* stress, and most likely a reflection of underlying conditions, such as overreliance on a declining industry. Thus, this analysis of unemployment can be read more generally as an analysis of long-term economic distress. The bad news, then, is that there are few, if any, quick fixes to persistent local problems. The good news is that the geographic stability of these problems provides an identifiable, stationary target for long-term interventions.

II. What Causes Geographical Variation in Unemployment Rates?

To understand why some counties have very high unemployment levels, it is helpful to understand why unemployment occurs in the first place, and how local unemployment rates are only partly related to national economic trends. In the simplest of economic models, unemployment occurs when the supply of workers exceeds the demand for those workers (the number of jobs available), and it persists until wages fall enough to restore supply and demand equilibrium. At the national level, this *insufficient demand* for workers, which can be traced back to a weak demand for goods and services, drives the changes in unemployment rates observed during economic downturns. Contrarily, periods of economic expansion are characterized by rising labor demand brought on by growth in the national quantity of goods and services purchased.

But sustained economic expansion alone can never drive the unemployment rate to zero. Inevitably, there is a *structural* mismatch between the requirements of vacant jobs and the skills of available workers in a particular location, due to shifts in product demand and production technology. Furthermore, even if overall skills and job requirements in the economy were equal, *frictional* unemployment would occur because individual workers and employers need time to find the most productive match.

Each of these types of unemployment--demand-deficient, structural, and frictional-- has a geographic dimension that helps to explain unemployment differences across local labor markets. Local unemployment rates may react very differently to a national economic slowdown or expansion based on their particular mix of industries, with some areas leading a national trend, and others lagging. As noted in the introduction, the industry mix will accordingly affect the persistence of unemployment. Moreover, at any point in time, demand-deficient unemployment will persist where wage rates are higher than the long-run sustainable level, given the productivity of the workforce.

It is likely, however, that much of the geographic variation in unemployment can be attributed either to rigidities in the local economic and demographic *structure*, or to the frictional forces that prevent instantaneous matching of workers and firms, and that are also affected by local characteristics. Structural mismatch will be more severe where the local industry mix is changing rapidly, or where changes in an industry's product demand leads to sudden job creation or loss.

In addition, some areas have populations that have suffered historically from chronic unemployment, weak labor force attachment, and/or limited job skills. In standard economic models, migration eliminates such structural unemployment in the long-run. But these models typically fail to consider the costs of gathering information about job opportunities in other places, the complex labor supply decisions of dual-earner households, and the psychic costs of leaving local kinship and friendship networks, all of which diminish the likelihood of employment-equalizing migration.

Frictional unemployment is a function of job turnover, the difficulty and method of job search, and the ability to hold out for the best possible offer. These, in turn, depend on the skills and education required by the job, or held by the worker. In areas with a large proportion of high-skill jobs/workers, relatively low turnover and brief periods between jobs pushes down the frictional component of unemployment.

III. How Large is the Problem of High Unemployment Areas?

The seriousness of locally high unemployment can be described by considering its magnitude and geographical distribution. That is, how many people and areas are affected by locally high unemployment, and how widespread is the phenomenon?

The 617 high unemployment counties combined had a labor force of 13.4 million people, about 11 percent of the national total in the first quarter of 1998. Some 1.5 million workers in these counties were unemployed, representing 29 percent of total unemployment in the United States. High unemployment counties can have large or small populations: 35 counties have populations of more than 100,000, and 184 counties, about a third, have populations of fewer than 20,000. The 25 largest high unemployment counties are shown in Table 2. At the top of the list are 3 of the 5 New York City boroughs, the only counties with populations exceeding one million. Scattered throughout are central counties of large urban areas, mostly along the East Coast or California. Small and medium-size high unemployment counties are distributed relatively evenly across the nation.

High unemployment counties are found in all 4 Census regions of the country. The largest number are in the South, with 281 counties, but the largest proportions of high unemployment counties within a region are the West (35 percent) and the Northeast (24 percent), while they are relatively sparse in the Midwest (12 percent) (table 3). The uneven regional distribution is particularly apparent when examined across the 9 Census divisions. Among these, the Pacific division has the highest percentage of high unemployment counties--55 percent, or 91 of 164 counties. At the other extreme, the Great Plains states have just 33 high unemployment counties, 5 percent of their total, and New England has 9 high unemployment counties, 13 percent of all counties in the census division.

Table 2. Twenty-five largest High Unemployment Counties

County	Population (1997 Est.)	Unemployment Rate
1. Kings, NY	2,240,384	10.5
2. Queens, NY	1,975,676	8.1
3. Bronx, NY	1,187,984	11.1
4. Fresno, CA	754,396	16.8
5. El Paso, TX	701,576	10.1
6. Baltimore (city), MD	657,256	9.1
7. Kern, CA	628,605	14.2
8. Hudson, NJ	551,451	8.1
9. San Joaquin, CA	542,504	12.8
10. District of Columbia	528,964	9
11. Hidalgo, TX	510,922	19.2
12. Stanislaus, CA	421,818	14.5
13. Richmond, NY	402,372	8.1
14. Monterey, CA	361,907	17.2
15. Tulare, CA	353,175	18.3
16. Cameron, TX	320,801	12.8
17. Santa Cruz, CA	240,488	10.4
18. Atlantic, NJ	236,569	8.7
19. Yakima, WA	218,318	13.1
20. Barnstable, MA	205,128	8.5
21. Merced, CA	196,123	19.7
22. Butte, CA	194,160	10.2
23. Webb, TX	183,219	9.7
24. St. Lucie, FL	179,559	8.2
25. Dona Ana, NM	168,470	9.9

Table 3. Regional distribution of High Unemployment Counties (HUCs)

Region/Division	No. of HUCs	Pct. of all HUCs	Pct. of total in region
Northeast	52	8	24
Midwest	127	21	12
South	281	46	20
West	157	25	35
Total	**617**	**100**	**20**
New England	9	1	13
Middle Atlantic	43	7	29
East North Central	106	17	18
West North Central	93	15	26
South Atlantic	82	13	17
East South Central	94	15	22
West South Central	33	5	5
Mountain	66	11	24
Pacific	91	15	55
Total	**617**	**100**	**20**

Although found in all regions, high unemployment counties are nonetheless notable for their marked geographic clustering, as the map in Figure 1 illustrates. In the West, for instance, large portions of the Pacific Northwest, the Central Valley of California, and the Colorado Plateau are high unemployment areas. The South's high unemployment counties lie primarily in the Rio Grande Valley, the lower Mississippi Valley, especially in the Delta region, and the Appalachian Highlands. Unemployment in the Northeast and Midwest is clustered in the northern tier counties of Minnesota, Michigan, New York, and Maine. Note, too, that high unemployment is unusual in the broad central section of the country, and relatively infrequent along the Atlantic coast.

The fact that these clusters are geographically well-defined suggests strongly that regional characteristics are key determinants of differences in unemployment rates. High unemployment counties are a fairly stable group--the counties they comprise tend to experience high unemployment over an extended period. The next section examines in more detail the persistence of unemployment in these 617 counties.

IV. How Persistent are High Unemployment Rates?

One line of thinking on unemployment is that there will always be a group of counties with high unemployment, but because local economies are dynamic in the long-run, the distribution of unemployment across the nation will change over time as local characteristics change. Economic hardship, in other words, gets spread around, much as many households move into and out of poverty.

But in fact, the economies of places with distressed labor markets are not particularly dynamic. One way to see this is to compare the high-unemployment counties' rates with average unemployment rates over a number of years. Unfortunately, this comparison is not straightforward, because the variation of county rates around the average can be expected to differ during years of economic expansion and contraction. If for example, the threshold for high unemployment is 8 percent when the U.S. average is 5 percent, what would the relevant threshold be if the national average of county unemployment is 8 percent? Merely holding the difference between the average and the threshold constant (at 3 percentage points) could be inappropriate if the variance of rates around the 8 percent average changes.

One solution is to convert county unemployment rates into standardized rates that measure how many standard deviations a given unemployment rate is from the average. A threshold of 0.6 standard deviations above the mean is used to be consistent with the 8 percent high unemployment threshold in 1998. By this measure, most of the counties classified as "high unemployment" in 1998 were high unemployment counties as far back as 1979. During the 1980's, an average of 58 percent of the current high unemployment counties fell above the standardized threshold in a given year; in the early 1990's, two-thirds of more of these counties

did so. Furthermore, two-thirds of the 617 high unemployment counties in 1998 were above the high-unemployment threshold in a majority of the 19 years available for this study, and 135 (22 percent) of these were high unemployment counties *every year* since 1979.

V. Characteristics Associated with High Unemployment Counties

Geographic variation in the three types of unemployment discussed above arise from the economic, demographic, and natural resource characteristics of local areas. Although they are not linked in a one-to-one correspondence, the theoretical types are useful for describing expected relationships between local attributes and unemployment rates. In this section, these relationships are outlined and preliminary evidence of their presence is marshaled. The key local factors to be considered can be grouped into market-related, locational, demographic, and human capital characteristics.

Market-related characteristics

The most obvious association between unemployment and other attributes of the local area is the ability of the economy to generate a sufficient number of new jobs to match the labor supply. Where employment growth is high, unemployment should be lower unless there is an unusually strong influx of migrants. Labor supply growth could indeed outstrip growth in demand for a number of reasons. High wages, for example, have consistently been found in the social science literature to attract working-age migrants into a region. Their impact on job growth is less clear. If local wages are not reflected in a commensurate level of productivity, job growth (and therefore labor demand) will suffer.

Even where wages are not especially high, migrants may be attracted to non-economic aspects of the local area, such as its climate and topography. Many migrants are willing to accept a lower wage and a greater uncertainty of employment in exchange for an enhanced quality of life, thus raising supply relative to demand. The attraction of physical amenities has increased relative to economic incentives for interregional migrants during the 1990's, suggesting that the association between amenities and unemployment may have increased as well (Cromartie and Nord, 1996).[5]

County unemployment rates necessarily reflect patterns of growth and decline among local industries. Counties where employment is concentrated in "old" industries, or industries with rapidly changing labor requirements may experience high unemployment. In addition, there is evidence that a diversified economy, particularly one based on services, cushions workers against

[5] Physical amenities are measured later in this report as a standardized index that combines attributes related to climate, elevation, topography, and proximity to water. The amenity index is scaled to a normal distribution with mean equal to zero and a unit variance.

cyclical downturns and allows quicker transitions to new jobs. A comparison of major industry distributions by unemployment rate, however, reveals that although high unemployment counties have slightly higher employment shares in agriculture, mining, and government, there are no sharp differences in the mix of industries between high unemployment counties and all other counties (table 4).

For nonmetropolitan counties, an alternative measure of industry-specific influence in the local economy exists that uses income as well as employment share. A comparison of county types by industry "dependence" developed at the U.S. Department of Agriculture's Economic Research Service (ERS) shows that high unemployment counties are more likely to be dependent on the employment and income derived from government services and mining than counties with lower unemployment rates. This is not surprising. Government-generated income and employment tends to dominate only when basic industrial activity is weak, or other kinds of economic stress such as low income exist. Mining-dependent counties face chronic sharp boom-and-bust cycles. At any given time, a substantial number of these counties will exhibit the effects of depressed world demand for their particular mineral.
Nonmetropolitan counties with high unemployment are much less likely, however, to be farm-dependent, a finding seemingly at odds with the lack of impact shown by simple employment share above. The fact that the economic typology is not applied to metropolitan counties, where farming-related unemployment rates are higher, may explain the apparent discrepancy. This relationship will be discussed in more detail below.

Locational

One of the most striking features of high unemployment counties is their strongly nonmetropolitan character. Just 9 percent of the counties lie in metro areas, compared with 30 percent of non-high unemployment counties (table 5). The 56 metropolitan high unemployment counties are evenly spread among the Northeast, the South, and the West; only 2 are found in the Midwest. High unemployment counties are particularly unusual among counties in metropolitan areas of one million people or more (3 percent, or 11 out of 311 counties), but their incidence rises among smaller metropolitan counties (table 6). For nonmetropolitan counties, the highest incidence of high unemployment counties is among counties with urban populations of less than 20,000 that are not adjacent to a metropolitan area. Adjacency to a metropolitan area appears to matter, in part because adjacent nonmetro counties are more diversified economically, and in part because their commuting links with urban centers increase workers' abilities to search for new jobs.

Human capital

The probability of being unemployed rises sharply for lower levels of education. Adults without a high school diploma face unemployment rates more than four times as high as college graduates. Many of the least-educated adults are in insecure, low-quality jobs, leading to higher rates of turnover and greater vulnerability to occupational and industrial change. Areas where a large proportion of adults have low educational attainment often have trouble attracting

Table 4. Industry mix of HUCs and non-HUCs

Industry	HUCs		non-HUCs	
	(percent of total employment)			
Agri., Forestry, Fishing	2.1		1.6	
Mining	1.5		1.2	
Construction	5.2		5.6	
Manufacturing	13.5		13.7	
Trans., Comm., Utilities	4.1		3.9	
Wholesale Trade	2.4		3.3	
Retail Trade	16.2		16.1	
FIRE	4.1		4.8	
Services	21.3		22.3	
Government	17.8		16.1	
Total	100.0		100.0	
County Typology (nonmetro only)	#	%	#	%
Farm-dependent	90	17	466	27
Mining-dependent	56	10	91	5
Manufacturing-dep	125	23	390	22
Services-dependent	67	12	256	15
Government-dep	90	17	165	9
Nonspecialized	117	21	371	21
Total	545	100	1738	100

Table 5. Urbanicity of High Unemployment Counties

Metropolitan Status	No. of HUCs	Pct of all HUCs	Pct of all counties in status
Metro	56	9	7
Nonmetro	561	91	24
Total	**617**	**100**	**20**
Rural-urban Continuum			
Large core metro	9	1	5
Large fringe metro	2	<1	2
Medium metro	23	4	7
Small metro	22	4	11
High urban, adjacent	22	4	16
High urban, nonadjacent	28	5	25
Low urban, adjacent	119	19	19
Low urban, nonadjacent	183	30	28
No urban, adjacent	60	10	24
No urban, nonadjacent	149	24	28
Total	**617**	**100**	**20**

Table 6. Metro status by region, High Unemployment Counties

Status		Northeast	Midwest	South	West	Total
Metro	#	18	2	19	17	**56**
	%	32	4	34	30	**100**
Nonmetro	#	34	125	22	140	**561**
	%	6	22	47	25	**100**

prospective employers, or for that matter, keeping those whose main motivation for staying is the low local wage level. For these reasons, both structural and frictional unemployment tends to be elevated in counties with lower average education levels. Average years of schooling in high unemployment counties is 10.6 years vs. 10.9 years in other counties.[6]

A more telling comparison between high unemployment counties and other counties is the share of adults at very high and very low levels of educational attainment. For instance, 13 percent of all counties have a high proportion of college graduates (15 percent or more of the adult population) but less than 3 percent of high unemployment counties do. Similarly while 1 in 5 counties nationally have a high proportion of high school dropouts (20 percent or more), the rate for high unemployment counties is greater than 1 in 3.

Demographics

Worker demographics also vary greatly from place to place. These often operate at the individual level, but affect aggregate unemployment as well. Worker characteristics that affect entry and exit from the labor force, such as age, are associated especially closely with geographic differences in frictional unemployment. Very young workers (teenagers and young adults) move into and out of jobs with greater frequency than older workers because they are less likely to assume the financial responsibility of maintaining a household, and because they are still in the job-sampling phase of their work lives. Hence counties with a greater share of young workers in the labor force should see higher unemployment rates. A similar argument could once be made for women's labor force participation, but their employment dynamics have changed dramatically since the 1970's.

The legacy of institutionalized discrimination and separation that marks the landscape in many parts of the United States is evident in the strong association between high unemployment rates and the geographic concentration of racial and ethnic minorities. Blacks, Hispanics, and/or American Indians make up a significant share of the population (at least 25 percent) in 31 percent (192) of high unemployment counties, compared with 19 percent of all other counties (table 7). Similarly, 32 percent of all counties with significant minority populations are also high unemployment counties. The strongest association is for American Indians -- 57 percent of counties where they form a significant presence experience high unemployment.

In some cases, however, the persistent association of racial or ethnic minorities with specific types of work creates a specious connection between minority presence and unemployment. A clear example of this can be found in the West, where Hispanics are disproportionately employed in agriculture, and where agriculture often depends heavily on seasonal labor. Of the region's 446 counties, 45 percent of the 60 counties with a large proportion of Hispanics are high unemployment counties, compared with 34 percent of other western counties. But of the 425 western counties where agriculture employs less than a tenth of the workforce, there is no

[6] The average educational attainment in low-unemployment counties is 11.5 years.

Table 7. Racial and Ethnicity Characteristics in HUCs and non-HUCs

County type	No. of HUCs	Pct of all HUCs	Pct of non-HUCs	Pct of low unempl. counties	HUCs as pct of all counties
Black	118	19	11	7	29
Hispanic	50	8	4	3	33
Native American	26	4	1	<1	57
All minorities	192	31	16	10	32
All HUCs	617	100	---	---	19

difference in the incidence of high unemployment between counties with a large Hispanic population and those without.[7]

VI. Relative Importance of County Characteristics

Although unemployment rates are the outcome of many factors working simultaneously, some of these factors can be expected to play a large role in explaining geographical difference in unemployment, while others will have a more marginal influence. Furthermore, many of these factors are difficult to disentangle. Rural counties, for example, tend to have fewer college graduates, and both rurality and lower education levels are likely to be associated with higher unemployment rates. In some cases, seemingly important factors may derive most of their explanatory power from their linkage with other factors--rurality's apparent effect on unemployment may work mostly through education and industrial structure. To separate and compare the marginal contribution of each variable, the characteristics are included together in a series of regression analyses of county unemployment rates.

The findings reported here are based on two models of unemployment. First, local characteristics are related to simple county unemployment rates, which allows a quantifiable relationship to be established between specific rates and each characteristic. Next, these same characteristics are related to each county's presence in, or absence from, the high unemployment group. The first analysis, then, uses local attributes to help explain a county's unemployment rate and the second uses them to "predict" whether a county falls into the high unemployment category.

All of the characteristics discussed so far are considered simultaneously in the analysis. A few additional variables that have been found to influence unemployment rates in other studies are also included. These are the average union membership rate for the state and the state's average AFDC payments in 1995. High unionization rates have historically been associated with slower economic growth and more rigid local wage scales. Both of these conditions are expected to increase unemployment. It has also been hypothesized that high AFDC payments might increase frictional unemployment by raising the lowest wage rate that job seekers are willing to accept (known as the "reservation wage").

Finally, two measures of the surrounding local labor market area have been added to capture nearby effects -- the unemployment rate and the average earnings per job for all counties in the commuting zone other than the county of interest. In many small counties, where out-commuting

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[7] Among the 384 western counties in which agricultural constitutes less than 5 percent of total employment, Hispanic counties are *less* likely to be high unemployment counties (26%) than are non-Hispanic counties (31%).

is common, the job market in adjoining counties may be of equal or greater significance to local residents.

How well do local characteristics explain county unemployment rates?

As shown in table 8, local characteristics explain a little more than half the variation in unemployment rates across counties.[8] In the discussion that follows, the impacts of individual characteristics on the unemployment rates of *all* counties in the United States are described. A partial estimate of the contribution each type of characteristic makes toward explaining geographical variation is also provided.[9]

Market-related characteristics

A number of the market-related local characteristics are strong predictors of unemployment rates, particularly **employment growth** in the previous year and the state's **union membership** rate. Nationally, the unemployment rate in a county with employment which grew one standard deviation above the mean (about 4 percent) was 0.4 percentage points lower than a county with average growth. A 10-percentage-point higher unionization rate translates into a 1 percentage point higher unemployment rate. For example, if a county in a state with a 10 percent union membership rate has 6 percent unemployment, an otherwise identical county in a state with a 20 percent union membership rate could expect to have 7 percent unemployment.

At the national level, **earnings per job** in the *county* is not a significant predictor of unemployment, although earnings in the entire *commuting zone* is significant, indicating that commuting tends to even out unemployment across counties within the local area. The earnings effect is relatively small, however -- a difference of $5,000 in average earnings per job yields a 0.2 percentage-point lower unemployment rate. In other words, to reduce unemployment in a county by a percentage point (say, from 8 to 7 percent), average earnings per job would have to fall $25,000, more than the earnings difference between the richest and the poorest counties in the nation in 1996.

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[8] The remaining variation is due to several causes, including the inevitable omission of other factors that may influence unemployment rates, which is many cases are unquantifiable or difficult to measure. Additionally, the factors that are included in the model are subject to measurement error, which always reduces the explanatory power of those factors.

