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Central Bank Flexibility and the Drawbacks to Currency Unification

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The European Monetary System proposes both the elimination of all trade barriers and complete monetary integration. The formation of a common European currency controlled by a single European central bank is planned for the mid-1990s. In effect, instituting a single currency permanently fixes the exchange rates between these countries, a system far different from the temporarily fixed exchange rates now in place. A perfect example of a currency union is the United States, where the exchange rate between states is immutably set at one. Discussion of the European currency integration has almost exclusively highlighted its beneficial effects on policy coordination and exchange rate uncertainty. The potential costs of currency unification have been largely ignored. In fact, recent British and West German doubts over the viability of such a union have met with surprise. This article briefly reviews the costs and benefits of monetary integration as articulated in the traditional optimal currency area literature. A full-employment model is then presented that for the first time examines diversity among countries' distaste for unemployment and inflation as a cost to currency unification. Finally, the policy implications for the Federal Reserve System, a central bank within a given currency union, are explored.

Recently, the optimal currency area debate has been subsumed by the optimal exchange rate regime literature. The difference between the two frameworks is a subtle one. The optimal currency area looks for the ideal borders for an area within which the exchange rate should be forever fixed, and outside of which the exchange rate should be flexible. The optimal exchange rate regime literature typically analyzes the preferred foreign exchange system given predetermined borders. For example, studies of the optimal exchange rate regime would examine whether the United States should float or fix the value of the dollar, while the optimal currency area literature might ask whether it is preferable to disaggregate the United States into different regions of flexible regimes. Another important difference between these two liter-

atures is their assumptions concerning unemployment. The more recent exchange rate regime studies usually assume full employment, while the optimal currency area literature typically has not.[1] Yet, both areas of research help to articulate the costs and benefits of monetary integration.

The discussion of the optimal currency area is much broader than an examination of the European Monetary System. It obviously applies to the question of whether the ex-Soviet "republics" should possess independent currencies or whether the East and West German marks should be unified. The optimal currency area analysis also illuminates an important issue in national monetary policy. National boundaries do not necessarily coincide with optimal currency areas; thus, potential regional targets, such as income, often diverge. Yet, interest rates and monetary aggregates are national instruments. As a result, central banks choose monetary policies that are optimal for the currency area as a whole but potentially suboptimal for some, if not all, of the individual regions of the country. How should the Federal Reserve react to a decline in output in the Southwest if helping that region inflates the rest of the country? This paper examines the extent of this problem in Federal Reserve policy formation.

Sections I and II briefly review the major costs and benefits of currency unification as highlighted in the optimal currency area literature.[2] Section III examines the importance of regional taste differences, not modeled in the previous full employment analysis. Section IV discusses how these issues relate to the European Monetary System, the EMS. The implications of the optimal currency area literature for U.S. monetary policy are examined in section V, and part VI presents a conclusion.

I. The Traditional Benefits to Currency Unification

The optimal currency area literature emphasizes the added usefulness of money when currencies are unified. Most importantly, money serves as a medium of exchange and a store of value. Uncertainty about the relative values of currencies, which occurs when exchange rates fluctuate, can impair both of these functions; it makes trade in both goods and capital more expensive and less likely. Although forward exchange contracts do reduce the costs to trade when exchange rates are flexible, the short maturities of these arrangements do not protect long-term trading relationships or long-term capital movements Consider the detrimental effect this uncertainty can have when planning a trip abroad. If the value of the dollar plummets after the commitments have been made, the cost of the trip in dollars soars. It is not surprising that such uncertainty reduces the frequency of inter-currency journeys. The reduction in inter-currency commerce diminishes the benefits to world trade, which is a serious cost of exchange rate uncertainty.

The optimal currency area literature emphasizes the added usefulness of money when currencies are unified.

Another drawback to currency flexibility has recently been articulated by Richard Cooper (1986). Fluctuations in exchange rates affect the trade balance. A dollar appreciation increases the price of our goods abroad and decreases the cost of foreign goods in the United States, thus tending to worsen the trade deficit. Although this may only be a temporary phenomenon, a political reaction to the deficit could result. Use of tariffs or quotas to decrease the imbalance would have lasting costs. Thus, the reduced gains from trade resulting from anything less than permanently fixed exchange rates motivate regions to unify their currencies. In fact, protectionist pressures in the United States have increased as the trade balance has worsened. Yet, serious trade deficits can and do occur under fixed exchange rates, and the immobility of the exchange rate can aggravate these imbalances. Which regime produces the larger temporary deficits depends on the frequency and strength of the forces that produce these trade imbalances in the first place.

A single currency area can also make macro policy more effective. Permanently fixed rates can help to automatically stabilize the economy. All economies are subject to random disturbances. If these shocks are local in origin and nominal in nature, fixing the exchange rate can mitigate their domestic effects by exporting them abroad. For example, a sudden decline in money demand tends to decrease the interest rate and increase output; yet the subsequent decline in the interest rate causes the supply of the domestic currency to fall as funds flee the coun-

try. To support the exchange rate, the central bank would decrease the money supply and increase the interest rate.[3] Along these same lines, fixing the exchange rate may discipline the central bank.[4] Many central banks tend to inflate their economies, and enacting a rule that prevents this undesirable inflation would improve social welfare. Forcing the central bank to maintain a fixed exchange rate is just such a rule. In this case, if domestic prices get out of line with foreign prices, pressure is exerted on the exchange rate. Central bank actions to relieve this strain bring prices back into line. The domestic inflation rate is, therefore, limited by the foreign rate. The gains from trade, automatic stabilization, and monetary discipline are the three most frequently cited policy benefits of a single currency area.

II. The Traditional Costs of Monetary Unification

Relinquishing the use of monetary policy to accommodate region-specific disturbances is the major cost to joining a currency union. If wages are nominally rigid, the price stability mentioned above comes at the expense of quantity adjustments. As an example, consider two regions within the same currency area at the beginning of the 1974 oil shock. As the price of oil increased, the wealth and terms of trade for Texas improved. On the other hand, Michigan, which was a large producer of autos particularly sensitive to the price of gasoline, suffered a decline in income and wealth as well as a deterioration in its terms of trade. Assuming, as the traditional literature does and as appears to be the case, that wages and prices are not immediately flexible, Michigan unemployment should tend to rise and its income fall while Texas unemployment should tend to fall and its income rise. In fact, the annual growth rate in real per capita income from 1973 to 1975 was 1 percent in Texas and −6 percent in Michigan; further, in the ensuing recession of 1974–75 Texas unemployment only increased 1.7 percentage points while Michigan's jumped 6.6 percentage points. Without the possibility of independent monetary policy in each of these two regions, either real wages had to fall rapidly in Michigan or labor had to be mobile between the states. Perfectly flexible wages and prices would avoid unemployment, while labor mobility would mitigate the excess demands and supplies of labor in the different regions.

Thus, the optimal currency area work specifies the diversity of regional responses to external disturbances as the source of the major cost of currency unification. Negative disturbances produce unemployment as wages and prices are assumed to be imperfectly flexible. Since monetary policy can help mitigate the effects of these rigidities by inflating away the nominal wage, decreasing the interest rate, or adjusting net exports through exchange rate movements, refraining from its use produces social losses. The cost of relinquishing control over this policy tool depends on the extent to which wages are rigid and labor is immobile. The slower wages and prices are to adjust, the longer the economy is off its full employment path and the higher is the cost in lost output. The less mobile is labor, the less the excess supply of labor in the depressed region offsets the excess demand elsewhere.[5] The assumption of imperfectly flexible wages and prices within a currency area generates the vital role in the optimal currency area literature for labor mobility in reducing unemployment in the depressed region and alleviating wage inflation in the boom area. Thus, wage rigidity and different stochastic environments do not preclude monetary integration; it is the boundaries of labor mobility that determine optimum currency areas in Mundell (1961).