[9] Technically, the absolute impact described in this paper is measured by the regression coefficient associated with each independent variable. Since variables are measured in different units, however, and/or have different variances, direct comparisons using the regression coefficients can be misleading. We therefore use a standardized estimate (the regression coefficient divided by its standard deviation) as a broad, though still imperfect, measure of relative importance.

Table 8. Relationship between Local Characteristics and Unemployment Rates

Characteristic	Significant? (Direction)	Standardized effect of additional unit on
Market-related		
Employment growth, 1996-97	Yes (-)	-0.12
Earnings per job, 1996	No	
State unionization rate	Yes (+)	0.18
Average state AFDC payment	Yes (+)	0.06
Percent employed in:		
Agriculture	Yes (+)	0.03
Manufacturing	Yes (-)	-0.04
Mining	No	
Government	No	
Wholesale Trade	Yes (-)	-0.10
Retail Trade	Yes (+)	0.11
Transport., Commun., and Utilities	No	
Finance, Insurance, Real Estate	No	
Construction	No	
Commuting shed's Unemployment	Yes (+)	0.42
Commuting shed's Earnings per job	Yes (+)	0.07
Locational		
Midwest (compared with Northeast)	No	
South	Yes (-)	-0.08
West	Yes (+)	0.09
Small, remote (compared with large	Yes (+)	0.15
Amenity index	Yes (+)	0.07
Demographic		
Percent black	Yes (+)	0.13
Percent Hispanic	Yes (+)	0.09
Percent ages 16-19	No	
Human capital		
Percent with college degree	Yes (-)	-0.13
Percent with less than high school	Yes (+)	0.27

Key industries affecting unemployment include **agriculture** and **retail trade** (greater employment *boosts* unemployment), and **manufacturing** and **wholesale trade** (greater employment *decreases* unemployment).[10] In addition to the seasonal effects of agriculture and retail trade, the workforce in these industries tends to have lower average education levels and lower occupational status for a given level of education. Retail trade tends to employ younger workers who have higher-than-average turnover rates.

The **unemployment rate in the rest of the commuting zone** was added to control for external factors that may nonetheless affect workers in the county. As one would expect, a county's unemployment rate correlates reasonably well with unemployment rates elsewhere in the commuting zone, each percentage point increase in the rest of the zone raising the county's rate by half a percentage point.

Locational characteristics

Overall, the locational factors discussed earlier continue to affect local unemployment rates even after controlling for confounding influences. **Rural** and **western** locations are associated with higher unemployment, as are **high-amenity** locations. The **South** continues to exert a negative influence on unemployment rates, although its effect is dampened after controlling for demographic factors and union membership rates. The effects of being a small remote county are particularly notable, increasing unemployment by more than 1 percentage point relative to the core counties of large metropolitan areas.

Demographic characteristics

The proportion of the population that is **black** or **Hispanic** is strongly, positively associated with unemployment rates. Controlling for all other factors, a county in which one-third of the population is black will have an unemployment rate 1-percentage point higher than a county with no black residents. The impact of the proportion of Hispanic residents is slightly smaller. The proportion of the population that is 16-19 years old, the **teenage** cohort, appears to have no effect on geographic differences in unemployment. This may be because there is relatively little variation in the proportion of the population composed of teenagers.

Human capital characteristics

The educational composition of the adult population emerges as one of the key determinants of differences in local unemployment rates. A one-standard-deviation increase in **college**

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[10] The lack of seasonal adjustment in the unemployment data may play a role in the prominence of some industries. Agriculture's impact is likely to be greater during the first quarter of the calendar year, when labor demand is lowest. Likewise, retail employment typically falls following the December holidays. However, the impact of both agriculture and retail employment is significant (although smaller) even in models of average annual unemployment.

completion rates (about 6 percentage points) shaves nearly half a percentage point off the county unemployment rate. A similar increase in the proportion with **less than a high school diploma** would raise the rate by over half a point.

The relative importance of local characteristics varies by region

Stephen Marston (1985) first observed that conclusions about the relationship between unemployment rates and local characteristics are unlikely to hold in all places. That is, not only do characteristics vary from region to region, but the fundamental relationship between characteristics such as employment growth and unemployment rates can vary as well due to a variety of structural forces.[11] Thus, otherwise well-targeted policies designed to alter a single risk factor (say, education levels) may have much greater impacts on unemployment in some regions than others.

A separate analysis of each of the four Census regions confirms that the structure of unemployment is quite different from place to place (table 9). In the Northeast, the size of the college-educated population is a dominating influence on unemployment rates. The size of the manufacturing and trade sectors are also of much greater importance. Surprisingly unimportant are several characteristics that are key at the national level--commuting zone effects, employment growth, demographic characteristics, and the proportion of adults who do not have a high school diploma.

Another case of regional differences is the role of agriculture, which is sensitive to its production context. In the Midwest, greater agricultural employment is strongly associated with lower unemployment rates, the reverse of both the national results and of those in the West. The discrepancy in the findings for agriculture is largely explained by regional differences in the kinds of crops grown and in the way that agricultural production is integrated into the local economy. In the West, counties with substantial agricultural employment are often metropolitan. These counties rely on labor-intensive production, typically requiring large numbers of migrant or seasonal workers who are officially unemployed part of the year. Great Plains agriculture is relatively capital intensive, employing far less seasonal labor, and generating very low rates of unemployment.

Also more important in the Midwest is the role of natural amenities -- again, contrary to the West, where amenity differences are of no significance. Meanwhile, the West is different from the Northeast in that college completion is insignificant, but having a higher proportion of the

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[11] A good example of this is the relative openness of the local economy. Local employment growth may have a greater impact on the unemployment rate if there are structural barriers to in-migration. Another example is the strength of internal transactional relationships between establishments in the area. Where these relationships are strong, factor productivity (including labor) is likely to be higher due to agglomeration forces, and a higher wage level is sustainable without depressing labor demand and raising unemployment.

Table 9. Regional divergence from the national model

Characteristic	Northeast	Midwest	South	West
Market-related				
Employment growth, 1996-97	NS			
Earnings per job, 1996				
State unionization rate	NS			NS
Average state AFDC payment	NS	NS	NS	L
Percent employed in:				
Agriculture	NS	(-)	NS	L
Manufacturing	L			(+)
Mining			Sign. (-)	
Government				
Wholesale Trade	L			
Retail Trade				
Transport., Commun., and Utilities				
Finance, Insurance, Real Estate				
Construction		Sign. (+)		
Commuting shed's Unemployment Rate	S			S
Commuting shed's Earnings per job	NS			
Locational				
Small, remote (compared with large urban)				L
Amenity index	NS			NS
Demographic				
Percent black	NS			NS
Percent Hispanic		NS		NS
Percent ages 16-19				
Human capital				
Percent with college degree	L			NS
Percent with less than high school	NS	S		

NS=Not significant at .05 level; L=Standardized estimate > by at least .1; S=Standardized estimate < by at least .1; Sign.=Now significant at .05 level; ( ) indicates change of sign.

adult population without a high school diploma is very much related to higher unemployment. Perhaps most intriguing, greater manufacturing employment is associated with higher unemployment rates in the West, possibly due to the specific type of manufacturing occurring there, or perhaps a result of the lingering effects of the severe 1990-91 recession in California, and Boeing's recent woes in Washington State.

The South most closely mirrors the United States as a whole in the relative importance of local characteristics. Its chief differences are in the effect of local earnings and employment growth, both having somewhat greater influence on the region's unemployment rates than is the case nationally.

VII. Characteristics that Distinguish High Unemployment Counties

As expected, most of the local attributes that figure prominently in determining county unemployment rates in general are also key in predicting high unemployment counties (table 9). The salient differences between the two models are that agricultural employment, manufacturing employment, and location in the South no longer significantly affect a county's chances of being classified as "high unemployment". The apparent contradiction between models suggests that these attributes may be important in predicting unemployment rates *within* categories (i.e., "high-unemployment" or "other"), but not *between* categories.

Other characteristics do appear to make a difference between categories. A Midwestern location now decreases the likelihood of being a high unemployment county, and higher proportions of young adults increase that likelihood.

VIII. Summary and Policy Implications

High unemployment, defined as a rate exceeding 8 percent, afflicted some 617 counties containing over 13 million workers during the first quarter of 1998. Although these high unemployment counties are found in every region of the nation, they tend to be grouped into geographic clusters. Despite their wide distribution across the country, they often share a number of economic, demographic, and locational features that distinguish them from the more prosperous areas of the United States.

High unemployment counties overall have *higher* levels of the following attributes than other counties: employment in agriculture and retail trade, state unionization rates, share of residents who belong to a racial or ethnic minority, share of adults without a high school diploma, average AFDC payments prior to 1996 welfare reform legislation, remoteness from cities, physical

amenities, and location in the West. These same counties have lower levels of manufacturing and wholesale trade employment, lower employment growth, smaller shares of college graduates, smaller and less-urban populations, and are less likely to be located in the South, once other attributes have been controlled for.

Two-thirds of counties with high unemployment have suffered from insufficient labor demand for most of the last two decades, with unemployment rates well above the national average. This stability in *relative* unemployment rates is not surprising because many of the most important characteristics associated with high unemployment change very slowly over time. For example, the racial and ethnic mix of the local population may change rapidly in urban areas, but in rural areas, where high unemployment counties are concentrated, such changes are gradual if apparent at all. Likewise the education mix of the workforce responds primarily to changing skill requirements. But most of the recent industrial change occurring in high unemployment counties, as in most other places, is from manufacturing to services, which changes the skills requirements of local employers in unpredictable ways, depending on the particular types of services where employment growth is concentrated.

The relationship between particular local characteristics and the unemployment rate can strengthen or weaken over time as well, and be a potential source of movement into and out of high-unemployment status. A good example is the changing effect of women's labor force participation. In the 1970's, women were more likely to be unemployed than men due to their more frequent entry into and exit from the workforce, as well as to the nature of jobs deemed to be "woman's work." But by the 1990's, the gender gap in unemployment had all but disappeared, and the share of the labor force composed of women is no longer an important source of geographic variation in unemployment (U.S. Department of Labor, 1993).

Regressions of unemployment rates on data from each year of the 1990's confirm that these relationships do change over time. Over the course of the decade, counties with large proportions of minorities became more likely to have high unemployment, as did agricultural counties. Other associations with unemployment are weaker now than was true a decade ago, including the links between unemployment and the proportion of local workers engaged in manufacturing, retail trade, and government; state union membership rates, and the proportion of the working-age population who are teenagers.

What does this mean for policy interventions? First, one must distinguish policies focused on *changing local attributes* from policies designed to *change the relationship* between unemployment and the attribute. The effect of women's labor force participation is a case of the latter. Women's participation rates still differ considerably across counties. Yet policies that removed barriers to working women, such as child care tax credits and stronger Federal enforcement of anti-bias and sexual harassment laws reduced turnover and encouraged job ladder promotion, which in turn played a role in weakening the link between gender and unemployment. Most policies related to demographic associations with unemployment would necessarily be of this nature. For example, counties with large minority populations would benefit from a variety

of policies intended to strengthen antidiscrimination laws and to promote the quality of education and training for disadvantaged groups.

Other policies would need to be developed to change the local characteristic itself if local unemployment rates are to be reduced. In most cases this requires a commitment to long-term, comprehensive (not piecemeal) economic development that is rarely possible if carried out by local stakeholders alone. A recent series of reports based on ERS's Rural Manufacturing Survey concludes that recent fundamental changes in production technologies and management practices, both requiring a more highly-skilled workforce, is as evident in rural areas as in cities. More establishments, including those in high unemployment counties, could be encouraged to participate in this "New Economy" if the proper investment incentives were more widely available, or if these incentives were better targeted to areas with high unemployment. Such incentives would attack persistent unemployment from several angles because they would help alter the industry mix as well as the education and skill mix of the area.

Policies designed to raise local educational attainment without simultaneously creating high-skill work would prove less effective, but may still be useful in communities where intercounty commuting is a feasible alternative to local employment. At least one previous study has demonstrated that college graduates from disadvantaged areas will often return to them because of social and family ties, even when job prospects are inferior to those of other destinations (Gibbs, 1998). Although they may not work in their county of residence, they create income for local consumption, and are unlikely to experience the job instability of their less-educated peers. Hence raising "locally-grown" college graduates can be a good investment for non-remote counties afflicted with persistently high unemployment.

As one section of the analysis in this paper suggested, not all anti-unemployment policies could be applied across high unemployment areas with uniform results. Recall, for example, that the association between agricultural employment and unemployment was negative in the Midwest, but strongly positive in the West. Thus a policy that attempted to ameliorate unemployment by encouraging the transfer of workers from farming to other jobs would have little impact in the former region, but could make a real difference in the latter. Likewise tax incentives aimed at promoting advanced production technologies in rural manufacturing establishments would both encourage manufacturing and the presence of college graduates. Yet northeastern counties would find this strategy far more compelling than those in the West as a way of reducing unemployment. One implication of this diversity is that it should be considered carefully whether a proposed policy is more sensibly implemented at a state, or even local, level rather than nationally.

Another potential problem with "one-size-fits-all" policies is that not all high unemployment counties exhibit most of the local attributes associated with high unemployment. For example, 239 high unemployment counties have adult educational attainment levels *above* the average for all counties. Diversity of conditions should not be a stumbling block to creating local unemployment solutions, but again, a call to consider the proper level of public intervention (federal, state, local), and to target assistance according to local needs rather than a broad-brush

approach. Note, too, that while many of these counties lack a number of the critical ingredients for high unemployment, nearly all of them possess at least one major risk factor. To illustrate, if educational attainment levels, presence of racial/ethnic minorities, employment growth, and urbanization/remoteness are considered simultaneously, only 22 of the 617 are atypical high unemployment counties in *all* of these attributes.

It must be acknowledged that effective and sensible remedies may not exist in all cases. Clearly a policy to reduce the physical amenities of a county for the sake of reducing unemployment would encounter stiff opposition. Neither would it improve the welfare of workers in the long run to enact policies to discourage unionization efforts. Even where remedies do exist, the ability to change a characteristic or its association with unemployment may be limited by deeply-embedded historical or economic realities. Counties with large proportions of blacks and Hispanics have legacies of underinvestment in human and physical capital, and of low-paying, unstable jobs, which affect their attractiveness for prospective new employers as well as their ability to generate new entrepreneurial activity internally. Without a fundamental shift in the mix of jobs, policies aimed at equality in hiring and promotion can only work at the margins of unemployment reduction.

Finally policies designed to reduce unemployment without considering other measures of workers' well being create more problems than they solve. Local economic development initiatives aimed at attracting *any* industry, for instance, may well increase employment. Yet if average new job quality is low, areas that pursue this strategy also increase the risks associated with a high-turnover labor force and employers who view the county as a convenient source of cheap labor, at least until a better location can be found. For some counties, this may be the only feasible approach, but it should always be a last resort.

The preferable anti-unemployment strategy, from both a local and a national prospective, should proceed along two broad lines: 1) aggressive human capital investments in school quality, college enrollment, and job training; 2) concurrent assistance and encouragement of New Economy employers, who demand a higher-skill workforce and are less exposed to the threat of competition from cheaper labor elsewhere. Recall that earnings and unemployment were found in this analysis to be very weakly associated. A county need not fear being saddled with a "high-wage/high-unemployment" labor mix if high wages flow from a well-prepared workforce engaged in advanced production processes. On the contrary, as the global economy becomes increasingly integrated, high wages *and* employment levels are likely to form a necessary partnership to ensure local prosperity in the next century.

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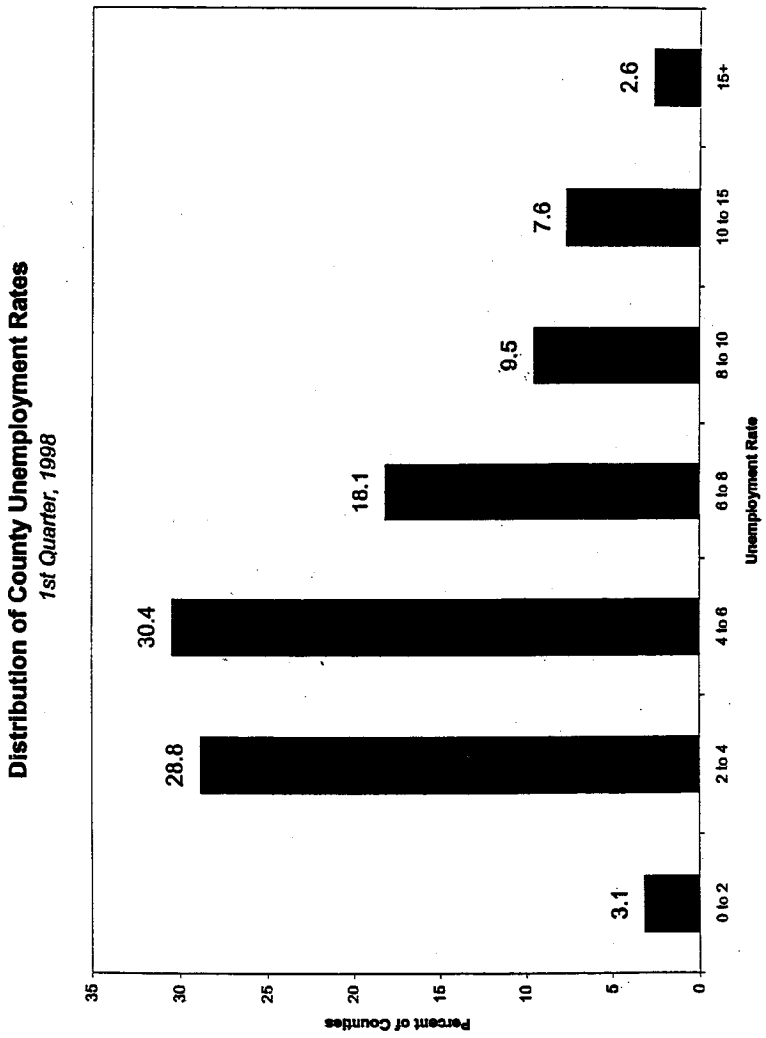
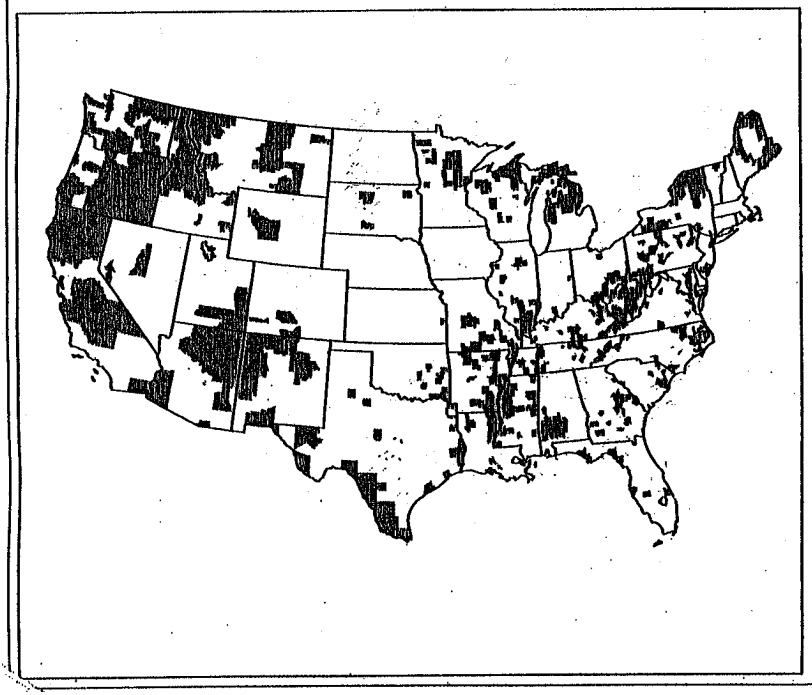
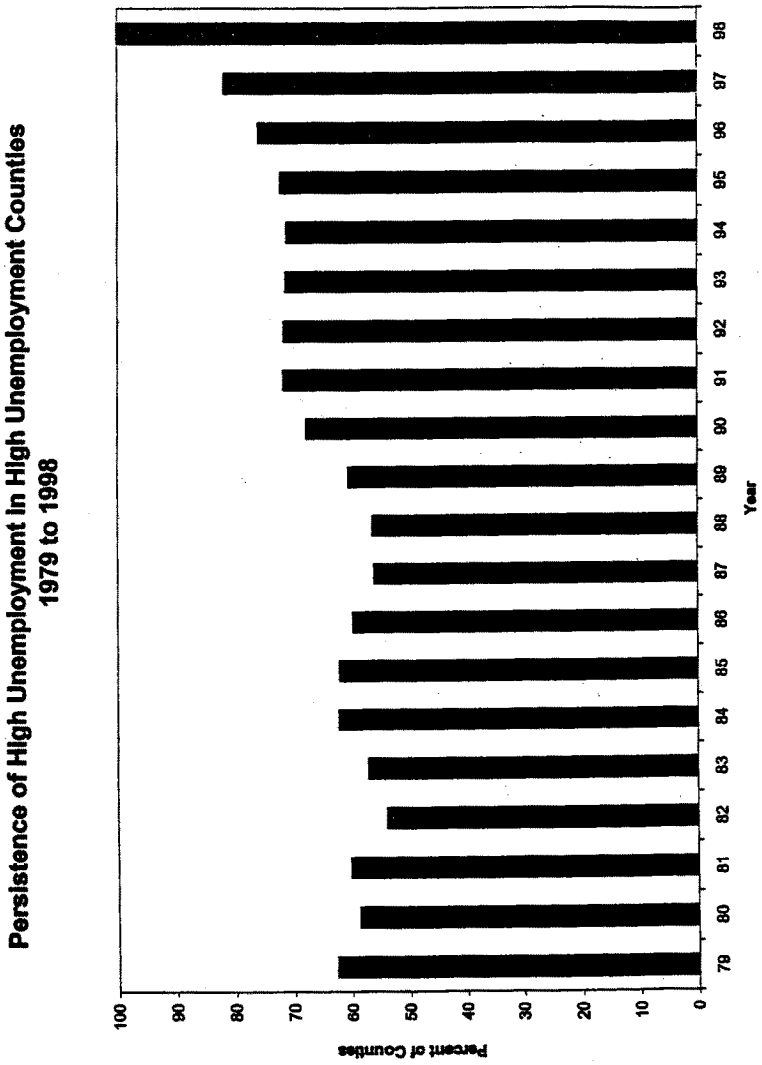


Source: Joint Economic Committee, Minority

High Unemployment Counties in the U.S.