The traditional literature also distinguishes the loss of sovereignty as a cost to currency unification. The exact nature of this cost is not clearly described, as the phrase really incorporates many ideas. Yet relinquishing authority over monetary policy is, again, the source of this loss. Abdicating control over monetary variables might also reduce the government's influence over long-run features of the country's economy. The optimal currency area literature uses a Phillips curve to analyze this cost. It is assumed that higher rates of inflation are accompanied, in the long run, by lower unemployment. By giving up control over monetary policy, the region forgoes the opportunity to select its preferred point along its Phillips curve. Thus, another drawback to currency

Relinquishing the use of monetary policy to accommodate region-specific disturbances is the major cost to joining a currency union.

unification is the loss of a region's ability to attain its preferred mixture of inflation and unemployment.

Other costs, however, fall under the category of loss of sovereignty. Depending on the exact institutional arrangement, by joining a monetary union a country can lose the government revenues produced from money creation; it forgoes its seigniorage. Furthermore, joining a currency area eliminates a region's ability to alter its exchange rate to offset foreign shocks. For example, if wage costs were to accelerate in one part of the currency union, wages and prices would eventually inflate in the remaining section as its current account with the rest of the union would move into surplus. If, however, that region were independent of the union, it could simply appreciate its currency vis-à-vis the high-wage region, leaving its output, wages, and prices unchanged. Its inability to insulate itself from shocks originating in the rest of the currency area increases the costs of monetary integration.

Doubts have been cast on the extent and importance of many of the costs described above. For example, most current theory rejects the idea that the Phillips curve is other than vertical in the long run.[6] Since no long-run trade-off exists between inflation and unemployment, no costs result from losing one's ability to select the optimal inflation-unemployment combination. Furthermore, the relevance of labor mobility has been questioned. Since labor is basically immobile everywhere, between sectors as well as regions, it cannot determine the boundaries of the optimal currency area.

In response, the next section constructs a model in which the long-run Phillips curve is vertical and labor is perfectly mobile between two regions considering a monetary union. Shocks affect each region identically, removing the major drawback to integration in the traditional literature. The only difference between these two areas in this model is their tastes for the trade-off between inflation and unemployment as they move back to full employment after a shock. As in all the optimal currency area literature and most of the optimal exchange rate regime studies, short-run unemployment is possible since wages are assumed to be temporarily rigid.[7] One justification for this assumption is the existence of explicit or implicit contracts. In this model currency unification is never preferred. This conclusion holds even though all of the traditional costs of monetary integration have been removed. The importance of this analysis to recent British and West German objections to European currency integration is, therefore, examined in part IV.

III. A Model of Sovereignty

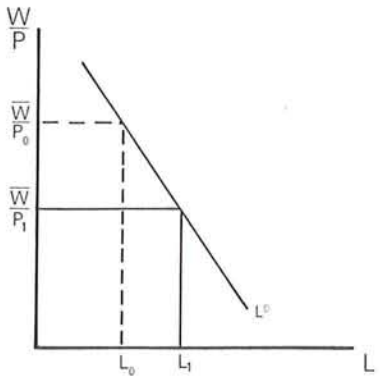
This section analytically examines the costs and benefits of joining a currency area. The model addresses the criticism leveled at the previous work and adds a cost to monetary integration derived from the potential diversity in tastes for unemployment and inflation among regions. It is assumed that there are three areas, two identical regions considering monetary unification, and the rest of the world, the ROW. The two regions considering integration are small in relation to the ROW; thus, they take foreign prices as given. These two areas must choose between two alternatives. Either they unite into a currency union with a common flexible exchange rate relative to the ROW, or they remain separate, floating their exchange rates with each other and with the ROW. It is essential that the currency union have a flexible exchange rate with the ROW, otherwise the entire globe would become a single currency area.[8] The assumption that regions 1 and 2 are identical, with the same reaction to real disturbances, is equivalent to modeling perfect labor mobility; thus the major cost of currency unification in the optimal currency area literature is eliminated. Abstracting from this cost increases the likelihood that monetary integration should be selected and emphasizes the importance of diversity in tastes. Finally, since the two regions are identical, the equations below apply to both together or either separately.

The firm produces output with a fixed quantity of capital and a variable labor input. Output at time t is a function of the real wage and a real productivity shock, μ.

$$Y_t = \overline{Y} + (P_t - {}_{t-1}E\,P_t) + \mu_t \qquad (1)$$
$$E(\mu) = 0 \quad E(\mu^2) = \sigma_\mu^2$$

The $\overline{Y}$ term represents output given the mean real wage, and therefore is referred to as full employment output. The second term in equation (1) depicts unexpected changes in the real wage. The rigid nominal wages, based on expectations of the price level, are set in period $t - 1$, before the realization of the actual prices. If the price level is higher than expected, the real wage falls, employment increases, and output expands. As shown in figure 1, when prices are greater than expected, $P_1 > P_0$, the real wage falls from $\overline{W}/P_0$ to $\overline{W}/P_1$, employment, L, and output rise. If $\mu = 0$ then today's price, P_t, equals last period's expectation of today's price, ${}_{t-1}E\,P_t$, and output hits its mean level. Equation (1) assumes a vertical long-run Phillips curve; regardless of the level

Figure 1



of inflation, with no unexpected price movement, income realizes its full employment level. Modeling a vertical Phillips curve eliminates another cost of currency integration, since the region has no power to select the optimal long-run inflation-unemployment trade-off.

By assumption, the two regions are equally affected by the disturbance to labor productivity. The μ in equation (1) is analogous to an oil price shock. As the price of oil decreases, labor productivity rises and output increases. The traditional literature, however, highlights the costs to currency integration that result from less than perfect correlation between these regional shocks. Different μs in each region would produce different Ys and different preferred monetary reactions. The assumption in this model that μ is perfectly correlated between regions 1 and 2 eliminates this traditional cost to unification and, thus, isolates the costs to lost sovereignty alone. Losses due to less than perfect regional shock correlations, however, can be quite large. Therefore, when discussing the United States and Europe the correlation among the regional μs will also be examined.

Domestic prices are controlled by the central bank in the region or, if the regions unify, the currency area. Competition ensures that the domestic prices of the foreign and home good are always equal so that purchasing power parity, in equation (2), holds. The flexible exchange rate with the ROW guarantees that changes in the world price level have no effect on domestic prices. Conversely, the central bank of the region, or of the combined area, can alter domestic prices and allow fluctuations in the exchange rate to equate the home currency prices of domestic and foreign goods.[9] The central bank uses the money supply to control the domestic price level. All that is needed to determine the domestic price level is a money demand function; the simple one given in equation (3) merely eases the arithmetic.

$$(2) \qquad P_t = e_t P_t^* \quad \text{where } * = \text{foreign}$$

$$e = \frac{\text{domestic currency}}{\text{foreign currency}}$$

$$(3) \qquad M_t^D = P_t + Y_t$$

$$(4) \qquad \underset{P}{\text{MIN}}\ \alpha_i(Y_t - \overline{Y})^2 + \Gamma_i(P_t - P_{t-1})^2 \quad \text{for } i = 1, 2$$

Equation (4) represents society's desire to minimize losses from unemployment and price level changes. The central bank sets P_t according to the μ realization and society's relative distaste for price level movements, Γ, and deviations from full employment, α. The i subscript in equation (4) indicates that these taste parameters can differ between regions. Note that Γ includes the loss in social utility brought about by a decline in the usefulness of money.[10] Although this is a full employment model, non-zero μ realizations motivate price surprises and output movements over the short run.[11] The central bank selects P_t in order to minimize the losses resulting from these shocks by spreading them between employment deviations and inflation.