Rates greater than 8 percent in 1998-1Q shown in gray





Source: Joint Economic Committee, Minority Staff

Characteristics of Low and High Unemployment Counties

Based on unemployment rates for the 1st quarter of 1998

	Important	Low Unemployment (<= 8 %)	High Unemployment (>8 %)	Very High Unemployment (>10 %)
County Group Characteristic				
Total number		*2525*	*617*	*320*
		(percent with characteristic)		
Employment Loss, 1996-97	*	*35*	*45*	*47*
High Earnings (>30K per job)	*	*23*	*13*	*13*
"Large" Black Pop (>25%)	*	*11*	*19*	*21*
"Large" Hispanic Pop (>25%)	*	*4*	*8*	*12*
"Large" Indian Pop (>25%)		*1*	*4*	*4*
"Large" Minority Pop (>25%)	*	*16*	*31*	*36*
"Large" College Pop (>20%)	*	*15*	*3*	*2*
"Large" Dropout Pop (>40%)	*	*16*	*36*	*41*
Northeast		*7*	*8*	*4*
Midwest		*30*	*32*	*33*
South	*	*52*	*34*	*29*
West	*	*11*	*25*	*33*
Metro	*	*31*	*9*	*8*
Nonmetro	*	*69*	*91*	*92*
Characteristics of nonmetro				
Farming-dependent	*	*27*	*16*	*16*
Services-dependent		*15*	*12*	*12*
Nonspecialized		*21*	*21*	*18*
Manufacturing-dep		*22*	*22*	*18*
Govt.-dependent	*	*9*	*16*	*21*
Mining-dependent	*	*5*	*10*	*10*

Relationship Between County Characteristics and Unemployment Rates

An increase in	**employment growth, 1996-97,**	**lowers** the unemployment rate by **0.41** percentage points
An increase in	**local earnings per job**	**raises** the unemployment rate by **0.24** percentage points
An increase in	**state's unionization rate**	**raises** the unemployment rate by **0.64** percentage points
An increase in	**average state AFDC payment (1995)**	**raises** the unemployment rate by **0.22** percentage points
An increase in	**employment share in agriculture**	**raises** the unemployment rate by **0.12** percentage points
An increase in	**employment share in manufacturing**	**lowers** the unemployment rate by **0.13** percentage points
An increase in	**employment share in wholesale trade**	**lowers** the unemployment rate by **0.36** percentage points
An increase in	**employment share in retail trade**	**raises** the unemployment rate by **0.39** percentage points
An increase in	**percent Black**	**raises** the unemployment rate by **0.47** percentage points
An increase in	**percent Hispanic**	**raises** the unemployment rate by **0.30** percentage points
An increase in	**share of adults with college degree**	**lowers** the unemployment rate by **0.46** percentage points
An increase in	**share of adults without a HS diploma**	**raises** the unemployment rate by **0.95** percentage points
An increase in	**the value of the amenity index**	**raises** the unemployment rate by **0.23** percentage points
Residence in	**the South**	**lowers** the unemployment rate by **0.27** percentage points compared with residence in the North
Residence in	**the West**	**raises** the unemployment rate by **0.33** percentage points compared with residence in the North
Residence in	**a small, remote county**	**raises** the unemployment rate by **0.51** percentage points compared with residence in a large city.

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The 1990s Economic Expansion:
Who Gained the Most?

Bruce W. Klein
September 1998

This series of papers, offered to the
Democratic members of the Joint Economic Committee,
addresses the major economic issues related to raising
living standards for American workers and their families.

The 1990s Economic Expansion: Who Gained the Most?

Bruce W. Klein

Executive Summary

The economic expansion that began in March 1991 has been widely touted as the longest peacetime expansion of the last 50 years. By implication, Americans today should be enjoying rising household incomes and expanded economic opportunities. This study set out to determine if this has in fact happened, and how the fruits of the expansion have been shared byAmericans of different income levels. The analysis takes a closc look at the recovery's effects on five different income groups.

The results of the study are unexpected and disturbing. The 1990s recovery has been longer, yet less robust than previous periods of expansion. The primary beneficiaries of the expansion were those with the highest incomes, whose incomes grew. By contrast, 80 percent of the population experienced only very small increases in their income -- roughly, between 1 and 4 percent increase -- during the first 6 years of the expansion. A rising tide may lift all boats, as President John F. Kennedy was fond of saying, but it may not always lift all boats equally.

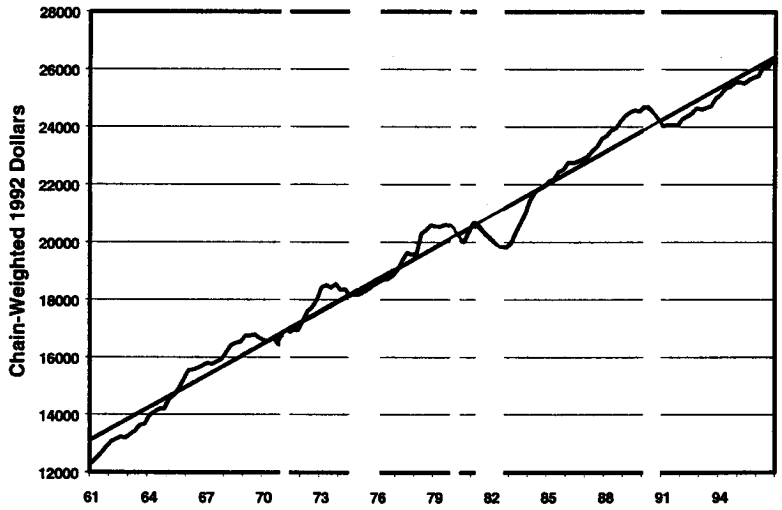
A closer look at the recovery reveals that there were marked differences between the first phase of the expansion, from 1991 to 1993, and the second phase, from 1993 to 1996. During the "Bush recovery" of 1991 to 1993, the 4 lower income groups experienced income *losses*. Only the very rich, who constitute the top 5 percent of the population, benefitted substantially. By contrast, during the "Clinton recovery" (1993 to 1996), all groups experienced at least some income growth. Still, it took until 1995 for the incomes' of the lower 3 income groups to surpass their 1991 levels.

The paper concludes that Congress, the Administration, and the Federal Reserve should pursue ways of boosting wages and closing the income gap. Specific recommendations are made to maintain policies that are non-inflationary, yet pro-expansionary policies that shift income to, and create opportunities for, individuals without a high school education, and policies that encourage households with middle and lower incomes to save and invest.

I. The 1990s Economic Recovery

All free market economies experience business cycles and the United States has experienced 6 such cycles since 1961.[1] During each cycle, gross domestic product (GDP) has grown during the upswing (recovery) and dropped or leveled off during the downswing (recession). Recoveries are also associated with a fall in unemployment levels, a rise in disposable personal income, and higher levels of consumer confidence and spending.

FIGURE 1: PER CAPITA GDP AND THE BUSINESS CYCLE, 1961 TO 1997



Shaded areas represent recessionary periods.
Solid line represents the trend.

Figure 1 shows how per capita GDP has fared over the business cycles between 1961 and 1997. In general, per capita income tends to fall during recessions and begin to rise during recoveries -- moving from below the 36-year trend (the solid black line) to above trend. Per capita GDP during the 1991 to 1996 recovery does not appear to follow this pattern -- it remains below trend until 1996.

In 1961, President John F. Kennedy spoke of the effects of an economic expansion in terms of a rising tide lifting all boats. The idea has become part of common economic wisdom and its implication is that as an economy recovers, all households are made better off -- higher income, lower unemployment, expanding opportunities, and more purchasing power. It does not appear that this maxim holds for the current recovery which began in 1991. This paper takes a close look at the relationship between the 1990s expansion and changes in income across households.

The current recovery began in March 1991. Overall, it has been characterized by a rapid rise in the stock market, near constant or declining prices for consumer goods, rising pay for all highly skilled workers, new opportunities for highly-skilled women, and the lowest unemployment rates in 30 years. Individuals with equity investments and advanced degrees, especially in technical fields, have tended to do well during this recovery. These individuals have been able to take advantage of the capital-intensive and skill-intensive characteristics of the recovery.

From the start of the expansion through the 4th quarter of 1997, total growth for the economy as a whole has been 17.3 percent, with a respectable average annual growth rate of 3.1 percent. Overall income measures showed smaller but positive increases during the expansion. Median household income rose 2.3 percent over the 1991 to 1996 period; mean household income rose 7.9 percent; and disposable personal income recorded a 12.8 percent increase.

But totals and averages hide important details of the story. The first few years of the expansion witnessed anemic growth. For the first 2 quarters of the expansion, GDP grew at an average annualized rate of only 0.8 percent, and only 1.3 percent in the third quarter. The first five years of the 1990s recovery were less robust than the first five years of all other recoveries since 1961 (Makinen, 1996).

Growth began to accelerate in 1993. The upward movement was accompanied by record stock market performance, higher pay for technically-skilled college graduates, and salary growth for women with advanced degrees. These two periods of the recovery -- referred to in this paper as the "Bush recovery" of 1991-1993 and the "Clinton recovery" of 1993-96 -- showed very different patterns of both growth and income distribution. Part of the differential may be explained by a time lag, which is often encountered in recoveries. Declines in unemployment lag behind GDP growth and until unemployment drops, household incomes are slow to improve.

Comparisons With Other Recoveries

The 1990s recovery produced widely different affects across income groups, a result that runs contrary to expectations about the nature of economic expansions. Table 4 compares the current expansion to 5 other recoveries beginning in the 1960s.

Table 4: Average Quarterly Changes in Per Capita Gross Domestic Product During Recent Recoveries

Date and Length of Recovery (according to NBER)	Average Quarterly Change in per capita GDP
February 1961 to December 1969 (36 quarters)	$120.42
November 1970 to November 1973 (12 quarters)	$176.08
March 1975 to January 1980 (19 quarters)	$133.05
July 1980 to July 1981 (4 quarters)	$91.75
November 1982 to July 1990 (31 quarters)	$158.52
March 1991 to December 1996 (23 quarters)	$100.09

Average Quarterly Change in GDP over 36 years (144 quarters): $97.25

The 1990s recovery is the second weakest in terms of per capita GDP growth, posting a $100.09 average quarterly increase (through 4th quarter 1996), compared to averages ranging from $91.75 to $176.08 for the five other recoveries. Equally telling is that income for individuals in 4 of the 5 income groups did not recover to their 1989 levels (the peak year of the 1980's expansion), despite 6 years of recovery. (See Table 5 below.)

Table 5
Comparison of 1989 and 1996 Mean Income Levels

Year	Low	Low-Middle	Middle	Upper-Middle	High
1989	$8,884	$22,018	$36,599	$55,362	$114,499 (adj.)
1996	8,596	21,097	35,486	54,922	115,514

Note: Data are in 1996 dollars. Source: U.S. Bureau of the Census, Current Population Survey and an adjustment factor from unpublished Bureau of the Census data.

II. The Recovery as Experienced by Various Income Groups

To determine what happened in both phases of the 1990s recovery, we examine the effects of the expansion between 1991 and 1996 on households in five income groups. The five income groups represent five equal-size slices (called quintiles) of total population. That is, quintiles are constructed so that 20 percent of the population falls into each group. The quintiles and their household income ranges are as follows:[2]

- Low income — Up to $14,768
- Low-middle income — $14,769 to $27,760
- Middle income — $27,761 to $44,006
- Upper-middle income — $44,007 to $68,015
- High income — Above $68,015

These household income figures represent the total annual amount of cash income of all members residing within a single housing unit. Cash income includes wages and salaries, self-employment income, interest, dividends, government cash welfare, and pensions.

Wages

The most important element of income for all but the richest of Americans is wages and salaries. To examine the typical wages earned by workers in each quintile, wages are grouped into ten equally-sized slices (deciles).[3] As useful background information, Table 1 presents hourly wages for the top earners in each decile, for male and female workers, between 1991 and 1996.

TABLE 1: HOURLY WAGE BY TOP OF DECILE, 1991 TO 1996

MALE WORKERS

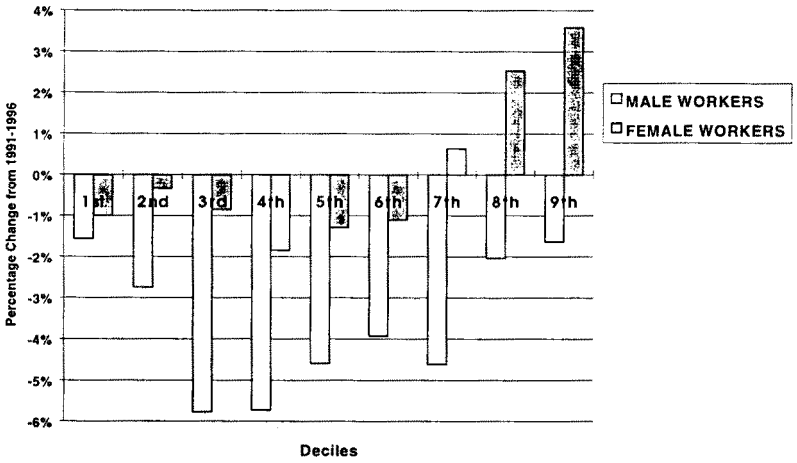
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
1991	$5.77	$7.28	$9.01	$10.65	$12.42	$14.50	$17.13	$20.15	$25.69
1992	$5.66	$7.15	$8.81	$10.57	$12.26	$14.30	$16.83	$19.99	$25.58
1993	$5.60	$7.16	$8.71	$10.60	$12.10	$14.19	$16.64	$19.89	$25.75
1994	$5.54	$7.11	$8.48	$10.26	$11.83	$13.97	$16.50	$19.89	$25.61
1995	$5.65	$7.14	$8.49	$10.20	$11.97	$13.98	$16.43	$19.64	$25.61
1996	$5.68	$7.08	$8.49	$10.04	$11.85	$13.93	$16.34	$19.74	$25.27
Percent Change 1991 to 1996	**-1.6**	**-2.7**	**-5.8**	**-5.7**	**-4.6**	**-3.9**	**-4.6**	**-2.0**	**-1.6**

FEMALE WORKERS

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
1991	$5.01	$5.96	$7.01	$8.15	$9.31	$10.84	$12.56	$15.00	$19.22
1992	$5.08	$5.92	$6.97	$8.16	$9.34	$10.96	$12.54	$15.15	$19.55
1993	$5.08	$6.00	$7.02	$8.18	$9.39	$10.90	$12.91	$15.54	$19.70
1994	$5.03	$5.92	$6.94	$8.04	$9.27	$10.73	$12.71	$15.56	$20.00
1995	$4.98	$5.94	$6.95	$7.99	$9.18	$10.58	$12.57	$15.36	$19.73
1996	$4.96	$5.94	$6.95	$8.00	$9.19	$10.72	$12.64	$15.38	$19.91
Percent Change 1991 T0 1996	**-1.0**	**-0.3**	**-0.9**	**-1.8**	**-1.3**	**-1.1**	**0.6**	**2.5**	**3.6**

Figure 2 displays a summary of the data, which shows that hourly wages declined for all male workers during the 1990s expansion and for all but the top 3 deciles of female workers. Wage declines during the expansion help explain the income results experienced by 4 of the 5 income groups.

FIGURE 2: CHANGE IN HOURLY WAGES FOR MEN AND WOMEN BY WAGE DECILES, 1991 TO 1996



Another way to examine trends in wages is to look at the association between hourly wages and education. Table 2 presents these data for 1991 through 1996, for male and female workers.

TABLE 2: AVERAGE HOURLY WAGES OF MEN AND WOMEN BY EDUCATIONAL LEVELS, 1991 TO 1996

MALE WORKERS

	LESS THAN HIGH SCHOOL	HIGH SCHOOL	SOME COLLEGE	COLLEGE COLLEGE	ADVANCED DEGREE
1991	$9.76	$12.40	$14.50	$19.73	$25.68
1992	$9.76	$12.44	$13.80	$20.07	$25.21
1993	$9.59	$12.30	$13.69	$19.97	$25.35
1994	$9.42	$12.38	$13.63	$20.13	$25.98
1995	$9.19	$12.22	$13.50	$20.12	$26.02
1996	$8.85	$11.95	$13.37	$19.80	$25.70
PERCENT CHANGE 1991 to 1996	-9.3	-3.6	-7.8	0.4	0.1

FEMALE WORKERS

	LESS THAN HIGH SCHOOL	HIGH SCHOOL	SOME COLLEGE	COLLEGE COLLEGE	ADVANCED DEGREE
1991	$7.22	$9.34	$11.08	$14.59	$19.22
1992	$7.51	$9.32	$10.80	$15.06	$19.14
1993	$7.50	$9.32	$10.83	$15.07	$19.46
1994	$7.48	$9.39	$10.71	$15.27	$20.70
1995	$7.19	$9.21	$10.50	$15.28	$20.12
1996	$6.69	$9.12	$10.53	$15.08	$20.27
PERCENT CHANGE 1991 to 1996	-7.3	-2.4	-5.0	3.4	5.5

Wages for men at all educational levels either dropped slightly or stagnated during the recovery period. Wages for women without a college degree declined as well. Women with college and advanced degrees were the only group to experience a sizable increase in wages during the recovery (3 to 5 percent). Weak income performance for workers without higher degrees is a result of many factors, including employers' increased demand for specialized highly-skilled employees, and reduced demand for semiskilled manufacturing employees.

Summary of Effects by Income Group and Phase

The 1990s expansion was experienced differently across income groups. In the first 6 years of the expansion, 80 percent of the population experienced positive but very small increases in their income[4] -- roughly, between 1 and 4 percent. Only the highest income group experienced a substantial increase (7.5 percent), while the top 5 percent did best of all (19.3 percent increase). Table 3 presents annual mean income by quintile for 1991 to 1996 and percent changes over time.