Minimizing the central bank's loss function with respect to the price level produces the solution for the inflation surprise.

$$(5) \qquad (P_t - {}_{t-1}E\ P_t) = -\frac{\mu_t}{1 + \frac{\Gamma_i}{\alpha_i}} \qquad i = 1, 2$$

It is assumed that region 1 has a stronger distaste for employment fluctuations relative to price changes than region 2; thus, α_1 is greater than α_2, and Γ_1 is less than Γ_2. Except for the taste differences, the two regions would agree on the optimal price surprise. Further, it is assumed that if region 1 enters a monetary union with region 2, the central bank in region 2 controls monetary policy for the combined area.[12] In that case, the actual price surprise in equation (5) is a function of α_2 and Γ_2. Whether region 1 should join the union depends on the

expected losses it incurs under each regime. Substituting equation (5), with i = 2, into region 1's loss function, equation (4) with i = 1, and taking expectations, produces the average losses for region 1 if they proceed with currency integration.

$$(6)\quad \text{Region 1's loss (if joins)} = \frac{\alpha_1\left(\frac{\Gamma_2}{\alpha_2}\right)^2\sigma_\mu^2 + \Gamma_1\sigma_\mu^2}{1+\frac{\Gamma_2}{\alpha_2}}$$

Alternatively, region 1 could choose to maintain its own monetary policy. A flexible exchange rate with both ROW and region 2 ensures that region 1's central bank selects its own price surprise. In this case, the taste parameters in equation (5) are those of region 1, not region 2. Substituting the expression for this price surprise into region 1's loss function produces its average losses if it does not join the union.

$$(7)\quad \text{Region 1's loss (if independent)} = \frac{\Gamma_1\sigma_\mu^2}{1+\frac{\Gamma_1}{\alpha_1}}$$

If the losses in (7) are less than the losses in (6), region 1 should not agree to currency integration. This condition reduces to whether (8) holds.

$$(8)\quad \left(\frac{\Gamma_2}{\alpha_2}-\frac{\Gamma_1}{\alpha_1}\right)^2 > 0$$

Equation (8) is always true so, in this model, region 1 should never join the monetary union. It is important to point out that condition (8) is simply a property of maximization. Region 1's reaction to a disturbance will always be preferred to another area's solution. Even with perfect labor mobility between the two regions and no long-run trade-off between unemployment and inflation, region 1 rejects unification. As long as there are disturbances that force the economy away from full employment, taste differentials alone are sufficient to reject monetary integration. The extent of this divergence in taste will be discussed in the next section; however, there are reasons to believe these differences can be quite large.

This model is structured to highlight the importance of diverse tastes. A more complicated version of this paradigm can be found in Tootell (1989). That paper includes a structural bias toward inflation, foreign shocks, and optimal labor contracts. The model with an inflationary bias in both regions is solved in this article's appendix. Given a predilection for inflation, region 1 might join the union since a potential increase in monetary discipline could result in lower inflation. In fact, it has been claimed that France and Italy entered the European Monetary System in an attempt to import the Bundesbank's noninflationary tendencies. In addition, optimal labor contracts complicate both the central bank's power over employment and the determination of the equilibrium inflation rate. Finally, this basic paradigm can incorporate the net losses due to the short-term and long-term effects on trade of a flexible exchange rate rather than a fixed one; simply add another cost expression to the objective function in (3). This term would be subtracted from (8). Joining the currency union is then ambiguous, depending on the magnitude of the trade losses relative to the size of the taste discrepancy. On the other hand, it is assumed above that region 2's central bank when integrated cares equally about both regions' unemployment; if it does not, the union would be less likely to occur. Although these extensions to the paradigm make the decision to join the union ambiguous, the lopsided benefits often portrayed in the popular literature are not present.

As long as there are disturbances that force the economy away from full employment, taste differentials alone are sufficient to reject monetary integration.

This section provides a rigorous analysis of a new result. Even in a model with full employment, a vertical Phillips curve, and perfect labor mobility, taste differences can create important losses to joining a currency area. The sovereignty issue as represented in this paradigm may be more important than these more frequently cited problems with monetary unification. Even when abstracting from the traditional costs to currency integration, the short-run ability to spread the effects of a real shock over inflation and employment deviations according to the region's own tastes is a sufficient reason for a region to maintain its own monetary policy. This model is quite

adaptable to more sophisticated analysis. The most important of these extensions, highlighted in the traditional literature, would include different μ shocks across the regions considering unification. The next two sections use this basic framework to examine the correlations in these disturbances across countries in Europe and states in the United States, as well as potential differences in their tastes.

IV. European Unification

Analyzing European unification requires incorporating the benefits to monetary integration as well as the costs. The major advantage is increased gains from trade. The lion's share of forthcoming gains for Europe derives from EMS trade unification, not EMS currency integration. Monetary integration affects intra-European trade through the elimination of exchange rate uncertainty. The magnitude of this change is unclear, however. Risk neutrality and the existence of forward exchange contracts can significantly reduce the effects of uncertainty on trade. The relative stability of the European currencies also reduces this loss, as flexible exchange rates do not necessarily entail variable rates. Another benefit to currency integration, as examined in the appendix, is the possible increase in monetary discipline. Yet, the need for discipline and the increased gains from trade make the decision to unify ambiguous, not obvious. Benefits certainly result from currency integration, but it is far from clear they are so large that they offset the potential losses.

To analyze the EMS, the costs to unification must also be examined. Britain, France, and West Germany have diverse mixes of agricultural, primary, durable, and nondurable goods production. Unlike the identical economies modeled in the previous section, these compositional differences ensure that random disturbances have different effects on each of these countries. Thus, the μ in equation (1) affects each country differently, reinforcing the choice for currency independence. The realities of wage rigidity and regional diversity also make the issue of labor mobility vital in any analysis of the costs of European currency unification.[13] The model's assumption of wage rigidity does appear relevant to Europe, as its persistent unemployment throughout the 1980s suggests. Furthermore, labor is far from perfectly mobile within the EMS. Evidence suggests that labor is highly immobile even within a country or between

Table 1
Inflation and Unemployment Rates after the 1973 Oil Shock
Percent

	1973	1974	1975	Percentage Point Change 1973–75
United States				
Inflation	6.2	11.0	9.1	2.9
Unemployment	4.9	5.6	8.5	3.6
West Germany				
Inflation	7.0	7.0	6.0	−1.0
Unemployment	.7	1.6	3.4	2.7
France				
Inflation	7.1	13.9	11.7	4.6
Unemployment	2.8	2.9	4.1	1.3
United Kingdom				
Inflation	9.4	15.8	24.5	15.1
Unemployment	3.2	3.1	4.6	1.4
Italy				
Inflation	10.2	19.4	17.1	6.9
Unemployment	3.7	3.1	3.4	−.3

Source: *Economic Report of the President*, February 1990.

sectors in the same region.[14] Relying on inter-country migration to restore equilibrium is much more tenuous; beyond the usual explanations for geographical immobility such as associations with family and institutions, language and cultural barriers exist. Despite EMS provisions to eliminate all restrictions on intra-European labor migration, the de facto obstacles may prove to be essentially prohibitive to labor mobility. The diverse industry composition among countries and the poor labor mobility only strengthen the conclusion in the previous section of this article, that costs to currency unification are great.