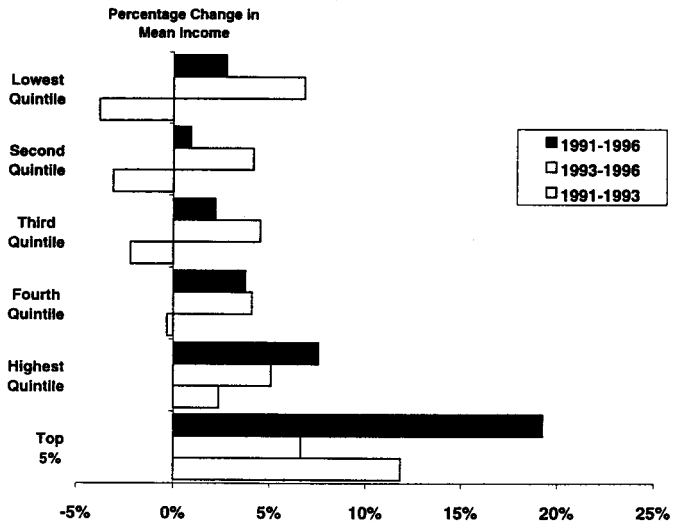
TABLE 3: MEAN INCOME BY QUINTILE AND PERCENT CHANGE, 1991 TO 1996

	Lowest Quintile	Second Quintile	Third Quintile	Fourth Quintile	Highest Quintile	Top 5 percent	Mean	Median
1991	$8,367	$20,907	$34,729	$52,942	$107,412	$168,732	$43,685	$34,706
1992	$8,150	$20,332	$34,255	$52,584	$107,800	$172,230	$43,435	$34,261
1993	$8,048	$20,257	$33,956	$52,769	$109,942	$188,697	$44,983	$33,922
1994	$8,218	$20,353	$34,286	$53,353	$112,164	$193,789	$45,665	$34,158
1995	$8,597	$20,999	$35,113	$53,977	$112,642	$194,404	$46,265	$35,082
1996	$8,596	$21,097	$35,486	$54,922	$115,514	$201,220	$47,123	$35,492
Percent Change 1991 to 1996	2.7	0.9	2.2	3.7	7.5	19.3	7.9	2.3
Percent Change 1991 to 1993	-3.8	-3.1	-2.2	-0.3	2.4	11.8	3.0	-2.3
Percent Change 1993 to 1996	6.8	4.1	4.5	4.1	5.1	6.6	4.8	4.6

Most notably, the recovery resulted in very different income profiles during its two phases. During the Bush recovery of 1991 to 1993, the 4 lower income quintiles showed slight income *losses* (-0.3 percent to -3.8 percent). Even the highest quintile showed only a modest 2.4 percent increase in income. Only the top 5 percent of the population benefitted substantially, with an almost 12 percent increase over the 3-year period.

It would seem that 1993 was a pivotal year; thereafter, incomes in all groups were on the rise. Between 1993 and 1996, mean income rose 4 to 7 percent across the five quintiles, an average increase of 4.6 percent. It is important to note that it took until 1995 for the lower 3 quintiles to surpass their 1991 income levels. Figure 3 presents the percentage change in income for each quintile during the 2 phases of the recovery.

FIGURE 3: CHANGES IN HOUSEHOLD INCOME BY QUINTILE DURING THE BUSH AND CLINTON RECOVERIES



Interestingly, the lowest and the highest income groups experienced the largest income changes. The top 5 percent income group, as noted above, enjoyed an overall increase of 19.3 percent over the 6 year period, much of which came from the large increase in 1992 to 1993 (9.6 percent). The lowest income group experienced the largest losses during the Bush recovery (-3.8 percent), and the largest gains during the Clinton recovery (6.8 percent). The middle quintiles, on the other hand, experienced more moderate results each year, with gains and losses of roughly 1 percent annually.

A more detailed description follows for each quintile, focusing on educational backgrounds and trends in wages and other sources of income.

Effects by Income Group

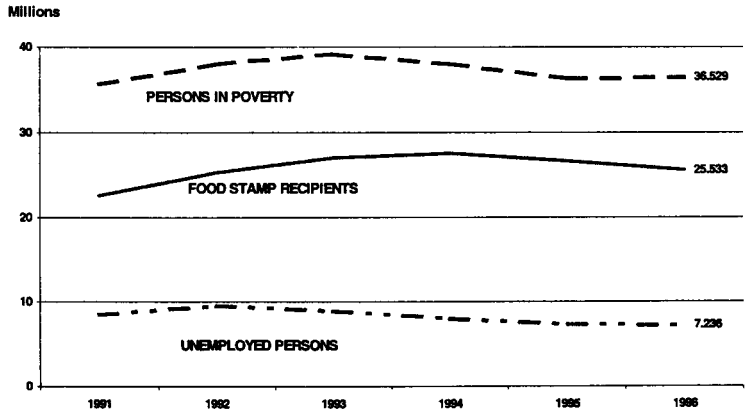
Low-Income Households

In 1996, low-income households had a mean income of $8,596. (See Table 3.) The upper limit of $14,768 in household income for this group is below the poverty threshold of $16,036 for a household of four persons.

Wages earned by low-income households declined during the current expansion. Between 1991 and 1996, both men and women in the lower deciles of the wage distribution experienced declines in real wages (see Figure 2 and Table 1). The current minimum wage of $5.15 an hour yields only $10,300 annually, which is $2,341 below the 1996 poverty threshold for a family of one adult and two children, and $515 below the poverty level for one adult and one child. As noted, this lowest income group experienced the sharpest decline in income during the Bush recovery (-3.8 percent) and the largest increase (6.8 percent) during the Clinton recovery. There is no single reason to explain this pattern.

The low and low-middle income groups include a large proportion of people who are unemployed, on welfare, and/or recipients of Food Stamps. The impact of wage stagnation on these two quintile can be seen in the large number of people receiving Food Stamps and living below the poverty line. Figure 4 presents key poverty indicators during the 1990s recovery: 36.5 million Americans were living in poverty in 1996 and 25.5 million people received Food Stamps.

FIGURE 4: FOOD STAMP PROGRAM PARTICIPANTS, UNEMPLOYED PERSONS AND POOR PERSONS, 1991 TO 1996



Low-income individuals who receive welfare payments -- which are not indexed to inflation -- saw their buying power substantially erode during the recovery. Between 1991 and 1995, average monthly benefits per family declined 13.1 percent in real 1995 dollars (*The Green Book,* 1996).

The one bright spot for this income group is the decline in unemployment. So many new jobs were created in the current expansion that the number of people on welfare began declining even before the implementation of the welfare reform measures (Council of Economic Advisors, 1997).

Since 1991, unemployment has continued to decline steadily, reaching the lowest levels in more than a generation. Indeed, higher employment levels and an increase in the average number of hours worked are the primary reasons for the net gain in income, despite stagnating wages, by the low-income group.

Low-Middle Income Households

Households in the low-middle income group had an annual income between $14,769 and $27,760 in 1996 and an average income of $21,097. Male earners in these households had wages that mostly fell in the third, fourth, and fifth deciles ($7.08-$11.85 per hour) and female earners fell in the third to sixth deciles ($5.94-$10.72). Male workers in these deciles were hard hit during the 1991 to 1996 period, with wage cuts of about 5 percent. Female workers in the third to sixth deciles had essentially stagnant wages during the recovery.

Most men and women in the low-middle income group have a high school education or less. A small portion of the women have attended college. As Table 2 shows, hourly wages of men with less than a high school education declined 9.3 percent, or $.91, on average between 1991 and 1996.

Middle-Income Households

Income levels for the middle group of households have stagnated during the expansion. Mean income in 1996 was $35,486, and actual income ranged from $27,761 to $44,006. Male workers in this group of households were concentrated at or above the middle of the pay distribution, but none were in the top 10 percent. Their wages range from about $10 to $20. The men in these households were primarily high school and college graduates. Female workers were concentrated in the fourth to seventh deciles of wages, on average earning from $6.95 to $12.64 per hour. The women were mostly high school graduates, some attended college or and some had a college degree. Between 1991 and 1996, the wages of men in this group dropped 2 to 5.7 percent, and the wages of women remained about constant.

Despite the rapid and large increase in stock prices during the course of the current expansion, stock holdings of the middle-income group have not increased significantly. Half of all families with incomes between $25,000 and $50,000 owned stock either directly or indirectly through retirement accounts, such as 401(k) plans, but their median holdings were only $8,000 (Kennickell et al., 1997). This amount of holdings does not provide enough dividends or capital gains to significantly supplement earnings.

Most homeowners have more equity in their home than any other asset. Nationally, average home values have kept just slightly above inflation. Between 1991 and 1997, the real median sale price of existing homes averaged a gain of 0.7 percent per year, or 0.85 percent at a compounded rate. Even computed as a return on a 20 percent downpayment, this equates to a 4.3 percent annual return -- better than a passbook savings account but worse than the stock market.

Upper-Middle Income Households

The upper-middle group ranged in income from $44,007 to $68,015, with a mean income of $54,922. Working men in these households were in the top 20 percent of wage earners with hourly earnings of $16 or more. Men's wages in the top 20 percent of the distribution declined slightly during the expansion. Working women in this group were in the top 50 percent of earners and had hourly wages in 1996 from about $9 and above. They had at least some college and possibly an advanced degree, while the men usually had a college degree or an advanced college degree.

Wages for men in this group declined slightly since 1991, and wages for women were about the same or better than at the recovery's start. Upper-middle class workers are among the highest paid in the economy and have experienced very little wage decline, if any. They are the beneficiaries of the shift in employers' needs to highly-skilled technical workers. On average, wages of all college graduates tend to be 1.67 times higher than wages of high-school-only graduates. Wages of advanced degree holders are 2.2 times higher than wages of high-school-only graduates.

About half to two-thirds of this group owned stock, with holdings up to $40,000, although most of those in the high end were elderly householders. Median stock holdings are below $20,000, an amount that is starting to be significant for income generation.

High-Income Households

For the highest income quintile, household income started at $68,016 and had a mean of $115,514 in 1996. Working men in this group were concentrated in the top 10 percent of earners and working women were in the top 20 percent of women earners. Most of the members of this group worked in highly-paid occupations, such as law, medicine, software systems engineering, and industries, such as finance, computers, and communications. Income gains in the 1990s expansion were asset-intensive, skill-intensive, and oriented towards proving economic opportunities to women. This group was well-equipped to benefit from the expansion and did so.

The top 5 percent highest-income households fall within this quintile. In 1996, the lower limit of the top 5 percent started at $119,540 and had a mean of $201,220.[5] In 1995, the median net worth for the top 5 percent was about $500,000, and about $250,000 for those in the lower 15 percent of the high-income quintile.[6] Median stock holdings were about $50,000 for the low end and about $100,000 for the high end.[7]

Assets and stock holdings at this level accumulate significant amounts of income which may be used to increase current consumption or saved for retirement and other uses. Moreover, the return on stock holdings has been excellent in the 1990s. Between March 1, 1991 and December 1, 1997, Standard and Poor's 500 average rose 1.5 times, and the Dow Jones Industrial Average

rose 2.7 times. This rise in asset value is likely to widen the gap at retirement time between income groups that accumulated stock-based savings in the 1990s and those that did not.

Extrapolating to 1997

Household income data are currently only available through 1996. To address changes between 1996 and 1997, one source of comparable data is real per-capita personal disposable income -- a measure based on aggregate economic activity which includes income that does not get distributed to households. The two measures track each other rather closely. On average between 1991 and 1996, personal disposable income rose 1.4 percent while mean household income rose 1.5 percent. In 1997, disposable personal income rose by 2 percent. If the relationship between the two income measures continues to hold, overall real mean income can be expected to have increased by a healthy 2.1 percent in 1997. Since increases in the overall mean during the expansion have been greater than or about equal to the means in the lower 4 quintiles, it is reasonable to conclude that income of all groups will have grown by at least 2 percent in 1997, thus posting another year of income growth during the Clinton recovery.

III. Public Policy Recommendations

Income gains during an economic expansion which result in widening the distribution of income is unwelcome news. A widening income gap exacerbates the economic conditions of lower-income groups, limits opportunities for upward mobility, and makes the American dream an increasingly elusive concept for the majority of Americans. Given the nature of the current recovery, policies may be needed to correct for the shifts in income distribution and boost the income of lower income groups.

Three broad recommendations emerge. First, policies that are pro-expansionary, yet non-inflationary should be maintained and expanded, where possible. Second, policies that shift income to, and create opportunities for, individuals without a high school education continue to be needed. And third, policies should be enacted to encourage the middle-income and low-middle income groups to save and invest more.

1. Pro-expansionary policies. The current expansion has thus far produced very gradual changes in income for many Americans. GDP growth in 4 of the years between 1992 and 1997 has been below the average postwar expansionary growth rate (3.1 percent). With such gradual performance, it becomes difficult to spread the benefits of an economic expansion over the entire population. Some workers have not yet experienced the benefits of the expansion or many more have benefitted to a much lesser degree extent than others. Some industries, occupations, and asset holders have prospered while others have not.

Although all income groups on average have probably met and exceeded their 1989 income levels, the current recovery may need to extend a few more years in order to reach hard-pressed households and depressed areas. Mayors across the country are just beginning to see improvements in their poor neighborhoods.[9] The continuing expansion has created labor shortages in some locations. These shortages are difficult for business, but create dramatic

opportunities for workers to get advances in training and move into higher-paying jobs. This is particularly true for high school graduates.

In order to enable the benefits of the expansion to flow to the least advantaged groups, the Federal Reserve must exercise caution in tightening monetary policy, waiting for hard evidence of inflation before making any moves. The Administration should promote growth by encouraging investment, trade, and employment. Raising the minimum wage, and raising public awareness of the availability of the Earned Income Tax Credit (EITC) could also help lower-income households.

2. Creating opportunities. As technological change permeates the work world, workers without a college education will continue to experience a constant or growing earnings gap with their college educated counterparts. Workers with some college or an associates degree generally have less earning power than those with 4-year college degrees, and workers with less than a high school education face the most severe earnings outlook.

Even modest changes to encourage completion of high school and college would be beneficial, and the federal government has a good track record of sponsoring such programs. Education policies aimed at expanding GED programs and college degree completions are possibly among the most cost effective approaches. Both educational efforts can be handled at the state and local levels through existing federal programs. Remote-site courses, computer-link courses, and weekend and evening sessions give adults the flexibility to complete a diploma or a 4-year college degree and still work and care for themselves and their families.

To expand opportunities for people with low income, special training vouchers could be issued that provide training at the right time and in the right place. For example, local organizations coordinating job training might be subsidized for training pre-qualified, low-income applicants for specific job vacancies identified by employers. The option of providing relocation expenses and services for welfare recipients who find jobs in other locations could also be revisited.

3. Saving and investment. Another way to increase national income in addition to job earnings is to improve the quality and quantity of investment. Increased personal saving is an important ingredient to increasing investment. At least one author strongly indicates that asset accumulation is the way out of poverty (Sherraden, 1991). It can be encouraged even among the lowest income groups and is effective at building wealth. One approach is embodied in the Assets for Independence Act. The Act includes a demonstration program of dedicated savings accounts for low-income families. Account funds would be matched by the federal government in conjunction with a third party such as a non-profit community-based organization. Account funds could only be used for purchasing homes, funding small businesses, or paying for post-secondary education.

In another approach, Senator Kerrey (D-NE) has proposed a universal child savings account. Deposits into the account would begin at birth and could involve federal resources such as credits and tax deferments. Such a savings account would start *all* children off with "money in the bank."

For the middle class, an effective strategy for building wealth through asset accumulation involves regular purchases of a stock or a mutual fund. Such a strategy is equivalent to income averaging, which allows investors to pay the average price for equities over time instead of coming into the market all at once and taking on the added risk of purchasing at above-average prices. Recently, Congressman Saxton (R-NJ), Chair of the Joint Economic Committee recommended a $200 interest and dividend exclusion from adjusted gross taxable income for the middle class and below. An exclusion of this nature, if properly promoted by the banking and finance industry, could stimulate middle-income groups to start investing.

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1. 1961 is used as the starting point for this analysis because some of the statistics used cannot properly be applied to earlier periods.

2. The quintiles were constructed using 1996 income data. The figures are in 1996 constant dollars which permits comparisons across time excluding price inflation.

3. Although there are 10 deciles, the tenth decile is open-ended. Table 1 displays only the nine lower categories.

4. Although median income is a better measure of central tendency for the entire income distribution, the mean is appropriate in the four bounded income groups, and for comparative purposes the mean is also used in the high-income group.

5. This mean income figure may be skewed upward somewhat by a small group of "superstars" in certain high-paying white-collar occupations and in the sports and entertainment industries (Frank and Cook, 1995). For example, a lawyer's median weekly salary, excluding the self-employed, was $1,149 in 1996, but superstar lawyers earned $1 to $3 million per year.

6. For comparison purposes, the median net worth for the middle-income group was $55,000 in 1995. These are estimates interpolated from data in Kennickell et al., 1997.

7. Based on linear interpolation of data in Kennickell et al., 1997.

8. Discussion at the U.S. Conference of Mayors, February 1998, Washington, DC.

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The Impact of Mismeasured Inflation on Wage Growth

Dean Baker

September 1998

This series of papers, offered to the Democratic members of the Joint Economic Committee, addresses the major economic issues related to raising living standards for American workers and their families.

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The Impact of Mismeasured Inflation On Wage Growth

Dean Baker

Executive Summary

Recent calls for adjusting the consumer price index (CPI) downward, as recommended by the Boskin Commission, could have a significant impact on federal spending and income taxes. A subject less well studied is the potential effect of a CPI adjustment on wages and living standards. This analysis set out to determine if errors in the government's measurement of inflation in the past have actually affected the path of wage growth in the economy.

A situation that offers some insights occurred during the inflationary period of 1967-1982. During that time, an important component of the CPI -- the rate of inflation in owner-occupied housing -- was calculated erroneously by the government, resulting in a significantly higher overall inflation rate than was actually the case. The problem was fixed in 1983 and a more accurate CPI was recalculated for the previous years. As a result, it is possible to examine whether wages followed the official CPI reported during that period or the truer, lower measure of inflation.

This paper analyzes inflation and wages using several types of Phillips Curve regressions. Results of the analysis strongly suggest that the error in the measurement of inflation in this period had a direct impact on wage growth. Wages appear to change in step with the CPI, regardless of whether it is accurate. In the context of the current debate, if the CPI is adjusted downward to show a lower measured rate of inflation, then wages are likely to grow more slowly than they would have otherwise. This point is independent of whether or not the CPI is actually overstated.

A downward adjustment in the CPI, as recommended by the Boskin Commission, would lower nominal wage growth by approximately 1.1 percentage points annually. If the Commission is right, this would still allow for real wage growth, where wage growth exceeds the true rate of inflation. However, if the Commission is wrong, a 1.1 percentage point reduction in wage growth would cause real wages to fall unnecessarily.

These results caution against making any changes in the CPI that are not clearly warranted by empirical evidence. Even if changes to the CPI are warranted, their expected impacts should be well publicized so that workers and firms can incorporate this information when they set wage targets. Otherwise, there is a significant risk that lowering the CPI will lead to lower real wages for most workers.

I. Introduction

Recently the accuracy of the consumer price index (CPI) has been called into question. Critics have charged that the CPI has historically been running above the true level of inflation. The Boskin Commission, for example, reported to Congress that the CPI is currently overstated by 1.1 percentage points annually (Senate Finance Committee, 1996). Most of the debate has focused on the budgetary implications of an inaccurate rate of inflation. Since many federal spending programs and the income tax brackets are indexed to the CPI, a lowering of the CPI would reduce spending and raise tax revenues by several hundred billion dollars over the next ten years.

Changes to the CPI's measure of inflation could have other economic effects as well. For example, if workers and firms look to the CPI as a measure of inflation when they bargain over wages, then adjusting the CPI downward would have the effect of lowering wage growth for workers. This could happen through contracts that explicitly specify that wages be adjusted in accordance with increases in the CPI. More typically, it may be the result of union contracts that are negotiated with the CPI serving as a target. These contracts then set a pattern for wages for the rest of the economy. Under these circumstances, adjusting the CPI downward would generally lead to lower wage increases for workers.

This paper examines whether errors in measuring inflation have actually affected the path of wage growth in the economy. It does this by looking at the impact of an error that affected the CPI's measure of inflation in the years from 1967 to 1982. During this period, the Bureau of Labor Statistics (BLS) applied a methodology, which it now views as erroneous, for measuring the rate of inflation in owner-occupied housing. This erroneous methodology had a significant impact on the measured rate of inflation for the period from 1967 to 1982. In 1983, BLS adopted a new methodology, which virtually all economists now agree is a better procedure, and recalculated what the rate of inflation would have been over this period using the current methodology. Since there is a significant gap between the official CPI reported from 1967 to 1982 and the current method (called CPI-UX1), it is possible to go back and examine which measure seemed to have more impact on the movement in wages.

If the official CPI seems to have had more impact on wages, it implies that wages are affected by the reported rate of inflation, whether or not it is accurate. If the more accurate CPI-UX1 seems to have had more impact on wages, then it would imply that wages generally follow the actual rate of inflation, and are not affected by an erroneous measure published by the government.

The experience from this period should provide some basis for determining if wage growth would be affected by proposed adjustments to the CPI. If it turns out that wages primarily follow the official CPI, then any downward adjustments in the CPI would likely lead to lower wage growth. Alternatively, if it turns out that wages primarily follow the CPI-UX1, then wage growth would likely not be affected by any changes in the measure of inflation.

This paper has four parts. The first part examines the relationship between wage growth and inflation. The second part describes a set of statistical tests that examine whether wages followed an erroneous measure of inflation in the period from 1967 to 1982. The third part discusses some of the implications of these statistical tests. The fourth part is a summary and conclusion.

II. Wages and Inflation

According to economic theory, workers should care about inflation because they are concerned about real wages. That is, they care about what their wage income will actually buy. To determine how much their wages can buy at different points in time, workers need some measure of inflation. This permits a comparison of the purchasing power of different nominal wage rates.

For example, a worker earning $11 an hour in 1996 is somewhat worse off than a worker who earned $10 an hour in 1990, because, according to the CPI, inflation through this period increased consumer prices by 20 percent. This means that a worker would need to be earning $12 an hour in 1996 to be able to buy as much as a worker who earned $10 an hour in 1990.

But how do workers know what the true rate of inflation is, and therefore what prices and wages should be set at? Workers may be generally aware of a rise in the price of the goods they purchase, but the rate of increase in these prices will vary considerably across workers depending on their specific consumption patterns. Also, a considerable portion of expenditures go to occasional purchases of large durable goods. For example, a worker's perception of the rate of increase in car prices might vary considerably depending on the last time she bought a car. In addition, it may be hard for workers to distinguish between paying more for a product due to quality improvements, and paying a higher price for a product of identical quality. For these reasons, and others, it would be hard for a worker to have direct knowledge of the true rate of inflation in consumer products.

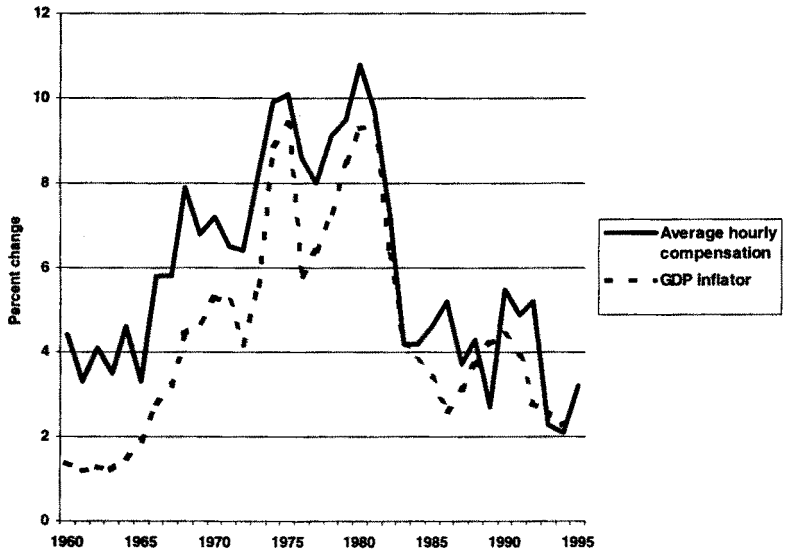
It might then be expected that workers would rely on official measures of inflation published by the government to determine whether they are better or worse off at different points in time, or to decide whether a specific nominal wage was reasonable. Similarly, unions would use the government's measure of inflation to set targets for nominal wages in their wage negotiations.

In fact, nominal wages have tracked at least one measured rate of inflation fairly closely. Figure 1 shows the annual change in average hourly compensation (wages and benefits) and the rate of inflation as measured by the GDP price index. This index is used by the Commerce Department to measure inflation throughout the economy, not just in consumer goods and services. It is used here to avoid some of the complications in the CPI discussed below.

As can be seen in Figure 1, the two lines generally move together. During the sixties, annual rates of inflation and compensation growth both rose as inflation increased through the decade.

Compensation consistently exceeded inflation through this period, as workers saw rapid improvements in their living standards. (The extent to which the compensation line is above the inflation line is the increase in real compensation.) This was possible because of rapid productivity growth in the U.S. economy.

FIGURE 1: INFLATION AND COMPENSATION GROWTH



The 1970s saw further rises in both annual rates of inflation and compensation growth, as oil price shocks pushed the inflation rate higher. The gap between the growth in average compensation and inflation was smaller during this decade than in the sixties because of slower productivity growth. In the eighties and nineties, the rates of inflation and annual compensation growth have both fallen considerably. At the same time, the two lines moved even closer together (even crossing in several years) as improvements in real wages slowed further. This slower improvement in living standards is due to continued declines in productivity growth and a redistribution from wages to profit over the last decade. This redistribution has meant that workers' compensation has not kept pace with overall productivity growth.[1]

Figure 1 shows that inflation and compensation growth generally move very closely together although productivity growth and the distribution of profits and wages can cause the curves to converge or diverge. If wages generally track the rate of inflation, the next question is whether wages specifically track the CPI. If so, what happens to wage growth if the CPI is adjusted? The next section investigates the impact on wage growth of a wrongly calibrated CPI between 1967 and 1982.

III. Testing the Impact of Mismeasured Inflation

In 1983, the Bureau of Labor Statistics (BLS) changed the way it treated owner-occupied housing in the CPI. Prior to 1983, the CPI measured the rate of inflation in owner-occupied housing by tracking the cost of buying a new home. This meant measuring the prices at which homes were sold, and also the cost of other aspects of home purchases, such as mortgage interest rates or closing fees. Virtually all economists agree that this was an incorrect procedure. A home purchase is in part an investment, not just a consumption expenditure.[2] As a result of the near consensus on this point among in-house and outside economists, a decision was made to change the treatment of owner-occupied housing in the CPI. Beginning in January of 1983, the CPI included an estimate of the cost of renting owner-occupied housing. This new category, which replaced the earlier category of home ownership costs, was called "owner-equivalent rent." It was intended to focus on the consumption aspect of home ownership, but to exclude costs that result from purchasing a home as an investment.

After BLS made this change it decided to go back and recalculate prior years' inflation using its new owner-equivalent rent measure. It did this to produce a consistent, and presumably more accurate, measure of inflation to be used by researchers and policy analysts. This new index, the CPI-UX1, was recalculated back to 1967.[3] It was during the period from 1967 to 1982 that the difference between the two measures was important. The rapid rise in housing prices and mortgage interest rates in this period caused the home ownership measure to rise much more rapidly than the owner-equivalent rent measure. Because housing expenditures of homeowners are such an important part of total consumption (and therefore have a large weight in the CPI), the difference between these measures had a substantial impact on the overall CPI. The cumulative difference over the 16-year period between the inflation rate recorded by the original CPI and the recalculated CPI-UX1 was 10.4 percentage points, an average of 0.7 percentage points annually.

The gap between these two measures of the rate of inflation provides for a natural experiment, where it is possible to test which measure of inflation had more of an impact on wage growth at the time. Two separate sets of tests that make use of Phillips Curve regressions were run to determine whether wages followed more closely the official CPI that was in effect during the 1967-1982 period or the CPI-UX1. (Both sets of tests are described more fully in the Appendix.) Phillips Curve regressions are one of the most commonly used tools by macroeconomists. The

Congressional Budget Office and other government agencies, as well as private sector economists, routinely use them to forecast inflation. The regressions used in this analysis follow closely the methodology used by the Congressional Budget Office.

The first set of tests used standard Phillips Curve regressions to examine the relationship between inflation and unemployment.[4] These regressions seek to explain the current rate of inflation as a function of the inflation rate in the recent past, and current and recent rates of unemployment. The second set of tests involved wage Phillips Curve regressions. These regressions seek to explain current wage growth as a function of the inflation rate in the recent past, and current and recent rates of unemployment.

The standard Phillips Curve regressions can be seen as a way of measuring the impact of mismeasured inflation on wages indirectly. They examine the change in the rate of inflation, which is presumably largely determined by changes in the rate of wage growth, which are then passed on to prices. The wage Phillips Curves should pick up the effect of mismeasured inflation on wages directly.

In both sets of tests, the CPI-UX1 was used as the measure of past inflation. A separate variable, "ERRX1," was then added to the tests. This variable is equal to the difference between the CPI-UX1 rate of inflation and the rate of inflation reported by the official CPI. Since most economists now view the CPI-UX1 as the correct measure of inflation for this period, ERRX1 represents the error in the officially reported rate of inflation for each quarter.

The tests were set up so that if only the true rate of inflation, as measured by the CPI-UX1, affected inflation or wage growth, the ERRX1 variable would have no explanatory power in these regressions. That is, there should be no relationship between the size of ERRX1 in a given quarter (and its size in the recent past) and the change in the rate of inflation or rate of wage growth. These changes should be fully explained by the other variables included in the tests.

The results, however, show that in both sets of regressions, the ERRX1 terms have substantial explanatory power. In Table 1 of the Appendix, the sum of the coefficients of the lagged ERRX1 terms in the 8th row (the lags give the value of the ERRX1 variable for the recent past) is large and highly significant statistically. In one of the three regressions, it is significant at the 5 percent level, which means that this relationship would not have appeared by random chance more than one in twenty times. In the other two regressions the coefficients are significant at the one percent level, which means that the relationship would not have occurred by random chance more than one time in a hundred. The reason for running the regression in three different forms is to reduce the likelihood that some quirk in the data is generating these results. The tests here provide solid evidence that the error in the CPI over this period had a real impact on the actual inflation rate the economy experienced.

The wage Phillips Curve regressions clearly indicate that the basis of this effect was the impact of the error on wages. The results of these regressions are presented in Table 2 in the Appendix.

Again the regressions show large coefficients on the lagged values of ERRX1 term. The sums of these lagged terms are all close to one (see row 7), which suggests that the error in the CPI was fully passed on in the form of more rapid wage growth. These coefficients are also highly significant statistically. In two of the three regressions they are significant at the one percent level, in the third they are significant at the five percent level.

In short, the two sets of Phillips Curve regressions discussed here provide solid statistical evidence that the error in the CPI from 1967 to 1982 had a substantial impact on wage growth and may have been passed on completely in the form of higher wages. The standard Phillips Curve regressions provide evidence for this impact indirectly, by indicating that errors in the measure of inflation affected the actual rate of inflation. The wage Phillips Curves provide more direct evidence by showing that the errors in the measure of inflation directly affected the rate of wage growth.

IV. Implications

The most immediate and important implication of these tests is that wages appear to change in step with official measures of inflation, regardless of whether or not these measures are accurate. The tests imply that workers and firms accept the CPI as a measure of inflation and use it as a basis for setting wages over time. This means that changes to the CPI that alter the way it measures inflation are likely to have an impact on wage growth. In the context of the current debate, if the CPI is adjusted downward to show a lower measured rate of inflation, then wages are likely to grow more slowly than they would have otherwise. This point is independent of whether or not the CPI is actually overstated, as some economists have claimed.

This last point is worth emphasizing. If the Boskin Commission is correct in concluding that the CPI is currently overstated by 1.1 percentage points annually, and if the CPI is adjusted downward to correct for this overstatement, then wages in the future would rise by approximately 1.1 percentage points less each year than would otherwise be the case. Wage agreements would tend to follow the new lower measure of inflation shown by the adjusted CPI.

However, the economy could clearly support a more rapid rate of wage growth, as it is presently doing. Again, if the Boskin Commission is correct, then the gap between the growth in average compensation and the true inflation rate is 1.1 percentage points more than is indicated by the CPI at present. This means that productivity growth has been understated (it is approximately 1.1 percent higher than current data show), and that real wages have been increasing by 1.1 percentage points more than the current CPI indicates.[5] Real wages could continue to increase at the same rate as they have been, i.e., by 1.1 percentage points more relative to the new "corrected" CPI, than to the current CPI. Adjusting the CPI would lower real wage growth to a considerably slower rate than the economy can sustain.

If the Boskin Commission is wrong, the effect of making a downward adjustment would be exactly the same in terms of slowing the rate of real wage growth. However, in this case, the "corrected" CPI would actually be understating the true rate of inflation by 1.1 percentage points annually, and real wages would be expected to decline in coming years.

The possible impact of adjusting the CPI on wage growth is no reason to maintain an inaccurate CPI. But it should provide grounds for caution in making changes that are not clearly warranted by the evidence. It also indicates the importance of widely publicizing the expected impact of any changes in the CPI. If average wages are rising 1.0 percentage point annually against the current CPI, then they should be rising 2.1 percentage points annually against a Boskin Commission-adjusted CPI. Any lower rate of increase would imply a redistribution from workers to corporations.

Rethinking NAIRU

There are two other areas where the findings of these tests have important implications. The first is in the theory of a non-accelerating inflation rate of unemployment (NAIRU). In the last two decades, macroeconomists have generally believed that the economy had a NAIRU -- a level of unemployment below which the economy could not fall without causing inflation to accelerate. Usually this unemployment rate was placed at 6.0 percent. (Recently, though, the NAIRU has been lowered since the unemployment rate has been below 6.0 percent for close to four years, and the inflation rate has declined during this period.) Many members of the Federal Reserve Board's open market committee have used some version of the NAIRU theory to guide their actions on interest rates.

Much of the statistical support for the NAIRU theory depends on the economy's behavior in the period from 1967 to 1983. This period includes the largest sustained inflation of the post-war era. The inflation is usually explained by the oil shocks and by an analysis that implies that the economy was below its NAIRU for much of this period. However, Eisner (1997) has already provided a serious basis for questioning whether low rates of unemployment actually lead to accelerating inflation. His results suggest an asymmetric relationship between inflation and unemployment. In examining the post-war period, he found that high rates of unemployment lead to lower rates of inflation, but that low rates of unemployment do not lead to higher rates of inflation.

If the error in the CPI measure of inflation was an important contributor to the acceleration of inflation during the 1967-1982 period, it would further undermine the traditional NAIRU view. It would mean that there is even less evidence that low unemployment rates lead to higher inflation rates and that the Fed need not fear further declines in the unemployment rate. It would be worth further examining the evidence for an asymmetric relationship between inflation and unemployment with the inclusion of a variable for the error in the inflation measure over this period.

Capital/Labor Distribution

The other area where these findings could have significant implications is the distribution of income between capital and labor. During the 1967-1982 period, there was a very large redistribution of corporate income from capital to labor. In 1966, the capital share of corporate GDP (profits plus interest) was 18.8 percent. In 1978, the peak profit year of the late seventies, the corporate share had dropped to 14.2 percent. This share declined further to 10.8 percent in 1982, although the recession was a major factor in this further drop-off since profits always decline during recessions. There has never been a widely accepted explanation for this large shift in income shares.[6] (In recent years, the capital share has risen again, to 16.9 percent in 1996).

A partial explanation of the shift from capital to labor over this period could be that wage bargains were guided by a mismeasured CPI. A third set of tests was used to examine the relationship between the CPI error and changes in income shares. The results of these tests, shown in Table 3, are less conclusive than the earlier sets. The sum of the coefficients of the ERRX1 term is generally close to 0.1, which suggests that the 10.4 percentage cumulative error in the CPI might have led to a 1.0 percentage point increase in the labor share of income over this period. (This would mean about $450 a year at present to an average worker.) However, these coefficients are not statistically significant, which suggests they may just reflect random factors in the data.

While it is disappointing that these tests do not provide more conclusive results, perhaps this should not be surprising. The earlier tests indicated that the errors in the CPI were passed on in the form of higher wages, which in turn are assumed to have been largely passed on in the form of higher prices. The fact that profit shares fell during this period implies that the wage increases were not fully passed along in higher prices. It is reasonable to believe that firms might have originally tried to pass along higher wage costs fully, but then were forced to lower their prices by cutting back on profit margins. This process may have occurred at a very uneven pace, since the economy was subject to oil shocks and several other unusual jolts during this period. For this reason, the relationship between the error in the CPI and the redistribution from capital to labor may not be as simple as the one tested in the regressions discussed here. This relationship clearly needs to be researched further.

It is also worth noting that between 1994 and 1996 there was a shift in income shares from labor to capital of nearly a full percentage point. This shift cannot be explained by cyclical factors, since capacity utilization rates actually fell slightly over this period and the unemployment rate has been nearly constant. On the other hand, roughly during this same period, BLS has made several recent changes in its procedures which have lowered the CPI relative to the true inflation rate in the economy. In January 1995, BLS changed its procedures for measuring the rate of inflation in generic drugs. It also changed the way it aggregated price data for shelter and for food consumed at home. In June 1996 it changed its procedures for aggregating other prices. The net effect of these changes would be to lower the measured rate of inflation in the CPI by approximately 0.25 percentage points annually relative to the true rate of inflation.[7] These changes in the CPI are not

large enough to fully explain the shift in income shares the economy has experienced since 1994, but they may well have been a significant factor in this shift.

V. Conclusion

This paper has examined the possibility that a mismeasured index of inflation can have real consequences for workers and the economy. It found evidence that the substantial overstatement in the official consumer price index used from 1967 to 1982 had a significant impact on wage growth. The evidence suggests that this error may explain part of the acceleration of inflation over this period as well as the large shift in shares of corporate income from capital to labor.

The results in this paper should be seen as preliminary. The period under investigation was an extraordinary one. It includes the Vietnam War, the Nixon era wage-price controls, and both OPEC oil shocks. There were many erratic jumps in wages and prices throughout this sixteen-year period. Further analysis is needed before it can be determined conclusively that the error in the measurement of inflation during this period had a real impact on wage growth and the economy. However, the results presented in this paper do provide preliminary evidence for this conclusion.

These results also caution against making any changes in the CPI that are not clearly warranted by empirical evidence. They imply that these changes will affect the actual path of wage growth. If changes to the CPI are warranted, their expected impacts should be well publicized so that workers and firms can incorporate this information when they set wage targets. Otherwise, there is a significant risk that lowering the CPI will lead to lower real wages for most workers.

NOTES

1 It is important to recognize that this graph shows *average* hourly compensation. Real average hourly compensation has continued to grow, although very slowly in recent years. However, average compensation provides no information about the distribution among workers. Median hourly compensation, the compensation received by a worker in the middle of the wage distribution, has fallen over most of the last decade and a half.

2 For a discussion of the issues around the change in the treatment of owner-occupied housing in the CPI see Gillingham and Lane, 1982.

3 Baker (1996) shows that the differing treatment of owner-occupied housing in the period prior to 1967 would have little impact on the CPI measure of inflation.

4 The original Phillips Curve described a relationship between rates of wage growth and unemployment discovered by A.W. Phillips in 1958. However, it has become standard to refer to the relationship between inflation and unemployment as the "Phillips Curve."

5 The understatement in productivity growth will not be exactly the same as the overstatement in the CPI. Productivity is usually given for the business sector as a whole which includes investment goods and a somewhat different consumption basket than appears in the CPI. However, consumption does constitute the bulk of business sector output, and many of the criticisms directed against the CPI have also been raised in the context of investment goods (see Gordon, 1990), so the assumption that any overstatement in the CPI is the same as the understatement in productivity growth should provide a reasonable approximation.

6 Nordhaus (1974) suggests that the decline in capital shares in the first portion of this period may have been attributable to the failure of firms to fully appreciate the impact of the inflation of the late sixties on the replacement cost of their capital. According to this view, they failed to increase their mark-ups enough to cover the higher replacement costs they would eventually face. It is worth noting that this view implies a mistaken response to inflation that is believed to be accurately reported, rather than failing to recognize the inaccuracy of official inflation numbers.

7 These changes are discussed in Armknecht, Moulton, and Stewart (1995) and BLS (1996).

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APPENDIX

Standard Phillips Curve Regressions

The first set of tests of the impact of the erroneous measure of inflation in the 1967-1982 period includes the error as an explanatory variable in a standard Phillips Curve regression. The model is essentially identical to the Phillips Curve regressions used by the Congressional Budget Office to determine NAIRU (CBO 1994) with the addition of a variable that includes the gap between CPI-U measure of inflation and the CPI-UX1 measure of inflation, lagged over four quarters:

(1) $In_t = C + \Sigma b_1 IN_{t-i} + \Sigma b_2 U_{t-j} + b_3 FAE_{t-1} + b_4 PRD_t + b_5 NIXON_t + b_6 NIXOFF_t + \Sigma b_7 ERR_{t-1} + e_t$

where In_t = inflation at time t,

C is a constant,

$\Sigma b_1 IN_{t-i}$ = the sum of the coefficients on 16 lagged quarters of inflation,

$\Sigma\ b_2 U_{t-j}$ = the sum of the coefficients on current and lagged unemployment rates, with the lags going back eight quarters,

$b_3 FAE_{t-1}$ = the coefficient of the difference in the previous quarter between food and energy inflation, and the general rate of increase of consumer prices,

$b_4 PRD_t$ = the coefficient for the gap between productivity growth in the current period and the trend rate of productivity growth,

$b_5 NIXON_t$ = the coefficient for a dummy variable for the period where wage price controls were in effect in the early 1970s,

$b_6 NIXOFF_t$ = the coefficient for a dummy variable associated with the period immediately after the removal of wage price controls in 1974,

$\Sigma\ b_7 ERR_{t-j}$ = the sum of the coefficients on the difference between the CPI-U measure of inflation and the CPI-UX1 measure of inflation, lagged four quarters, and

e_t = an error term.