The importance of taste differences among the European nations should not, however, be minimized. The inflation and unemployment experiences of the developed economies after the 1973 oil shock are illustrative.[15] Table 1 reveals this divergence in tastes; the United States and West Germany reacted with low inflation and high unemployment rates, while France, Britain, and Italy all experienced high inflation and relatively little change in unemployment. These countries clearly made significantly different choices regarding the division of this shock between unemployment and inflation. A study by Oudiz (1985) reinforces this conclusion in estimates of European taste parameters, reproduced in table 2.

Table 2
European Tastes for Inflation and Unemployment

	Γ	α
West Germany	.91	.05
France	.11	.10
United Kingdom	.07	.07
Italy	.05	.09

Reprinted from Gilles Oudiz, "European Policy Coordination: An Evaluation." *Recherches Economiques de Louvain*, December 1985.

West Germany's distaste for inflation is apparently significantly larger than that of France, the United Kingdom, or Italy. This difference helps to explain why West Germany bore much more unemployment and much less inflation after the 1974 oil shock than her European partners. West Germany's divergence from the rest of Europe is particularly important in light of its disproportionate power over monetary policy in Europe.

The recent debate over who will run the EMS central bank further suggests the importance of the taste differences. Although the United Kingdom has been most noticeably reluctant to integrate, the president of the Bundesbank recently conditioned West German participation in an EMS currency union on the formation of a European central bank independent of political influence and committed to price stability. In fact, Karl Pohl, head of the Bundesbank, expressed fear that European monetary policy will orientate itself "towards averages and compromises, but that is the worst possible compass for monetary policy."[16] Currency integration is being delayed precisely because each country fears which α and Γ will determine European monetary policy; the Bundesbank is attempting to ensure that its tastes are imposed on the European central bank, while Britain is reluctant to subject itself to monetary policy not determined by its own α and Γ. Even France, one of integration's most ardent supporters, has recently proposed an appreciation of the deutsche mark in light of the rise in West German interest rates.[17] As the unification date approaches, it becomes more evident that issues of labor mobility are far less important to the current reluctance to unify than the issues of sovereignty highlighted in section III.

In short, the decision to unify the European currencies is far more ambiguous and complicated than the EMS timetable assumed. The historical literature on the optimal currency area occasionally applied itself to the issue of European unification and generally concluded that Europe is not an optimal currency area.[18] These works examined the issue along the traditional dimensions of structural similarity, labor mobility, and Phillips curve analysis. Section III illustrates that differences in tastes could be affecting the decision. While the benefits that result from unification could outweigh its costs for many countries in Europe, it is not at all clear that this is true for all of Europe. Important and significant costs to monetary integration could easily dominate the gains, particularly for countries like West Germany and Britain.

V. Implications for United States Policy

Applying this framework to U.S. monetary policy casts the optimal currency area literature in another light. Instead of analyzing exactly where the optimal borders for a currency regime should be drawn, one can examine the optimal central bank policy given the pre-existing borders of a currency area. How a unified European central bank would determine policy given the different regions/countries in its currency area is exactly analogous to how the Federal Reserve must make policy within the given borders of the United States. The United States is a vast and diversified economy, roughly equivalent in size to a unified Western Europe. The tool the Federal Reserve employs to affect the economy, bank reserves, is national, as are its potential price level or GNP targets. GNP, however, is merely an aggregation of regional outputs. These regional outputs, like those of the countries in Europe, are affected differently by exogenous shocks. With only a national instrument at its disposal, the Fed can efficiently target only a national variable, regardless of how severely regional variables fluctuate. For example, if the Federal Reserve adjusts its national instrument to aid a depressed region, inflation in the other areas and the country as a whole will increase. If the Federal Reserve does nothing, the price level remains stable, and regional output levels adjust. The Federal Reserve cannot target every individual region's optimal output, as its one instrument would have to be set differently for the different areas. If, on the other hand, it reacted asymmetrically to aid regions distressed by unemployment, it would aggravate the problem of inflation in the remaining areas. It can,

Table 3
Correlations Among Selected States in Annual Deviations from Trend Real Per Capita Gross State Product 1963–86, and Percentage Composition of Real Gross State Product 1986

	CA	NY	IA	LA	AK	MI	TX	MA
California		.247	.694	.185	−.224	.826	.480	.217
New York			−.088	.236	−.587	.508	.014	.853
Iowa				.440	.152	.638	.725	−.256
Louisiana					.293	.309	.852	−.190
Alaska						−.430	.372	−.742
Michigan							.493	.351
Texas								−.398
Agriculture, Forestry, and Fisheries	2.1	.6	11.0	1.2	1.6	1.3	1.9	.7
Mining	1.1	.1	.2	16.8	33.4	.7	10.3	.1
Durable Goods Manufacturing	12.4	9.0	11.9	3.7	.9	24.6	8.0	15.5
Nondurable Goods Manufacturing	5.9	7.5	9.2	9.3	4.0	6.4	8.1	6.3
Transportation, Communications, and Utilities	7.9	9.2	8.1	11.1	7.6	7.4	11.0	7.1
Finance, Insurance, and Real Estate	17.6	22.2	17.9	14.8	9.2	15.8	13.6	17.1
Services	19.4	20.1	13.4	13.1	8.4	15.1	14.2	22.0
Government	11.6	10.7	9.4	10.1	16.5	10.1	10.6	9.2
Other	22.0	20.6	18.9	19.9	18.4	18.6	22.3	22.0

Source: U.S. Bureau of Economic Analysis, Gross State Products computer tape, and author's calculations.

however, be argued that if the variance of regional output is high around the national aggregate mean, the existing borders of the U.S. monetary union severely hinder regional performance.

To assess the extent of the major traditional cost to currency integration in the United States, state and regional reactions to shocks are examined. The more diverse are the reactions to these disturbances, the more variable will be the regional performance for a given national mean. In the context of the optimal currency area literature, the smaller this correlation, the higher the probability that these regions should not unify; from a monetary policy perspective, this correlation measures the difficulties and advantages of charting a national monetary policy. Although one cannot see the μs directly, the correlation of detrended state products is a proxy for the correlation of the μs, as illustrated in part (b) of the appendix. Table 3 gives the correlation coefficients for deviations from trend of real per capita output of selected states from 1962 to 1986.[19] A number of these correlations are actually negative, particularly for Alaska and Massachusetts, and most are very low. The service sector states in the Northeast, the heavy industry states in the Midwest, the agricultural states of the Plains, the mining states of the Southwest, and the diversified states of the Far West react differently to the various μ disturbances. These low correlations reveal significant variance in regional performances within the United States.

One might expect these correlations to be low when small areas are chosen as points of comparison. The states with high correlations are, therefore, aggregated into the different regions depicted in map 1. Although the process was occasionally somewhat arbitrary, aggregation into only a few districts minimizes this problem.[20] The results are provided in table 4. The states are combined into six regions, the Far West, the Southeast, the industrial Midwest, the farm states, the oil and gas producing states of the Southwest, and New England. Higher correlations do result with these more aggregated regions, yet significant differences still remain. The Southwest and New England are poorly correlated with every other district. Even the farm states do not move closely with the other five areas. Although the Midwest, the Far West, and the Southeast are more closely related, they are far from perfectly correlated. In short, even when the United States is disaggregated into regions usually larger than any country in Europe, the variance between the regions' economic performances is quite large.