The regression was run for the years 1960 to 1995. The measure of inflation used as the dependent variable was both the chain-weighted GDP price index and the GDP deflator. Both of these measures of inflation use the owner-equivalent rent measure for owner-occupied housing and therefore should not have been affected by the error in the CPI in the 1967-82 period.

If the erroneous measure of inflation had no impact during this period, the sum of the coefficients of the ERR term should be close to zero. The impact of actual past rates of inflation on the current rate of inflation should be fully picked up the lagged values of the inflation measure. There should be no relationship between the size of the error in the reported CPI and the current rate of inflation. Alternatively, if the error in the official measure of inflation is passed on fully in current inflation, then the sum of the coefficients should be one.

Table 1 shows the results of these regressions. The dependent variable in the first column is the annualized inflation rate as measured by the GDP chain-weighted price index. The dependent variable in second column is the annualized inflation rate as measured by the GDP deflator. The third column shows the results of a regression that used the rate of inflation as measured by the CPI-UX1 as the dependent variable. The sum of the coefficients of the ERR term is barely affected by the choice of deflator. In all three cases, it is highly significant. Also, in all three regressions, the sum of the coefficients is close enough to 1 so that the hypothesis that the sum is equal to 1 cannot be rejected at standard levels of significance.

Wage Phillips Curves

Another way to test for the impact of mismeasured inflation is to construct a wage Phillips curve, where the dependent variable is the rate of increase in the nominal wage, rather than the price level. The model tested was:

(2) $Dwage_t = C + b_1 trendpr_t + \Sigma b_2 XINF_{t-i} + \Sigma b_3 U_{t-j} + b_4 NIXON_t + b_5 NIXOFF_t + \Sigma b_6 ERR_{t-i} + e_t$

where C = a constant

$b_1 trendpr_{t-1}$ = trend productivity growth at time

$\Sigma b_2 X_i IN_{t-i}$ = the sum of the coefficients on 16 lagged quarters of inflation as measured by the CPIU-X1,

$\Sigma\ b_3 U_{t-j}$ = the sum of the coefficients on current and lagged unemployment rates, with the lags going back four or eight quarters,

$b_4 NIXON_t$ = the coefficient for a dummy variable for the period where wage price controls were in effect in the early 1970s,

$b_5 NIXOFF_t$ = the coefficient for a dummy variable associated with the period immediately after the removal of wage price controls in 1974,

$\Sigma\ b_6 ERR_{t-j}$ = the sum of the coefficients on the difference between the CPI-U measure of inflation and the CPI-UX1 measure of inflation, lagged four quarters, and

e_t = an error term.

The regressions were run for the years 1964 to 1995. The measure of wage change used as the dependent variable was the average hourly compensation series from the Bureau of Labor Statistics' Productivity and Costs data. As with the price Phillips Curve, if wages are only affected by actual inflation and not mismeasured inflation, the impact of past inflation on wages should be fully picked up by the lagged XINF terms. The sum of the coefficients of the ERRX1 term should be close to zero. Alternatively, if the mismeasured inflation has the same impact as actual inflation, then the sum of ERRX1 terms should be close to the sum of the coefficients of the XINF terms.

Table 2 presents the results from these regressions. The first column shows the results from a regression using 16 lagged quarter lags of inflation as measured by the CPI-UX1 and eight lagged quarters of the unemployment variable. The second column shows the result of an identical regression except the sum of the coefficients of the lagged inflation variable was constrained to equal one. The third column shows the results of a regression that included only four lagged quarters of inflation. In all three cases the sum of the coefficients on the lagged ERR term is close to one and highly significant. This suggests that the error in the reported rate of inflation was passed on completely in the form of higher wages.

Capital and Labor Shares

There was a very large redistribution of shares of corporate income during the 1967-1982 period from capital to labor. A third set of tests was performed to determine the extent to which the mismeasured inflation rate may have been a factor in this redistribution. In these tests, the change in the labor compensation share of corporate GDP was the dependent variable.

The model tested was:

(3) $Dlabsh_t = C + \Sigma b_1 U_{t-j} + +\Sigma b_2 ERR_{t-1} + e_t$

where Dlabsh is the change in the labor share as measured by compensation divided by gross domestic corporate product in the national income product accounts,

C is a constant,

$\Sigma\, b_1 U_{t-j}$ = the sum of the coefficients on current and lagged unemployment rates, and

$\Sigma\, b_2 ERR_{t-j}$ = the sum of the coefficients on the difference between the CPI-U measure of inflation and the CPI-UX1 measure of inflation, lagged eight quarters.

Table 3 gives the results of this set of tests. The first column shows the results of a regression for the period from 1962 through 1995 using four lagged quarters of the unemployment variable. The second column gives the result of a regression that covers the same time period using eight lagged quarters of the unemployment variable. The third column gives the result of a regression that covers the more narrow period from 1967 through 1983 when the CPI error would have been a

factor. As can be seen, the sum of the coefficients on the ERR term are positive (row 3) and economically important, but fall short of standard levels of statistical significance.

Table 1
Standard Phillips Curve Regressions

Dependent Variable	GDP- chain price index	GDP deflator	CPI-UX1
Constant	3.31 (5.81)***	3.13 (5.44)***	2.81 (3.55)***
Lagged Inflation [a] 1.00	1.00	1.00	
Food and Energy Inflation [b]	0.15 (2.66)***	0.11 (1.51)	0.33 (3.16)***
Productivity Deviation [c]	-0.05 (1.80)*	0.00 (0.16)	----
On [d]	-1.07 (1.83)*	-0.95 (1.61)	-1.37 (1.56)
Off [e]	3.46 (7.31)***	3.07 (6.24)***	1.66 (2.15)**
Lagged Unemployment [f]	-0.57 (6.15)***	-0.54 (5.77)***	-0.48 (3.73)***
ERRX1 [g]	0.70 (3.51)***	0.69 (3.44)***	0.78 (2.41)**
R-Bar Squared	0.85	0.85	0.94
DW	2.09	1.96	1.88
Observations	129	129	127

t-statistics in parenthesis

* significant at .10 level ** significant at 0.05 level *** significant at 0.01 level

a) Inflation is lagged 16 quarters and is constrained to follow a third degree polynomial distributed lag with the far end point restricted to zero. The sum of the lags is restricted to equal 1.

b) Food and energy inflation is the difference in the inflation rate between the overall CPIU and the core CPIU, lagged one quarter.

c) Productivity deviation is the difference between trend productivity growth and actual productivity growth for the quarter, as calculated by the Congressional Budget Office (CBO).

d) On is a dummy variable for the five quarters from 1971:3 to 1972:3. Following CBO's methodology, it is assigned a value of 0.8 for these quarters.

e) Off is a dummy variable for end of wage price controls. Following CBO, it equals 0.4 in 1974:2 and 1975:1, and 1.6 in 1974:3 and 1974:4.

f) The unemployment rate variable is the current rate and eight lagged quarters.

g) ERRX1 is the difference between the CPIU measure of the rate of inflation and the CPI-UX1 measure of the rate of inflation, lagged four quarters.

Table 2
Wage Phillips Curve Regressions

Dependent Variable	Average Hourly Compensation	Average Hourly Compensation	Average Hourly Compensation
Constant	5.45 (4.84)***	5.23 (4.87)***	1.17 (1.15)
Lagged Inflation [a]	1.07	1.00	0.76
	(9.81)***		(8.58)***
Trend Productivity Growth [b]	0.57 (3.35)***	0.59 (3.44)***	0.90 (4.72)***
On [c]	1.70 (2.41)***	1.70 (2.41)**	1.89 (2.29)**
Off [d]	2.43 (3.74)***	2.51 (3.92)***	0.73 (1.12)
Lagged Unemployment [e]	-1.10 (5.97)***	-1.02 (7.19)***	-0.24 (1.84)*
ERRX1 [f]	1.24 (2.98)***	1.43 (4.70)***	0.88 (2.51)**
R-Bar Squared	0.76	0.76	0.66
DW	2.02	2.01	1.56
Observations	127	127	127

t-statistics in parenthesis

* significant at .10 level ** significant at 0.05 level *** significant at 0.01 level

a) Inflation is as measured by the CPI-UX1 lagged 16 quarters and is constrained to follow a third degree polynomial distributed lag with the far end point restricted to zero. In the first regression the sum of the lags is not restricted to equal 1, while in the second it is restricted to equal 1. The third regression includes only four lagged quarters of the CPI-UX1.

b) Trend productivity is the trend for rate of growth for each business cycle, as calculated by the Congressional Budget Office (CBO).

c) On is a dummy variable for the five quarters from 1971:3 to 1972:3.

d) Off is a dummy variable for end of wage price controls for the four quarters from 1974:2 to 1975:1.

e) The unemployment rate variable is the current rate and eight lagged quarters in the first regression. In the second regression it is the current rate with four lagged quarters .

f) ERRX1 is the difference between the CPIU measure of the rate of inflation and the CPI-UX1 measure of the rate of inflation, lagged eight quarters.

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Technology and Economic Growth:
A Review for Policymakers

Kenan Patrick Jarboe
February 1998

This series of papers, offered to the
Democratic members of the Joint Economic Committee,
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Technology and Economic Growth: A Review for Policymakers

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Technology and Economic Growth: A Review for Policymakers

EXECUTIVE SUMMARY

It is generally accepted as a given, both within the economics profession and the public at large, that technology is a key factor in economic growth. However, once that simple sentence is examined more carefully, the view is much more complex.

There is a general consensus among economists that the level of output is a function of a number of inputs: capital (K - land, plant and equipment), labor (L- number of workers and hours worked), human capital (H - the skills of the work force) and technology/knowledge/innovation (A - originally the residual, now "total factor productivity"). There is also general agreement as to the relative magnitude of total factor productivity.

However, there is an ongoing debate as to how to treat technology and knowledge in the models:

- Is it an independent variable?
- Is it embodied in capital goods or in worker skills?
- If it is embodied in capital goods or human capital, is it still an independent factor?
- Is it a factor that augments the other factors?

Traditional growth accounting treats "A" as an external factor. Endogenous growth theory postulates that R&D and knowledge is the result of intentional activity and is therefore a function of economic incentives.

From the point of view of analyzing technology policy, neither of these macroeconomic models fully captures the innovation process with its complex dynamics and interrelations. Traditional growth accounting appears to be "science-push," while new growth theory is "market-pull." Going beyond the process of innovation, there are questions as to how the various factors interrelate, what is the difference between knowledge, technology and innovation, and whether and how to include other intangible factors such as organizational and managerial capabilities.

All of the models suffer from conceptual and measurement difficulties. A better understanding is needed of the institutional framework -- both that which allows for economic growth and that which fosters innovation and technological development -- and on the dynamics of

the innovation process. In this regard, further exploration of alternative economic models, such as evolutionary economics, may be a promising direction for future research.

On the micro-economic side, there is general agreement that investment in formal research and development (R&D) generates a significant private rate of return (that which the company doing the R&D can hope to gain) and an even higher social rate of return (including the benefit to other companies and to society as a whole). Accompanying the high social rate of return is a high level of spillover from R&D activities. Research cannot be fully controlled by firms and the knowledge produced can be used by others. Beyond simply intra-industry spillovers (from one firm in the same industry to another firm), research also indicates a significate spillover of technology between industries and nations.

The differential between the private and social rates of return is generally taken as evidence of a market failure (less than socially optimal investment by market forces alone) requiring government investment in R&D. Estimates of the rate of underinvestment are significant. Spillovers and market structure effects may also contribute to market failures and the need for government investment in R&D.

However, federally-funded research is generally hard to analyze using rates-of-return techniques because of the multiple (and non-economic) goals of most government programs. In this regard, public project evaluation techniques might benefit from an exploration of how the private sector evaluates R&D opportunities. Of particular importance is the role of the government in the process of diffusion and adoption -- as opposed to a focus solely on the direct funding of technology development activities. A promising approach may lie in the use of detailed case studies. Such case studies could lead to a better understanding of the technological development process and of how and where investment (public or private) can gain the best leverage.

In addition to technical and conceptual problems at both the macro and micro level, there is also a general agreement as to problems with the data, especially in measuring R&D spending. These include concerns over the quality of the data, the issue of price indices, and the correct depreciation rate for R&D. Questions are raised as to whether R&D spending captures the right inputs. Most economists would agree that formal R&D is only one important input; learning-by-doing is equally important. To overcome some of the data difficulties, some researchers have turned to scientific indicators and bibliometric approaches -- patents and citations. These approaches are, however, fraught with their own problems.

From the perspective of a policy analyst, much of the debate can seem to be abstract and technical. However, the models developed and the issues raised can be useful in the development of technology policy, trade policy and intellectual property law, among other areas. For example, the models can be useful in determining how best to structure technology policy programs. The research on international technological spillovers is especially significant for technology policies relating to foreign participation, direct foreign investment and international technological cooperation. Likewise, the debate over the economic nature of knowledge (i.e. is it fundamentally different from other commodities? and if so, how?) has profound ramifications for intellectual property policies.

One of the more interesting policy questions concerns productivity growth resulting from new technologies. As of yet, the impacts of new technologies, especially computer and information technologies, have not shown up in the productivity data. Recent research shows that they may only now be beginning to have a measurable effect. If true, the current estimates of the economy's non-inflationary growth potential may need to be re-evaluated -- with significant consequences for monetary policy.

In conclusion, a great amount of useful work has been done over the past decade on the issues of economic growth and the rate of return of investment in technology -- leading to the following generally agreed upon facts:

- *technology, innovation and knowledge are important factors in economic growth;*
- *there is a significant private return on R&D investment at the firm and industry level -- and an even greater social return on investment; and,*
- *there is a positive social value of raising the level of investment in technology and knowledge creation over that determined by the market.*

However, many unanswered questions remain and much research still must be done before existing economic studies, macro and micro, can provide detailed assistance to policymakers in the quest for technological-driven economic growth. How factors of growth interact, what incentives are useful to spur on the innovation process, and the role and nature of technology spillovers are all areas where further economic research can provide insights to policymakers.

From the perspective of a policy analyst, the future research agenda should pursue a goal of better understand the dynamics of the innovation process. Rather than get bogged down in the specific outcomes of the theoretical models and rate-of-return analysis, policymakers should search for insights in the discussion of the nature of technology and analysts and theorists should strive for a better understanding of "knowledge" and the innovation process.

Technology and Economic Growth: A Review for Policymakers

Kenan Patrick Jarboe

February 1998

INTRODUCTION

This paper presents an overview of research on the economic impacts of technology. Specifically, the review focuses on two areas of analysis: macroeconomic growth theory and the contribution of technology/knowledge/innovation to economic growth; and studies of the rate of return on investments in technology. It is not the purpose of this paper to present a comprehensive survey of the economics literature or of what economics can tell us about technological change. Nor is it to offer an in-depth, technical critique of the research. Rather, this paper is meant to give an overview of these two areas of research -- macro and micro -- with special attention to the relevance of the studies to public policy issues. The review raises questions about the research and suggests future directions with an emphasis on issues confronting policymakers.

The paper is divided into four sections. The first section reviews macroeconomic growth theory, including traditional growth accounting and the new endogenous growth theory. The next section looks at microeconomic studies, specifically studies on the rates of return to investment in technology. The third section discusses the public policy implications of these studies. The paper concludes with suggestions for directions for future research.

MACROECONOMICS:
GROWTH THEORY – OLD, NEW AND FUTURE

Modern macroeconomic growth theory has its beginnings with the growth accounting studies of Solow (1957), Abramovitz (1956), Kendrick (1957, 1961), Denison (1962), and others. While these studies are based on concepts and ideas of earlier economists, their contribution was the determination of the relative contribution of capital (K -- physical capital in the form of land, buildings and equipment) and labor (L -- the number and hours of people working) to the level of economic output. Surprisingly, they found that the traditional inputs of capital and labor accumulation contributed relatively little. Solow (1957) described the residual -- what was left over after accounting for capital and labor -- as "technical advances." The term was originally not meant to imply "technology," but was used to describe any change that caused the production function to shift -- thereby increasing the growth potential above the rates of capital and labor accumulation.

GROWTH ACCOUNTING

Ever since these path-breaking studies, economists have been seeking to better understand this "residual" in order to reduce what Abramovitz (1956, 1993) called the "measure of our ignorance." As a result, "growth accounting" models include a factor for this "residual" generally called "total factor productivity" (A), which in some models becomes "technology" or "knowledge." Some models also add human capital (H), which accounts for improvement in worker skills and knowledge. Some even include the contribution to growth from increased economies of scale.

Despite all of the research on growth accounting over the past 40 years, studies appear to disagree over the amount of growth in total output explained by the various factors. Jorgenson (1996) finds that 83 percent of economic growth can be explained by capital and labor accumulation. Technological change and fertility rates explain the remaining 17 percent. On the other hand, Boskin and Lau (1992) came up with an estimate of 49 percent for the contribution of technical progress.

This apparently wide difference in the figures may, however, overstate the true difference between the models. Boskin and Lau (1992) calculated the contribution of the traditional factors of labor and capital to growth and the size of the residual ("technical progress") from a number of studies (see Table 1). They also modified the calculations by removing any adjustments to the data for quality improvements made by the original authors, since some studies include the quality improvement of capital goods in the contribution of capital to the level of economic output. This change greatly alters the conclusion of some studies. For example, the contribution of technical progress in Jorgenson, et al. (1987) jumps from the original 24 percent to 69 percent without quality adjustments.

TABLE 1
IMPUTED CONTRIBUTIONS OF THE DIFFERENT SOURCES OF GROWTH
(in percent without quality adjustments)

Study	*Time Period*	*Capital*	*Labor*	*Tech. Progress*	*Scale*
Abramovitz (1956)	1869-1953	22	33	48	
Solow (1957)	1909-1949	21	24	51	
Kendrick (1961)	1889-1953	21	34	44	
Denison (1962)	1909-1929	26	32	33	10
with quality adjustment		(26)	(54)	(10)	(10)
	1929-1957	15	16	58.	12
with quality adjustment		(15)	(54)	(20)	(12)
Denison (1967)	1950-1962	25	19	47	9
with quality adjustment		(25)	(34)	(32)	(9)
Kuznets (1971)	1889-1929	34	32	34	
	1929-1957	8	14	78	
	1950-1962	25	19	56	
Jorgenson/Griliches (1972)	1950-1962	40	8	51	
with quality adjustment		(49)	(21)	(30)	
Kendrick (1973)	1948-1966	21	24	56	
Denison (1979)	1929-1976	15	26	50	9
with quality adjustment		(15)	(46)	(30)	(9)
Denison (1985)	1929-1982	19	26	46	9
with quality adjustment		(19)	(46)	(26)	(9)
Jorgenson, et al.(1987)	1948-1979	12	20	69	
with quality adjustment		(47)	(30)	(24)	

Boskin and Lau (1992), Table 2.2. Note: percentages many not sum to 100% due to approximation errors.

Much of the remaining variation in the findings of these studies can be attributed to methodological differences. The studies use different types of aggregate real output as a measure of growth: real net national product; real private nonfarm gross net product; real national income; real gross private domestic product; real gross national product; and, real aggregated value added. *Thus, there is general agreement among the studies as to the relative contribution of "technical progress" once methodological differences, such as in how to incorporate factors such as quality changes, are removed.*

However, it must be noted that not all economists agree as to the relative importance of technical progress in all cases. For instance, Krugman (1994) argues, based on work by Lau and Kim (1993, 1994) and Young (1992, 1994a, 1994b), that Asian growth rates are not due to technical progress but mainly due to significant increases in inputs of physical and human capital -- contrary to generally accepted understanding.