Table 4
Correlations among "Optimal Currency Regions" in Annual Deviations from Trend, Real Per Capita Gross State Product 1963–86, and Percentage Composition of Real Gross State Product 1986

	New England	Southeast Seaboard	Midwest	Farm Belt	Southwest	Far West
New England		.708	.378	−.251	−.244	.183
Southeast Seaboard			.770	.284	.388	.371
Midwest				.711	.618	.794
Farm Belt					.844	.672
Southwest						.433
Agriculture, Forestry, and Fisheries	.9	1.3	2.3	9.8	2.1	2.3
Mining	.1	.4	1.2	3.5	11.4	1.2
Durable Goods Manufacturing	16.2	8.2	15.4	8.1	7.1	11.8
Nondurable Goods Manufacturing	6.8	9.5	9.5	7.0	7.8	5.4
Transportation, Communications, and Utilities	7.4	9.3	9.6	10.7	10.6	8.5
Finance, Insurance, and Real Estate	18.0	17.9	15.9	16.6	13.8	17.1
Services	19.0	17.9	15.6	13.1	13.8	18.7
Government	9.7	13.3	10.3	11.2	12.0	12.4
Other	21.9	22.2	20.2	20.0	21.4	22.6

Source: U.S. Bureau of Economic Analysis, Gross State Products computer tape, and author's calculations.

The bottom of table 4, listing the percent of regional product by sector, provides the explanation for the regional variability. Agriculture has roughly five times the importance in the "farm" region that it has in any of the others, while mining, including oil and gas, is roughly four times as important in the Southwest as elsewhere. The service sector is biggest in the West and New England, manufacturing in the Midwest. That durables production is much more important in the West than in the Southeast probably explains the lower than expected correlation between these two areas. The reason all these regions behave differently is their divergent sectoral composition; disparate industries react differently to a given set of exogenous shocks. Both the individual states and these fairly aggregated regions have poorly diversified industrial structures, which increases the loss in regional output given the borders of monetary policy in the United States.

Since Federal Reserve decisionmaking incorporates the regional banks, the relationships between the twelve Federal Reserve Districts, represented in map 2, are examined. To keep states intact, these districts are only approximated. As seen in table 5, the correlation coefficients are often quite low. The highly correlated Fed districts tend to be those within the same "optimal currency areas" of table 4. The sectoral breakdown of the districts follows the same basic pattern as the regional differences in table 4. The Federal Reserve Districts are apparently no more diversified than the hypothetical six regions examined in this paper. Regional Reserve Bank presidents vote at Federal Open Market Committee meetings; thus, this diversity may affect monetary policy. Since national tools are inefficient for manipulating regional targets, calls to relieve distressed regions by using the Fed's instruments should not be accommodated within a unified currency area. Instead, regional instruments need to be created, or existing ones used. Breaking the United States into distinct currency areas is merely one possible way to produce a regional instrument to deal with this problem. In this light, the optimal currency framework is simply an interesting way to analyze the problems of national monetary policy in a country with diverse regions.

State, or national, fiscal policy is one possible instrument besides regional money.[21] The importance of fiscal policy and its boundaries relative to those of the currency area are explored in Kenen (1969) and Tower and Willett (1976). The usefulness

Map 1

United States 'Optimal Currency Regions'

of these tools is questionable, however. State fiscal policy is frequently limited by constitutional constraints on budget deficits and nationwide competition to lure investment into each state; beggar-thy-neighbor state tax policy is inefficient and ineffective when state governments compete. For this reason it is argued that the fiscal authority should possess boundaries identical to those of the currency area. With a national authority, as in the United States, or a supranational authority, as in the EMS, income transfers can be made between boom and bust regions. Federal assistance to the unemployed and the poor is one such program. Potentially more useful fiscal actions, however, like locating a super-collider in a depressed region, are slower to mitigate regional losses as the budgetary process takes a great deal of time. Yet, such redistributions seem more likely to occur, or to be sufficient, between different parts of a single country such as the United States than between different countries in Europe. The EMS has yet to institute such a supranational fiscal authority. Fiscal policy spanning the entire currency area can reduce the costs of monetary integration, but its applicability to anything but preexisting currency areas is questionable.

In the light of these considerations, any conclusion that certain regions of the United States should form their own currency area would be dubious. Although the wide variance around the national mean does increase the costs of a unified national

monetary policy, other costs for U.S. currency integration are low. Diverse economic performances do exist in the United States, but labor mobility across regions should be far higher than in Europe. Each state enjoys the same language and roughly the same culture. Labor migration can, therefore, more easily mitigate the effects of the divergent regional economic performances. Furthermore, the analysis of section III is much less appropriate to the United States, as the similar culture and history are more apt to make the α and Γ parameters similar across regions. Interestingly, this dependence of tastes on the borders of the currency area illustrates the potential endogeneity, or path dependence, of the optimal currency area. Being in a currency area probably forces a convergence of cultural values and tastes, as well as a possible convergence of economic structure like a currency-wide fiscal authority, which makes that area more likely to be an optimal currency area in the future. Perhaps for these reasons the West Germans have unhesitatingly embraced currency integration with East Germany, but are dragging their feet over European monetary union.

VI. Conclusion

This article examines the optimal currency area literature and its application to the recent discussion of currency unification in Europe. It shows many reasons why a country may correctly refuse to join such an institution. Beyond the more traditional reasons, such as a lack of labor mobility, different stochastic and structural environments, and the loss of flexibility, is a more general cost to losing sovereignty. An extremely simple model is used to rigorously illustrate the importance of this additional cost. Without the traditional losses ascribed to joining the