ENDOGENOUS GROWTH THEORY

In the past decade or so, a new variation which conceptualizes the model very differently has emerged. Called either "new growth theory" or "endogenous growth theory," these models reformulate the growth equation so that knowledge and technology is not treated as an exogenous or outside activity (see Romer, 1990; Grossman and Helpman, 1991). Under traditional growth accounting, technical progress is taken as a given. In the endogenous growth theory, technological advance is seen as the result of *intentional* activities by economic actors; the production of knowledge is a function of the economic rate of return. This "knowledge capital" is self-perpetuating and, therefore, economic growth is continuous with no need for constant boosts from outside (exogenous) "technical change."

According to its proponents, endogenous growth theory is not interested in measuring the size of the residual but in explaining the process. For example, Grossman (1996) argues that growth accounting techniques cannot explain growth because they are accounting techniques, not structural models.

New growth theory also stresses the difference between "knowledge" and other forms of capital. Previously, knowledge was assumed to be a pure public good that moves freely. New growth theory assumes that technology/knowledge varies in terms of both rivalry (ability of more than one person to use the economic good at the same time -- a non-rival good is one that can be used by more than one person at a time, such as a software program) and excludability (the ability of someone to prevent others from using the economic good). As a result, there are spillovers from knowledge, unlike from other commodities (an assumption that follows from the microeconomic studies of rates of return -- see next section).

It is the existence of spillovers that makes the accumulation of knowledge self-perpetuating. As Grossman and Helpman (1991) explain:

> In the neoclassical models of capital accumulation, growth often peters out unless *exogenous* productivity gains preserve the incentives for investment. By contrast, investment incentives in the economies we study are endogenously maintained by technological spillovers. These spillovers allow successive generations of researchers to achieve technological breakthroughs using fewer resources than their predecessors. The resulting declines in the real cost of invention counteract any tendency for profits to fall. In short, the process of knowledge accumulation generates endogenously the productivity gains that sustain growth in the long run. (p. 336)

These endogenous growth models come in numerous variations. Grossman and Helpman (1994), Amable (1994), and McCallum (1996) provide some overviews of the literature; Fagerberg (1994) presents a useful discussion of the how both growth accounting and new growth theory wrestle with the question of differing growth rates among nations. In an especially interesting version, Young (1993) has extended the models in an attempt to incorporate both formal R&D and informal learning-by-doing.

Not all economists accept these formulations of the growth model. Mankiw, David Romer, and Weil (1992), Islam (1995), and Jorgenson (1996) argue that modifications to the traditional neo-classical model do a better job of explaining the empirical evidence as to the difference in growth rates among nations. Jones (1995a) proposes a "semi-endogenous" R&D-based model, in keeping with his findings (Jones, 1995b) that endogenous R&D models are not supported by the evidence.

Interaction Among Factors

At the heart of the debate over the models is the question of how to treat technology-knowledge-innovation. Is it an independent variable? Is it embodied in capital goods or in worker skills? If it is embodied in capital goods or human capital, is it still an independent factor? Or is it a factor that augments the other factors?

It would be misleading, however, to assume that the debate over how to treat the various factors for modeling purposes gives policymakers much guidance as to the importance of the various factors for spurring growth. Simply because some models treat technology as embodied in capital does not mean that the most important policy lever for spurring growth is capital formation and/or the saving rate. Nor does the fact that some models treat technology as exogenous mean that the development of technology is outside of the influence of government.

It should also be noted that the use of percentage contributions, as shown in Table 1, can be misleading for policy discussion. Such percentages do not indicate the total contribution of a factor to the level of economic output – and thus, the factor's importance to economic growth. For example, a healthy growth rate in total factor productivity (TFP) may appear as a small contribution to the total level of output when labor and capital are also growing at a fast rate – such as in a rapidly growing developing nation. The same TFP growth rate may appear as a larger contribution when labor and capital accumulation is smaller – such as in a more mature economy. This does not mean that TFP is less important in the former case and more important in the latter.[1]

In part, this is also a debate as to how to model the interactions among all factors of growth. As Abramovitz (1993) puts it: "surely there can be few economists who do not sense that there are two-way connections between technological progress, economies of scale, tangible capital

[1] I am grateful to Kenneth Arrow for this observation. Personal communications, December 15, 1997.

accumulation, and human and other intangible capital accumulation." (p. 221) Yet, most models continue to struggle with these interactions.

It can hardly be denied that technology and other "intangible" factors (i.e., factors that cannot be seen or measured directly) are inherently wrapped up in other factors. As Abramovitz (1993) states:

> . . . the compensations of both "capital" and "labor" now contain elements properly attributed to intangible capital. On one hand, intangible capital in the form of education and training is embodied in labor, and the return to that capital forms a large part of "labor's" earnings. On the other side, accumulations of intangible capital in the form of knowledge acquired by R&D and in the form of business capability acquired by investment in the corporate structures of management and administration and in market development yield significant parts of the compensation that our measures attribute to "capital." (p. 229-230)

But treating technology as simply part of either capital or labor would be a mistake. Such a formulation misses the complex relationship between technology, capital and labor. As Boskin and Lau (1996) states:

> To take a simple example, the benefits of successful R&D in improved microprocessors to the economy depend upon, among other things, the amount of tangible capital that can benefit from better and faster microprocessors, the human capital necessary for people to be able to use the computer, and other forms of technology, such as advanced software, that can better utilize the capabilities of the better microprocessors. (p. 106)

From the point of view of a policy analyst, the task is to find and understand the levers of economic growth. Simply knowing that capital includes new technology and that labor includes worker skills and knowledge does not give guidance on how to boost growth. Nor does simply knowing that technology is important. Rather, it is important to understand the interaction between increases in capital, labor, knowledge, and higher technological sophistication and utilization.

Characteristics of Knowledge

One very important set of insights can be gained from the debate over growth theories. Two characteristics of knowledge in the new growth theory lead to a very special exploration of a role of government. As mentioned earlier, new growth theory assumes that technology/knowledge can be a non-rival good that can be used by more than one person at a time, but can be excludable so that others can be prevented from using it. This combination of non-rival yet excludable creates, according to the theorists, a tension between competition and intellectual property protection. Market efficiency requires competition to ensure that prices are set at marginal cost. However, according to this formulation, endogenous technological progress requires incentives, often in the form of monopoly profits. Thus, in the new growth theory, how an economy manages this tension is important in the growth mix.

The second characteristics of knowledge is the spillover -- both to other industries and within the process of discovery. Those spillovers call for a government role because of the non-socially optimal level of investment that may be produced (see the discussion in the next section on microeconomic studies). Note that according to some formulations of the model, it is possible to have an overinvestment in R&D (Stokey, 1995). According to the proponents of new growth theories, understanding the mechanisms of spillover will help design government policies to maximize benefits (see Grossman and Helpman, 1994).

CAPTURING INNOVATION

Ironically, one of the problems with the new growth theory models is the result of exactly what makes them different from traditional growth models -- the endogenous nature of technology development. The models overstate the response of R&D to pure economic forces (i.e., profitability of the investment). Many researchers have emphasized the role of uncertainty and serendipity in the discovery process. According to Abramovitz (1993), the new growth theory is overly concerned with the effect of capital accumulation on technological progress rather than on studying the entire process of technological progress:

> It is doubtlessly true that the terms on which capital is supplied has some, perhaps much, influence on the direction as well as the pace of technological progress. But it may also derive from an evolution of scientific and technological knowledge quite unrelated to the terms of factor supply. There is still far too much that is poorly understood about the influence of relative factor costs, about the evolution of science and technology, and about the political and economic institutions and modes of organization on which the discovery or acquisition of new knowledge depend. (p. 237)

Some claim that is there no evidence to support the new growth theory's claim about the response of the research endeavor to incentives. Kortum (1996) argues, "not much evidence is available about the true elasticity of technological change with respect to research effort. A model of endogenous R&D and exogenous technological change (in which the true elasticity is zero) is surprisingly hard to reject." (p. 206) The question of how the research enterprise responds to economic incentives is still an open issue -- especially in the more non-commercial side of basic science (see Dasgupta and David, 1994, and Stephan, 1996, for an overview of research on the economics of science).

Another basic problem with the existing endogenous models is their emphasis on formal research as the driver of economic growth. By focusing only on formal R&D, the models capture only part of the process. In some cases, the models seem to assume a trade off of research labor and manufacturing labor -- as discussed above. Yet, economists have long known about the complexities of knowledge, including the importance of learning-by-doing (Arrow, 1962, 1994) -- that is, tacit knowledge that accumulates only through experience. In the current era of rapid product innovation, the manufacturing / R&D dichotomy (also known as the "learning-or-doing" approach) looks more and more like an industrial era concept. Under new forms of organization, R&D activities and

manufacturing activities are necessary compliments (see Kenney and Florida, 1993). Thus, learning-by-doing models may be more realistic than the learning-or-doing formulations.

It is also unclear as to how the models -- traditional growth accounting or endogenous growth theory -- differentiate between knowledge, technology and innovation. The difference is important. Endogenous growth theory asserts that knowledge is cumulative and does not depreciate. But, technology -- in which much of knowledge is embodied -- does depreciate. Nor is it clear that "A" encompasses just technology or whether it remains closer to the original definition of the residual as any thing that moves the production function -- "technical progress" or "total factor productivity"-- and therefore includes other intangible factors such as organizational and managerial capabilities.

Data Issues

In addition to technical and conceptual issues, studies of the impact of technology suffer from data and measurement problems. One of the major data problems concerns the price deflator (see Griliches, 1994, for a discussion of this problem). Since the price deflator is used to adjust for quality improvement of products at the firm level, a small error in the price index will have a large impact on the estimation of the contribution of R&D to productivity growth. As the problems associated with finding the correct price index for rapidly changing computer technology has shown, getting the deflators right is not a simple task. Other problems, as outlined by Griliches (1994) include the inability to measure productivity generally in the economy as outputs shift into the "unmeasurable" sectors such as government and services -- and poorer data response from industry.

There is also a question as to the accuracy of R&D spending data. Changes in the R&D tax credit may have caused firms to switch the classification of some activities between R&D and non-R&D expenditures. Questions have been raised as to whether accounting rules require company R&D expenditures only above a certain dollar threshold, so that spending by smaller companies may not show up (Scherer, 1992). Another problem is that R&D expenditures do not cover informal research and "learning-by-doing" activities.

Limitations of the Models

As a result of these weaknesses in the models, the public policy implications coming out of new growth theory may be too strong in terms of the response of the R&D endeavor to economic stimuli -- just as the policy implications coming out of the traditional growth models underplay the role of technology. As Grossman and Helpman (1994) readily admit, "we do not profess to understand fully the determinants of technological progress." (p. 42) Discussing the problem of relying on cross-country regressions of factors of growth, Mankiw (1995) concludes "(p)olicy makers who want to promote growth would not go far wrong ignoring most of the vast literature reporting growth regressions. Basic theory, shrewd observation, and common sense are surely more reliable guides for policy." (pp. 307-308)

In the final analysis, none of the macroeconomic models to date have managed to capture the true nature of the complexity of the innovation process. The traditional growth accounting models are "science-push." They assume that innovation comes from advances in science. On the other hand, endogenous growth models are "market-pull." They assume that demand, in the form of economic incentives, will pull an innovation through the process.

Yet, as most researchers who study the innovation process know, both of these processes are false as a sole description -- and true in combination. The innovation process is a complex relationship of market demand, scientific opportunities, serendipity and deliberative actions. Models that focus on only a part of the process are incomplete. Nelson (1994) sums it up when he says:

> While the new formal neoclassical growth theories do treat technological change in a richer and more sophisticated way than did the earlier neoclassical theory, there is still a large gap between the formal treatment in these recent papers and what economists studying technology and technical change know. (p. 319)

The Next Agenda

Closing that gap between the formal growth models and the current-state-of-knowledge about the innovation process is clearly the research agenda for the future. That is not an easy task. As Solow (1994) states:

> . . . there is an internal logic -- or sometimes non-logic -- to the advance of knowledge that may be orthogonal to the economic logic. This is not to deny the partially endogenous character of innovation but only to suggest that the 'production' of new technology may not be a simple matter of inputs and outputs. I do not doubt that high financial returns to successful innovation will divert resources into R&D. The hard part is to model that happens then. (p. 52)

Going beyond the innovation process, further work is needed if the models are to be able to adequately incorporate the complexities of the growth process. As Fuhrer and Little (1996) put it in the summary to a recent conference on the subject:

> It may be helpful to understand the input to production that is neither human or physical capital not simply as "technology," but as an aggregate of the state of technology, organizational and managerial ability, and "economic culture." These concepts are not easily measured, but given the inability of relatively well-measured constructs to explain the variation in productivity in disaggregated data, we must try to model and measure these intangibles better if we are to understand significant differences in growth and productivity over time and across countries. (p. 31)

North (1995, 1996) argues that the models need to incorporate a deeper understanding of institutions:

> Current theory stems from the development of national income and growth accounting literature and explores the superficial aspects of economic growth -- technology or human or physical capital -- rather than the structure of incentives and disincentives that make up the institutional framework on an economy and polity. (1995, p. 2)

> . . . a comprehensive understanding of economic performance through time requires a melding of theories of institutional, demographic, and stock of knowledge changes in order to have an overall approach to the issues. We have only begun to explore the interaction between these three sources of economic performance but I believe we can go far in developing useful models of the interaction between them not only in terms of institutions providing the incentive structure for demographic and technological change but also in terms of the ways in which demographic-and-stock-of-knowledge-perceived "imperatives" have in turn shaped the change in institutions. (1996, p. 9)

One of the more interesting attempts to move beyond the problems with the existing analytical framework is the evolutionary model of economic growth fueled by technical advances, as originally described by Nelson and Winter (1982). Since then, attention to "evolutionary economics" has expanded (see Nelson, 1995, and Witt, 1993, for surveys of the field). Based on Schumpeter, these models look at the behavior of firms in developing and utilizing knowledge in a search-and-learning mode. Arthur (1994) offers another version of a mathematically formalized model based on increasing, rather than decreasing, returns on investment.

As Nelson (1997) argues:

> The basic issues behind the choice of models is whether one can comprehend technological advance, or economic growth largely driven by technological advance, within a model that assumes 'rational expectations' on the part of the actors, and moving equilibrium in the system as a whole. I think it is absolutely clear that the answer is no.

He calls for a closer tie between "formal" theories of economic behavior and "appreciative" theory (see Nelson and Winter, 1982).

Such alternative theories are not widely accepted within the economics profession. However, from the point of view of a public policy analyst, these and other alternative models may be worth exploring for policy insights.

MICROECONOMICS:
RETURNS ON INVESTMENT IN R&D

Beginning with the path breaking analysis by Griliches (1958), numerous studies have been carried out on the return on investment in R&D. These studies calculate not only the private rate of return (to those undertaking the research) but also the social rate of return based on the consumer surplus created. Table 2 summarizes only a very few of the numerous studies.

TABLE 2
EXAMPLES OF PRIVATE AND SOCIAL RATES OF RETURN FROM PRIVATE R&D
(in percent)

Study	*Private Rate of Return*	*Social Rate of Return*
Terleckyi (1974)	20 - 30	50
Mansfield, et al. (1977)	25	56
Sveikauskas (1981)	7 - 25	50
Scherer (1982, 1984)	29 - 43	64 - 147
Goto-Suzuki (1989)	26	80
Bernstein-Nadiri (1991)	15 - 28	20 -110

Adapted from Griliches (1992), Nadiri (1993), CEA (1995) and Mohnen (1996).

The range of outcomes in these and other studies can be explained by the differing assumptions and data used. Although the methodology for calculating both private and social returns on investment is relatively straightforward, it requires a number of assumptions and can utilize a variety of estimating techniques. Mansfield, et al. (1977) aggregates across a set of case studies; Terleckyi (1974) uses a technology flow approach based on the coefficients from the input-output tables to estimate the amount of "borrowed" R&D; Bernstein and Nadiri (1991) use a cost function approach. Differences also arise due to differing data sets (cross-section versus time-series) and units of analysis (product, firm or industry). As Griliches (1992) notes, "(t)he main set of issues revolves around the question of how output is measured and whether the available measures actually capture the contribution of R&D (direct or spilled-over), and how R&D 'capital' is to be constructed, deflated and depreciated." (p. S33)

The methodology can also be used (as it was originally by Griliches, 1958) to study specific technologies. Trajtenberg (1990) analyzed a specific technology, the CT Scanner; and finds a social rate of return of 270 percent. In a study of information technology, Brynjolfsson and Hitt (1993)

find the social rate of return to be over 80 percent. Table 3 summarizes a number of studies on publicly-funded agricultural research (both technology specific and aggregate).

Regardless of their differences, these studies come to the same basic conclusions: *there is a significant private return on R&D investment at the firm and industry level – and an even greater social return on investment.*

TABLE 3
RATES OF RETURN FOR PUBLIC R&D IN AGRICULTURE
(in percent)

Study	*Case*	*Rate of Return*
Griliches (1958)	Hybrid corn	35-40
	Hybrid sorghum	20
Peterson (1967)	Poultry	21-25
Schmitz-Seckler (1970)	Tomato harvester	37-46
Griliches (1964)	Aggregate	35-40
Evenson (1968)	Aggregate	41-50
Knutson-Tweeten (1979)	Aggregate	28-47
Huffman-Evenson (1991)	Crops	45-62
	Livestock	11-83
	Aggregate	43-67

(from Griliches, 1992)

UNDERINVESTMENT, MARKET FAILURE AND SPILLOVERS

The finding of high social rates of return is often used to bolster the positive role of government in R&D funding. The large difference between the private rate of return (what a company can hope to gain) and the overall social benefit indicates an underinvestment in R&D. Assuming a conservative estimate of 30 percent for the rate of return on R&D, Jones and Williams (1997) estimate that the optimal level of R&D investment is four times larger than current investment. That underinvestment is taken as a market failure requiring a government response.

The reason for a higher social return on R&D investment is the incomplete appropriability of the benefits of an innovation. In competitive markets, a firm cannot charge for all of the improvement of a new product or process, since the older technology is still available. Thus, some of the benefit flows to the consumer in the form of better quality/performance and/or lower price.

Another reason the social return is often higher than the private return is the spillover from R&D activities to other firms. Since knowledge is a non-rival commodity (see earlier discussion of new growth theory), it is very difficult for the producer to maintain a monopoly on the results of R&D activities. Other companies utilize the research to improve their products and process at a fraction of the cost of the original research. In addition to intra-industry spillovers (from one firm in the same industry to another firm), research also indicates a significant spillover of technology between industries. Such spillovers, both intra- and inter-industry, create a "free-rider" problem whereby some gain freely from the effort of others. This adds to the disincentive to invest in R&D, intensifying the problem of under-investment -- and hence the need for government action.

Tassey (1997) argues that market structure effects -- not just the gap between social and private rates of return -- contribute to market failure. Market failure stems from uncertainty and questions of appropriability and manifests in both technology and market-related risk. These market-related risks are associated with the market structure, "either access to individual markets or the efficiency by which several industries or markets interact to form supply chains." (p. 90) The result is not simply an under-investment in R&D, but a skewing of funding toward less risky, short-term projects.

Not only do companies and nations gain from these externalities, but the process of discovery itself is enhanced. Researchers benefit from all previous known work on the subject. Without this process of knowledge accumulation -- sometimes referred to as "standing on the shoulders of giants" -- the process of scientific discovery would be severely limited. It is this cumulative effect that allows knowledge to escape the fate of diminishing returns on investment, and thereby contribute to self-sustained economic growth.

GOVERNMENT R&D

When looking at what the government should do to maintain optimal investment in R&D, specifically federally-funded R&D, the results of the studies are much more difficult to interpret. A number of studies of government contracted R&D (Griliches, 1980; Griliches and Lichtenberg, 1984; Lichtenberg and Siegel, 1991) show either zero or negative rates of return. Yet, other studies conclude that government funding raises the productivity of private R&D (Link, 1981; Levy and Terleckyi, 1982; Levin and Reiss, 1984; Mansfield and Switzer, 1984; Leyden and Link, 1991; Toole, forthcoming). According to Hall (1996), these studies show that every dollar of federally-funded R&D raises private R&D funding by 3 percent. Mansfield (1991, 1992) finds that the return on academic research -- much of which is federally funded -- to be an estimated 28 percent. As shown earlier in Table 3, studies of publicly-funded agricultural research indicate significant rates of return.