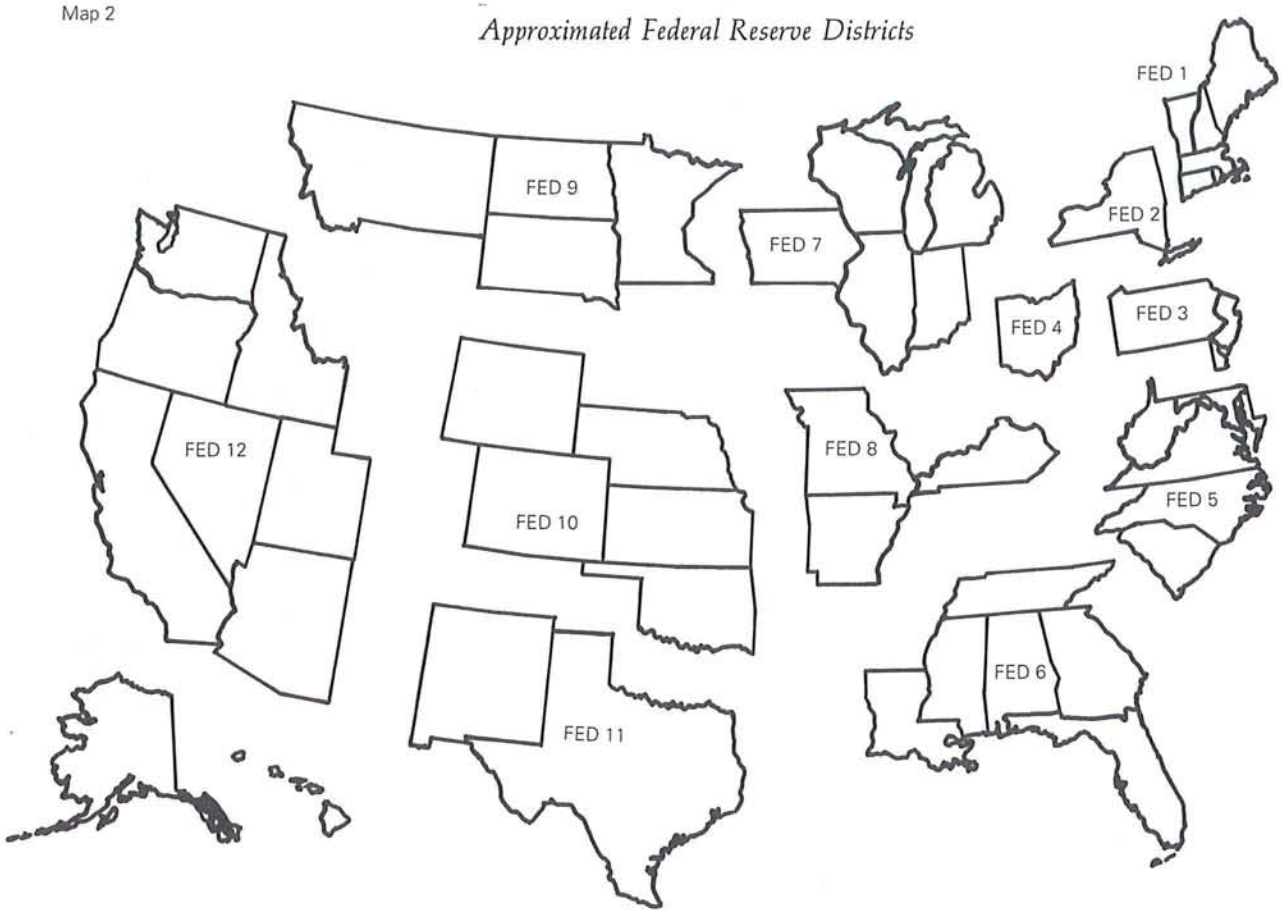
Table 5
Correlations among Federal Reserve Districts[a] in Deviations from Trend Real Per Capita Gross State Product 1963–86, and Percentage Composition of Real Gross State Product 1986

	FED1	FED2	FED3	FED4	FED5	FED6	FED7	FED8	FED9	FED10	FED11	FED12
FED1		.812	.634	.436	.426	.288	.318	.372	.055	−.220	−.312	.133
FED2			.881	.615	.789	.675	.515	.620	.337	.113	.099	.197
FED3				.886	.961	.886	.819	.892	.707	.483	.454	.528
FED4					.873	.797	.975	.960	.851	.633	.607	.821
FED5						.961	.823	.916	.782	.646	.648	.570
FED6							.742	.888	.796	.762	.749	.503
FED7								.945	.850	.622	.629	.847
FED8									.857	.705	.699	.751
FED9										.870	.805	.768
FED10											.937	.640
FED11												.622
Agriculture, Forestry, and Fisheries	.9	.6	1.0	1.3	1.6	2.2	2.9	3.6	7.1	5.2	1.9	2.4
Mining	.1	.1	.6	.8	1.4	3.3	.6	2.3	1.9	5.8	10.5	1.8
Durable Goods Manufacturing	16.2	9.0	10.6	19.1	8.6	8.5	17.0	12.9	9.7	8.1	7.7	11.5
Nondurable Goods Manufacturing	6.8	7.5	10.7	10.1	12.7	9.0	8.6	10.6	7.2	6.0	7.8	5.4
Transportation, Communications, and Utilities	7.4	9.2	10.4	9.3	9.1	9.7	9.1	10.2	9.6	11.3	10.9	8.4
Finance, Insurance and Real Estate	18.0	22.2	17.3	15.4	14.3	15.6	16.6	15.1	17.9	15.4	13.7	16.9
Services	19.0	20.1	18.1	15.2	14.9	15.8	15.4	14.1	14.7	14.2	14.3	18.5
Government	9.7	10.7	10.0	9.4	16.1	12.3	9.7	10.6	10.5	13.1	11.1	12.6
Other	21.9	20.6	21.3	19.4	21.3	23.6	20.1	20.6	21.4	20.9	22.1	22.5

[a] Approximated.
Source: U.S. Bureau of Economic Analysis, Gross State Products computer tape, and author's calculations.

Map 2

Approximated Federal Reserve Districts



union, it is revealed that a divergence in tastes between unemployment and inflation could be sufficient to motivate a refusal to integrate. Thus, the recent reluctance of several members of the European Community to commit to the currency union may be rational and justified. Perhaps Europe is not an optimal currency area, and the EMS unification as now planned is suboptimal.

An application of this analysis to the United States is then undertaken. Several regions within the United States could potentially prefer their own currency. Although our cultural unity may preclude a currency disintegration, the optimal currency area issues highlight an important element of monetary policy in the United States. The Federal Reserve cannot be expected to react to regional disequilibria. Problems in the Southwest, for example, cannot efficiently be solved by using a national policy instrument. Although the variance of regional performance around the national mean is important to social welfare, only more specialized tools can help reduce the costs of this variance. This lesson is not new, but seeing it through the lens of the optimal currency area sheds light on its importance.

Appendix

(a) As in Barro and Gordon (1983), the structural unemployment rate produces an inflationary bias. The central bank now minimizes losses from both unemployment and inflation.

$$(9) \qquad \underset{\Pi}{\text{MIN}}\ \alpha_i(y_t^* - \bar{y})^2 + \Gamma_i(\Pi)^2 \qquad \text{for } i = 1, 2$$

where Π = inflation

$$(10) \qquad y_t = \bar{y} + (\Pi_t - {}_{t-1}E\,\Pi) + \mu_t$$

Note that the central bank's desired level of output, y^*, is greater than the equilibrium employment level, $\bar{y}$. Again assume that $\frac{\Gamma_2}{\alpha_2} > \frac{\Gamma_1}{\alpha_1}$, so that region 1 tends to be more inflationary than region 2. Solving for the losses under each regime, and subtracting the average loss if the region does not join from the average loss if the region does, produces equation (11).

$$(11) \quad \Gamma_1(y^* - \bar{y})^2\left[\left(\frac{1}{1+\frac{\Gamma_2}{\alpha_2}}\right)^2 - \left(\frac{1}{1+\frac{\Gamma_1}{\alpha_1}}\right)^2\right] + \frac{\alpha_1\sigma_\mu^2\left[\frac{\Gamma_1}{\alpha_1} - \frac{\Gamma_2}{\alpha_2}\right]^2}{\left(1+\frac{\Gamma_2}{\alpha_2}\right)^2\left(1+\frac{\Gamma_1}{\alpha_1}\right)^2} \gtreqless 0$$

The sign of this expression is ambiguous. The first term is negative, representing the gain to lower-base inflation of fixing the exchange rate, while the second term is positive, revealing the benefits derived from the ability to react to the shocks under the flexible regime. In this case the added discipline of lower inflation at equilibrium, when $\mu = 0$, can offset the benefits of monetary independence when μ is other than zero. This model can be complicated further by allowing the structural unemployment in the two economies to differ, but the results of ambiguity will still be the same.

(b) If output is a random walk, as is fashionable to believe at the moment, equation (12) holds. If it is trend stationary, equation (13) is valid.

$$(12) \qquad y_t = y_{t-1} + \mu_t \ \Rightarrow\ y_t - y_{t-1} = \mu_t$$

$$(13) \quad y_t = \alpha + \beta\ \text{trend} + \mu_t \ \Rightarrow\ y_t - (\alpha + \beta\ \text{trend}) = \mu_t$$

All variables are in logs. Equation (12) reveals that growth in real output is a proxy for μ if output is a unit root. All tables use the procedure in (13). All results were duplicated using the random walk procedure. The results were extremely similar except that New England was incorporated into the Eastern seaboard and Wyoming and Idaho were in the West.

[1] Flood and Marion (1982) and Aizenman (1984) are two examples of studies that assume a long-run vertical Phillips curve. A brief list of models that allow less than full employment is contained in footnote 2.

[2] See Mundell (1961), McKinnon (1963), Kenen (1969), and Tower and Willett (1976), for a complete discussion of these issues.

[3] The exact effect of these shocks depends on the degree of capital mobility and the institutional responsibilities for fixing the exchange rate. For example, under the Bretton Woods system, a decrease in money demand in the United States only raised the money supplies in the other member countries, which were responsible for maintaining the exchange rate. In this sense, the United States exported its inflation.

[4] This point is implicit throughout the literature. Recently, it has been made explicit in Cooper (1985), Giavazzi and Pagano (1988), and Tootell (1989).

[5] I am indebted to Richard Kopcke for pointing out that excessive labor mobility in the face of only temporary shocks could increase the costs of these disturbances. Labor constantly chasing positive disturbances may only waste resources, not save them.

[6] Recent work by Sachs (1986) and Blanchard and Summers (1986) has suggested hysteresis in the unemployment rate. Thus, in their models the long-run Phillips curve is downward-sloping. Yet throughout the 1970s, when most of the criticism of the optimal currency area was leveled, a vertical long-run Phillips curve was widely accepted.

[7] The assumption of rigidity is merely a convenience. As discussed in Clower (1965), all that is necessary is that wages and prices only grope toward their equilibrium values over time.

[8] Shocks from the ROW in this model do not affect the decision to integrate for the two regions. The two regions are assumed to be identical and small in relation to the ROW. Although it will be shown that the flexible regime in this model completely insulates the regions from foreign shocks, in variants of this paradigm where incomplete insulation occurs, the foreign disturbances are exactly the same for each region whether they join or not; thus, they add nothing to the decision. The identical reactions to foreign shocks do not occur if either the small country assumption is dropped, as in Tootell (1989), or some diversity exists between the two regions. If the regions differ, the added diversification gained by joining a currency union could actually mitigate the effects of the foreign shocks. In all of these other models, however, whether to join or not becomes ambiguous, not definitively positive.

[9] It is the policy reactions of the central bank that perfectly insulate the economy from foreign shocks. In a model of differentiated goods, however, this is not the case, as seen in Tootell (1989).

[10] As inflation rises, the usefulness of money declines. Money becomes less functional as inflation rises, which is why flight to other currencies or commodities occurs in inflationary environments.

[11] The optimal, full-employment, y could change with the real shock. The full-employment level will be a function of the real shock's effect on labor demand and the labor supply curve. Only to keep the mathematics simple, a stable and vertical labor supply curve is assumed.

[12] This assumption is merely for ease of exposition. It will become clear that it is only necessary that the tastes of the combined central bank not be identical to region 1's tastes.

[13] Note that Kenen (1969) points out that intersectoral labor mobility is at issue, not interregional. Both regions could be perfectly diversified in the production of different products, and the labor mobility issue would not affect the decision to unify. In fact, regions of this country and countries in Europe are far from perfectly diversified, reemphasizing the need for interregional labor mobility.

[14] Katz and Summers (1989), Kreuger and Summers (1988), and Katz (1986) detail the work done in this area. Traditional attempts to explain inter-industry wage differentials with human capital explanations fail. This finding implies labor immobility even between sectors of the same economy.

[15] Other determinants of this reaction were the rigidity of real wages, as in Sachs (1979), and the dependence of each country's production on oil. But these reactions are extremely diverse in countries that are relatively the same, the developed countries.

[16] This quote appeared in the January 17, 1990 edition of the *Financial Times*. In this same issue, Guido Carli, Italy's Treasury Minister, analyzed in detail the British reaction to the Delors report, articulating U.K. reluctance to join the EMS monetary Union, and the Italian reaction to that reluctance.

[17] "A Shared D-Mark," *Financial Times*, February 8, 1990.

[18] Flemming (1971) and Tower and Willett (1970) both explicitly concluded that Europe is not an optimal currency area. Although they were clear that their conclusions could change, it was their belief that political forces were driving the move toward European currency unification.

[19] Dickey-Fuller tests were run on the real per-capita state products to determine whether they were difference or trend stationary. The lack of many observations would lead one to expect that unit roots would not be rejected. In 13 cases the unit root can be rejected at the 95 percent level. Yet the low power of the test suggests that examining the deviations from trend is superior. The model in section III is trend stationary, also suggesting this approach. As is discussed in part b of the appendix, however, the exact same procedures were performed for the random walk case producing essentially the same results.

[20] These results are too strong to be affected by this complaint. But by having few regions, the effect of including one state in any one region declines. Thus, if a state was misplaced, it would not drastically affect the results. In fact, Arizona belonged with Florida and the Southeast, New Jersey belonged with New England, and Wyoming belonged with the Southwest. They were put in their second best regions to ensure contiguous currency regions.

[21] The use of state fiscal policy to encourage employment growth is surprisingly limited. First, a zero-sum game exists with the other states; each state must compete for capital inflows with its rivals. Furthermore, states are usually constrained to balance their budgets, and expansions in government spending would be needed just as the budget was slipping into deficit.

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Commerce with the Newly Liberalizing Countries: Promised Land, Quicksand, or What?

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As liberalization movements have swept across Eastern Europe and the Soviet Union, many observers feel as the fabled Alice must have felt upon being invited by the Red Queen to believe six impossible things before breakfast. But as liberalization takes on convincing shape and substance, international entrepreneurs the world over are entertaining visions of capitalizing on new business opportunities. No doubt the transformation of heretofore centrally directed economies into more nearly market economies will bring such opportunities, and will entail significant, if not dramatic, changes in the international commerce of these economies.

This article presents an overview of trade between what we designate as "newly liberalizing countries," or NLCs, and the rest of the world, and tenders some suggestions on how that trade might develop under liberalization. Some general observations on the creditworthiness of these countries are also offered. Special attention is given to commerce between the NLCs and the United States. The NLCs here include Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, the Soviet Union, and Yugoslavia. (Even though for some time Yugoslavia has widely been considered a "market economy," it has not been immune from the liberalizing wind.)

The Magnitude of NLC Trade

Except for the Soviet Union, the NLCs do not loom at all large in world trade. Even in the aggregate, they account for no more than 8 percent of world merchandise exports, with roughly equal shares for the Soviet Union, on the one hand, and the East European countries (here defined to exclude Yugoslavia), on the other hand (table 1). Larger shares of world exports are contributed by each of the world's three leading trading nations—the United States, West Germany, and Japan.