As this range of results indicates, determining the rate of return for government programs is fraught with difficulty (see Jaffe, 1998). The bulk of federal R&D spending is for non-economic, mission-specific research, especially military and space. Since such mission-specific research does not result directly in marketable new products and processes, the benefits are not easily captured in the consumer surplus approach. The agricultural research, on the other hand, resulted in specific market-relevant innovations. Another factor not captured in the studies is the role of government programs in the diffusion and adoption of a new technology. As Borrus and Stowsky (1998) put it, "(t)he historical experience strongly suggests that the US government's direct R&D sponsorship has often been far less important for commercial success than its support to diffusion and use." (p. 51)

LIMITATIONS ON THE TECHNIQUE

Although useful in establishing the importance of research activities, the entire methodology of calculating rates of return suffers from a number of problems. As Mansfield (1991) admits in his study of academic research, "it is by no means a full or satisfactory solution to the long-standing -- and extraordinarily difficult -- problem of evaluating the payoff to society from academic research." (p. 11) Trajtenberg (1990) warns that his finding of a 270 percent social rate of return for the CT scanner should be taken "with a grain (or two) of salt." (p. 167)

To begin with, these approaches have the same technical estimation and data problems (e.g., what deflator to use) as do the macroeconomic studies. In addition, as Hall (1996) points out, a small change in the R&D depreciation estimate will have a large impact on the estimate of the rate of return. On a conceptual level, rate-of-return studies suffer from a narrowness of focus. They are very sensitive as to what is included and excluded in the measurement of costs and benefits. As the General Accounting Office (1997) points out, R&D spending is an indicator of the level of effort but not a good indicator of the results of that effort (i.e., innovative success). Nor is formal R&D spending the only important input into the innovation process (as discussed in the earlier section). Additionally, attempts to look only at quantifiable returns on investment may overlook the many non-monetary gains from research.

Because of the limitation of both the data and the methodology, return on investment studies have only limited usefulness for specific public policy decisions regarding program evaluation and incremental budgetary decisions. They tend to be studies of the total return on investment, not the return on investment of an additional dollar of research. Nor are these rate-of-return studies an analysis of the future potential of any particular research activity. As the Congressional Budget Office (1993) reports, "(t)he type of research most likely to yield commercially valuable breakthroughs in the future can best be determined not by economists who study historical data, but by researchers and industrialists who study the state of technology." (p. 2)

In addition, as Tassey (1997) points out, when attempting to analyze macro-effects, such studies,

> encounter substantial difficulties in isolating the effects of the project on economic activity occurring beyond the industry or market initially affected. . . . most individual R&D

projects and the resulting outcomes are sufficiently small that estimating the bottom-line economic impacts for the target industry, let alone the whole economy, can be quite difficult. (p. 206)

PATENTS AND BIBLOMETRIC STUDIES

To overcome some of the problems associated with rates of return studies, some researchers have turned to other indicators of R&D activities (see Griliches, 1990). Jaffe uses patent data to determine the spillovers of R&D spending (1986) and the benefits of university research (1989). Jaffe, Trajtenberg and Henderson (1993) use a citation-weighted approach to patent data to look at the geographical effect of spillovers. Narin, Hamilton and Olivastro (1995, 1997) tie research references with patent data and finds a strong link between academic research and US-invented patents. Acs, et al. (1992) replicates the Jaffe (1989) study of the impacts of university research using the Small Business Administration's count of innovations as instead of patents. Using this technique, they find an even larger impact of university research on corporate R&D.

Adams (1990, 1993) and Adams and Sviekauskas (1993) use a count of scientific articles, weighted by the number of scientists in the field, to construct a measure of the "stock of scientific knowledge." This research bolsters the findings of the traditional econometrics approaches that academic research is a strong contributor to productivity growth. Interestingly, Adams finds a lag of roughly 20 years between academic research and its effect on productivity -- much longer than in other studies. However, as Adams himself points out, this "stock of knowledge" approach can be criticized on a number of grounds, such as the problem in the relative importance of a scientific paper in different disciplines.

These techniques suffer from their own data problems. For example, changes in patent law and the operations of the Patent Office have introduced biases in the data. As the General Accounting Office (1997) points out, the use of patents varies across industries. There is a great propensity to patent in some technological areas while others rely upon other ways of protecting their intellectual property (e.g., trade secrets) or do not seek such protection at all. Nor do patents distinguish between major breakthroughs and minor improvements. Likewise, bibliographic measures, such as the number of citations, suffer from interdisciplinary comparisons. Some disciplines publish fewer research papers than others for the same amount of research results. In addition, there is a question as to whether measures such as the frequency of citation gives any indication of the level of innovation.

DIFFICULTIES AND INSIGHTS

In part, the difficulties faced by all of these microeconomic studies are a result of the nature of the research enterprise itself. As was true with the macroeconomic studies, these microeconomic techniques attempt to match an input (resources) with an output (papers, productivity). In doing so, they fail to take into account the throughput. They look only at an outcome, either a specific

product/technology or an aggregate level of productivity or research, without adequately capturing the process of innovation with its complex relationships and uncertainties.

Still, the insights gained from rates-of-return studies can be useful for public policy. *Rates-of-return studies clearly indicate the positive social value of raising the level of investment in technology and knowledge creation over that determined by the market.* In addition, such studies are useful in program design, as will be discussed in the next section.

PUBLIC POLICY IMPLICATIONS:
WHY IT MATTERS

For policymakers and analysts, much of the debate summarized can seem to be abstract and technical. Nonetheless, the issues raised can have profound implications for a number of policy areas, such as technology policy, trade policy, intellectual property protection, monetary policy, education and training, tax policy, and policy coordination.

TECHNOLOGY POLICY

Obviously, many of the findings of these economic studies are directly relevant to science and technology policy. *The macro and microeconomic studies reviewed above strongly show the benefit of public investment in technology and knowledge creation due to increased economic growth and significant social rates of return.* These studies can also offer insights for policymakers on the design and operation of technology programs and policies.

On the macro side, the models can be used to assess policy options. Bartelsman (1990) uses an endogenous growth model to conclude that spending on R&D by the federal government increases the growth rate of productivity at low levels of funding but federally-funded research crowds out private research at higher levels by drawing away human capital resources from more commercially-oriented activities, thereby leading to a decline in productivity. Grossman and Helpman (1991) argue that policies that subsidize the sale of technology products could raise the return to inventors but increase the cost of the innovation process by bidding up salaries of scientists and engineers.

The results of the models must be viewed with caution, as they may be due to the models' formulation. In the case of the two examples cited above, both models seem to assume a fixed supply of human capital for R&D activities. They do not account for incentives drawing additional labor into the research enterprise. Second, the Bartelsman model assumes that government research only affects productivity indirectly through spillover (e.g., spin-offs from military research). While both of these assumptions are plausible in part, they do not completely hold. The findings do, however, raise interesting questions.

Based on these models, most economists are still reluctant to advocate specific programs of technology assistance -- even though most advanced (and many developing) nations have well-established R&D programs. The prevailing view among economists is summed up by Mohnen (1996) when he states that while we know that spillovers exist and are important, "we know too little about how knowledge is created and transmitted to recommend a sectorial specialization in R&D." (p. 57) But since spillovers are important, policy should concentrate on facilitating the transmission and absorption of knowledge.

Romer (1990) argues that "(a)lthough all the research is embodied in capital goods, a subsidy to physical capital accumulation may be a very poor substitute for direct subsidies that increase the incentive to undertake research. In the absence of feasible policies that can remove the divergence between the social and private returns to research, a second-best policy would be to subsidize the accumulation of total human capital." (p. S99) Most economists would agree that such a policy focused on education and increased skills is a clear path to economic growth, improved productivity and reduced inequality.

Although the "second-best" policy of improving human capital is important in its own right, it would be a mistake to simply revert to the notion of embodying technology in either capital and/or labor. The goal should be the creation of those "feasible policies" -- based on an understanding of the innovation system -- which increase the incentives to not only undertake R&D, but to utilize the results of that R&D in a timely and meaningful fashion.

The process of policy experimentation is key in using the models for insight. As Romer (1998) states:

> Theoretical models . . . are not to the stage where they can give us much specific guidance about, say, the optimal share of R&D in GDP or the best mechanism for government support. However, it has changed how we should think about the problem. Before, we started from a presumption that strong property rights and market trading were the optimal institutions for supporting economic activity. Departures from these institutions could be justified only on specific grounds -- external effects, income distribution, etc. What the theory of endogenous growth has established is that while this traditional conclusion continues to apply with full force in the realm of objects, it does not, indeed logically cannot apply when dealing in the realm of ideas. Thus, there should no longer be any debate about whether some departure from market mechanisms is called for. Instead, what we should be asking is what the right institutions are in this new area.

Romer goes on to argue that it will take careful experimentation and rigorous evaluation to learn what are those institutions.

It is clear that the development of such new institutions will require both experimentation and evaluation of public policies as we attempt to find our way in this new era of knowledge-based economics. As mentioned earlier, Jaffe (1996) argues that the Commerce Department's Advanced Technology Program (ATP) should utilize the concept of spillovers in picking research projects. Specifically, he suggests that ATP should fund those projects with the potential for significant social public and private rates of return with a clear path to commercialization in order to maximize spillovers. To do so, Jaffe warns, will require a better understanding of the mechanisms of appropriation and spillovers and the social and private rates of return.

Tassey (1997) argues for government assistance when the projected social rate of return is high, but the expected private rate of return to the innovator is below the existing corporate hurtle rate. When the private rate of return is above the corporate hurtle rate, government help is not warranted. He also argues for employing options valuation techniques now being used to assess

industrial R&D projects. A modified combination of these two private-sector methodologies can help government programs develop an optimal portfolio of R&D projects.

Economic impact assessment has become a greater part of technology policy management and will become even more important given the Government Performance and Results Act of 1993. It is therefore important to invest in improving the methodologies. One possible area for future exploration would be a comparison of government evaluation techniques with those used by R&D managers in the private sector -- as begun by Tassey (1997). See Huaser (1996) for a review of the R&D management literature.

Such a direct translation should be done with care. According to the General Accounting Office (1997), many of the indicators used by the private sector to measure the contribution of R&D to the firm's profitability are not directly translatable to the public sector. Special care must be taken with respect to both mission-specific and basic research -- those areas of research with little direct commercial benefit but potentially huge indirect economic benefit. However, as a workshop by the National Research Council (1995) concluded, the task is difficult but not impossible.

Trade Policy

International trade is intrinsically linked to science and technology policy and the debate over the nature of spillovers (i.e., whether they are international or localized) is relevant. Analysis of spillovers at the cross-national level by Coe and Helpman (1995) finds the rate of return on R&D in the G-7 countries to be 152 percent. They also find that a nation's productivity depends on foreign as well as domestic R&D spending. Cameron (1996) comes to a different conclusion as to the importance of international spillovers. He argues that most spillovers are localized. Therefore, domestic research is more important.

This question impinges directly on trade policy -- specifically what the government should do, if anything, to protect domestic technologies. It also raises a number of public policy questions related to issues of foreign participation in US R&D activities, direct foreign investment and international technological cooperation, such as:

- How important is international research?
- Does the United States have the ability to absorb foreign technology?
- Do we need to be the leaders in science in order to be competitive in technology (i.e., if imitation is cheaper and just as effective, why should we spend money on science)?
- What should we do, if anything, about the international free rider problem, i.e., the use of US-funded research by others?

Regarding the question of free-riders, it can be argued that international spillovers are a positive-sum activity. If the US economy gets a good rate of return from government-funded R&D,

it should not matter that others may benefit as well. Their gain is not our loss. Likewise, if others increase their levels of R&D investment, the United States should benefit from their spillovers.[2]

For the most part, proponents of the endogenous growth theory argue that open trade promotes technology and growth. Nonetheless, F. Rivera-Batiz (1996) argues that although open trade generally promotes growth, it can under certain circumstances reduce technological change and therefore growth. According to Rivera-Batiz, this happens when trade raises the production of labor-intensive industries and takes human capital away from R&D activities. This argument remains controversial within the economics community, however.

Again, the models must be viewed carefully before accepting their policy conclusions. In the above example, it appears that the model follows the learning-or-doing approach, whereas the learning-by-doing variation may be more appropriate (see earlier discussion). If absorption of foreign technology and imitation is easy, then production may be as important, if not more, than R&D.

Intellectual Property Protection

Closely tied to technology policy is the area of intellectual property protection. As mentioned earlier, knowledge is treated in the endogenous growth models as an explicit outcome of incentives. The models are also based on the incomplete appropriability of the results of that research. Such a combination creates a tension between the need to provide incentives in the form of monopoly rents and the need to allow others to utilize the knowledge. These models can be used to further our understanding of the tradeoffs involved in intellectual property rights. For example, rates-of-return techniques could be used to analyze a recent proposal by some pharmaceutical manufacturers to extend patent protection on certain drugs in return for royalty payments to the government.

Monetary Policy

One interesting policy tie-in to studies of the rates of return on new technologies -- and the contribution of new technologies to productivity and economic growth -- concerns monetary policy.

Despite much hype and anecdotal evidence, data on the overall productivity of the economy do not seem to show any impact from new computer and information technologies. However, recent research on the industry and firm level shows that the new technologies may now be having an impact. Brynjolfsson and Hitt (1996) argue that this "productivity paradox" was over in large firms by 1991. Their research shows that "computers contribute significantly to firm-level output, even after accounting for depreciation, measurement error, and some data limitations." (p. 557) They

[2] I am grateful to Adam Jaffe for this point. Personal communications, December 1997.

estimate that the gross marginal product for computer capital averages 81 percent for the firms in their sample.

The current debate over productivity measures is a carry-over of the ongoing discussion over the "productivity puzzle." Specifically, that issue concerned whether or not the productivity of R&D, as measured by elasticities and rates of return, declined in the 1980s -- and what caused the decline. Part of that decline, according to Hall (1993, 1996), may have been a statistical artifact (even though it must be remembered that Hall's conclusions are focused on private rates of return on R&D, not productivity growth in general). As was discussed earlier, the choice of price deflators can have a large impact on the measurement of the rate of return.

Regardless of that caveat, the issue of the impact of new technologies on productivity is far from understood. As discussed in the earlier sections, we do not have adequate models of the innovation process, nor do we clearly understand how various factors interact (i.e., technology, organizational structures, worker skills) to increase productivity. Specifically, we do not fully understand the role of the complimentarities between technologies. Economic historians and theorists have pointed out that new technologies often require a host of other changes -- technological, institutional/organizational, and in worker skills and knowledge -- before they can be fully utilized. One example is the case of electric motors replacing steam engines in the factory system. According to Rosenberg (1996), it took 40 years before the full impact of this change was felt, because of the need for complimentary changes in power transmission technologies, plant design and organizational procedures.

This delay, caused by the time needed to build up these complimentary assets, could be a major reason behind the "productivity paradox." It may be that those complimentary assets for computer and information technologies are now in place. If so, the economy may see a sustainable boost in productivity as a result of the last decade's increased investment in computer and information technologies. If not, the technological change may result in a short-term boost to productivity but may not produce a sustained productivity increase.

The resolution of these issues has direct ramifications on monetary policy. Currently, there is a debate surrounding the potential non-inflationary growth rate of the economy. There are those in both the business and economic communities who argue that the US economy has entered a new era -- labeled in the press "the New Economy" or "the New Paradigm." One of their arguments is that new technologies are creating a sustained productivity boost. Thus, the economy can growth faster than the current long term rate of 2 to 2½ percent, without triggering inflationary pressures. The Federal Reserve Board can therefore be more expansionary in setting monetary policy. It should be noted, however, that proponents of "the New Economy" also describe a number of other factors as key too either lowering the possibility of inflation or raising the potential growth rate -- ranging from increase globalization to the Reagan tax cuts to the shrinking of the federal budget deficit.

This "New Paradigm" has been roundly criticized by some economists, such as Krugman (1997) and Blinder (1997). Nonetheless, if new technologies are raising the productivity levels at a sustained higher rate, then there may be room for the economy to grow faster than the recent historic trend. If, on the other hand, new technologies are providing only a one-time or short-term

boost in the productivity rate, then the critics may be correct about the inflationary dangers of the New Paradigm.

EDUCATION AND TRAINING POLICY

It is clear from a review of the economic models that human capital is an important factor in economic growth. And, thus, all of the models support what Romer characterized as the second-best policy of education, training and skill development. Yet, it is also clear that "technical change" owes a lot to the process of learning-by-doing. Key to this process is how worker skills and managerial know-how are developed and shared -- in essence, the process of knowledge spillovers. Education and training policy may benefit, therefore, from an effort to gain insights on the spillover process explored in the macro and microeconomic models.

TAX POLICY

Although not directly the topic of this paper, tax and capital formation are important policy tools with respect to capital accumulation. All growth models agree that capital accumulation is a critical factor in economic growth. Thus, tax policies which reward saving and investment are generally thought of by economists as necessary for economic growth. What is unclear from the models is the interaction between the various factors -- and therefore if and how tax incentives should be targeted. A better understanding of these factors could provide useful guidance to policymakers as they design specific elements of tax policy.

POLICY COORDINATION

As stated earlier, growth theory (both new and old) tells us that all factors (capital accumulation, education and skills, and R&D) are critical and they compliment one another. Therefore, any policy which focuses on one to the exclusion of the others is incomplete. Creating and sustaining economic growth is a process of having the right policies in a number of areas -- with each set of policies complimenting rather than hindering the other. This need for a coordinated multi-facet approach may be the most useful and important policy insight to be gained from a review of the growth theory literature.

CONCLUSION:
WHERE DO WE GO FROM HERE

A great amount of useful work has been done over the past decade on the issues of economic growth and the rate of return of investment in technology. From the perspective of a public policy analyst, there are a number conclusions that can be drawn from the review of this work. First, the research contains numerous policy-relevant insights. It is time to systematically harvest these insights -- while understanding and paying close attention to the limitations of the models. In the case of growth theory, this means using the models to gain insights specifically on policies related to trade, intellectual property and tax. In the case of microeconomic studies, insights into the nature and extent of spillovers can have a great deal of relevance for technology and trade policy, among other policy areas.

The second conclusion concerns the limitations of the models. Current growth models, while an improvement over previous growth accounting techniques, are still relatively simplistic. More work needs to be done to refine the models with respect to:

- how do the various factors, such as physical capital, human capital and technology, interact; and,
- what are the factors that go into increasing technological progress.

Going beyond existing theory, more research is needed to close the gap between the new growth models and case studies of innovation. The same can be said for microeconomic studies. Rather than more precise estimates, both macroeconomic growth theories and microeconomic studies of rates of return should be mined for their insights -- especially concerning the nature, degree and dynamics of spillovers. There is a vast body of literature on innovation and technological development (for example, see Nelson, 1993, and Rosenberg, 1994). As Nelson (1997) states, "these institutionally oriented, appreciative theoretic studies have been much more illuminating about the microeconomics of technological advance than most of the econometric studies." The insights gained from such should also be mined in the development of better microeconomic models. Likewise, those who study the innovation process might gain valuable insights from the rigorous microeconomic models.

As discussed earlier, current rate-of-return techniques are only partially useful in understanding how to design effective technology programs. Nor are private sector techniques directly applicable. However, the Government Performance and Results Act of 1993 is forcing programs to justify themselves. This provides an opportunity for further research on evaluation techniques -- where the bottom line is contribution to economic growth, not profitability. Further work should look into combining private sector evaluation methods with the economic research on spillovers with a specific focus on public policy.

Productivity and economic growth are of special importance for the current public policy debate. Further analysis is needed, specifically on:

- what is the overall trend in productivity;
- is the "productivity paradox" over (i.e., are we beginning to see the payoff from investments in information technology); and,
- if so, is this payoff large enough to boost the non-inflationary growth rate beyond 2½ percent.

Such research should be undertaken specifically with the question of non-inflationary growth in mind. In essence, this research should extend the existing new growth theory models to include monetary policy.

Work on data problems should also continue. Development of new data sources and new measurement methodologies is critical to advancing our knowledge base. For example, the Bureau of Economic Analysis created a one-time satellite R&D account as part of the national income and production accounts (see BEA, 1994). Further efforts should be undertaken and improved, in all areas of research and innovation indicators (see National Research Council, forthcoming).

In summary, economic research has supplied policymakers with three important findings:

- *technology, innovation and knowledge are important factors in economic growth;*
- *there is a significant private return on R&D investment at the firm and industry level – and an even greater social return on investment; and,*
- *there is a positive social value of raising the level of investment in technology and knowledge creation over that determined by the market.*

However, many unanswered questions remain and much research still must be done before existing economic studies, macro and micro, can provide detailed assistance to policymakers in their quest for achieving technological-driven economic growth. From the perspective of a policy analyst, the future research agenda should pursue a goal of better understanding the dynamics of the innovation process. Rather than get bogged down in the specific outcomes of the theoretical models and rate-of-return analysis, policymakers should search for insights in the discussion of the nature of technology and analysts and theorists should strive for a better understanding of "knowledge" and the innovation process.

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