Table 1
Merchandise Trade of Eastern Europe, the U.S.S.R., and the World's Leading Trading Nations

Area	Value in 1988 (Billions of Dollars)		Share of World Exports (Percent)	
	Exports	Imports	1988	1980
Eastern Europe	116	107	4.0	4.1
U.S.S.R.	111	107	3.8	3.8
Eastern Europe and U.S.S.R.	226	214	7.8	7.9
United States	322	460	11.2	11.1
West Germany	323	251	11.2	9.5
Japan	265	187	9.2	6.4

Note: Eastern Europe does not include Yugoslavia.
Source: Exports for 1980 for the U.S., Japan, and West Germany are from International Monetary Fund, *International Financial Statistics Yearbook* (Washington, D.C.: IMF, 1989). Other data are from General Agreement on Tariffs and Trade, *International Trade 88–89*, vol. II (Geneva: 1989), Tables I.3, III.37, and A1.

Table 2
Merchandise Trade of Eastern Europe and the U.S.S.R., by Major Regions, as a Percent of World Trade, 1973, 1980 and 1988

Region	1973	1980	1988
Intra-Eastern Europe and the U.S.S.R.	5.2	4.1	4.4
Western Europe	4.0	4.0	3.1
Asia	1.1	.9	1.0
Latin America	.5	.6	.6
North America	.5	.4	.3
Middle East	.3	.5	.3
Africa	.4	.4	.2

Note: Yugoslavia is included here as part of Western Europe. Trade of region A with region B is defined as the sum of A's exports to B and B's exports to A.
Source: General Agreement on Tariffs and Trade, *International Trade 88–89*, vol. II (Geneva: 1989), Table III.3.

Moreover, the trade of the NLCs with each other exceeds their trade with every other region (table 2). Thus, if the aggregate statistics are any guide, the impact on the rest of the world of trade with the NLCs has been relatively minor.

Potential trade is another matter, and it is the potential dangled by liberalization that has excited the likes of businessmen and economists. Even now, the Soviet Union's merchandise exports, and also its imports, are eighth largest in the world, and the nation ranks first in exports of fuels, fifth in exports of ores, minerals, and nonferrous metals, fifth also in exports of raw materials, sixth in imports of machinery and transport equipment, and seventh in imports of food and also of clothing.[1] And even now, before realizing any of the fruits of liberalization, each of the other NLCs (including Yugoslavia) ranks among the world's top 40 exporters.[2]

How much might trade grow if liberalization proceeds? An initial approach to evaluating the potential is to examine the ratio of trade to GNP. An uncommonly low ratio for the NLCs would support the interpretation that their international commerce had been artificially constrained and might surge as liberalization widened. As can be seen in table 3, however, the ratio of trade to GNP within Eastern Europe and the Soviet Union is well within the range found across all regions and little different from the ratio for the world.

But greater insight from trade-to-GNP ratios can be gained from focusing on individual countries, because the larger countries, of course, tend to exhibit the smaller ratios. Thus, trade-to-GNP ratios are presented for those East European countries for which such data could be obtained and for selected other countries with GNPs of about the same size (as measured with purchasing-power-parity exchange rates). Hungary's GNP may be about the size of Austria's, the GNPs of both Romania and Czechoslovakia may exceed those of Belgium and of Sweden but be less than that of the Netherlands, and the GNP of Poland may be somewhat larger than those of Australia or of Turkey. Comparing the trade-to-GNP ratios for countries with similar GNPs, one would be hard pressed to make the case that Hungary, Czechoslovakia, or Poland have been unusually closed to foreign trade. Romania, on the other hand, may have been, although even this tentative conclusion must be qualified by recognition of the imprecise nature of the data underlying the table. Were liberalization to induce more rapid GNP growth in these countries, a likely prospect at least in the longer run, trade would, of course, be stimulated on that score; and the increase in trade would, in turn, promote faster growth of GNP itself.

Aside from the question of expansion of total NLC trade, it is likely that some of the trade currently flowing among the NLCs will switch to trade between the NLCs and other countries as controls

Table 3
Merchandise Trade as Percent of GNP or GDP for Major Regions and Selected Countries, for Various Years 1986–88

Area	Percent[a]
Western Europe	31
Africa	22
Eastern Europe and the U.S.S.R.[b]	22
Middle East	21
Asia	18
Latin America	15
North America	11
World	20
Hungary	38
Czechoslavakia	35
Romania	20
Poland	20
Belgium	67
Netherlands	51
Austria	35
Sweden	32
Turkey	22
Australia	18

[a]One half the sum of the area's exports and imports, as a percent of GDP or GNP. For the regions and the world, underlying trade data are for 1988, and GDP data are for 1986. Underlying data for individual countries, except Romania, are for 1987; for Romania, underlying data are for 1986.

[b]Excluding Yugoslavia, which here is included in Western Europe.

Source: Data for regions and the world are from General Agreement on Tariffs and Trade, *International Trade 88–89*, vol. II (Geneva: 1989), Table III.1. Data for individual East European countries are from L.W. International Financial Research, Inc. GNP data for the remaining countries, except for Turkey, are from *International Financial Statistics*, March 1990; all trade data for these countries, and GDP data for Turkey, are from OECD, *National Accounts 1960–88*, vol. I (OECD, Paris: 1990).

channeling trade among the NLCs are eased. During 1988, 57 percent of NLC merchandise exports went to other NLCs, and 65 percent of their imports came from other NLCs.[3]

The Composition of NLC Trade

What kinds of goods do the NLCs export and import? For those NLCs that report their trade statistics to the United Nations, machines and transport equipment comprise the largest category of both exports and imports, with second place going to basic manufactures among the exports and to mineral fuels among the imports (table 4). Less confidence can be placed in the figures (indirectly derived) for the NLCs that do not report to the U.N., but for these countries the data show machines and transport equipment to be even more dominant among imports, with basic manufactures in second place. The exports of the Soviet Union are heavily concentrated in mineral fuels (petroleum), while the exports of the other nonreporters are not highly concentrated, although manufactures predominate.

All of the NLCs except Yugoslavia belong to the CMEA (Council for Mutual Economic Assistance), through which the members have closely managed trade among themselves. The composition of such highly managed trade is likely to differ appreciably from what would prevail under free competition, and the remaining, less directly managed trade of the NLCs with non-CMEA countries is sure to have been distorted as well. What stands out in table 5, which covers the four countries reporting the relevant data, is that for these countries machines and transport equipment comprise a much larger share of their exports to other CMEA members than to non-CMEA countries, while for basic manufactures the reverse is true. This finding accords with reports that the more sophisticated manufactures of these countries, although accepted by state purchasing agencies in CMEA countries, are often rejected as shoddy or obsolete by non-CMEA countries. At least in the short run, then, relaxation of trade controls within the CMEA might well shift the composition of the manufactured exports of these four countries toward that currently prevailing in their exports to non-CMEA countries. In the longer run, of course, skills, management, and equipment might be upgraded so as to promote the more advanced manufactures.

As for imports, a salient fact is that mineral fuels, particularly petroleum, comprise a much larger share of the imports of these four countries from other CMEA members than from non-CMEA countries (table 6). It is well known that the Soviet Union has supplied petroleum to other CMEA countries at below-market prices. Again, greater reliance on market prices within the CMEA could well result in more similar shares for petroleum in imports from CMEA and from non-CMEA sources.

The commodity composition of NLC trade can be examined further to gain insight into the "revealed comparative advantage" of the NLCs. Revealed comparative advantage may be measured by the ratio of a country's net exports (exports minus imports) in each commodity category to the sum of the country's total exports and imports in that category.[4] This ratio, or index, can take on any value between −1 and 1; the larger the algebraic value for a commodity category

Table 4

Percentage Distribution of Reported Exports and Imports of NLCs by Major Commodity Group, 1986–87

	NLCs Reporting to the UN			
	Czechoslovakia, Hungary, Poland, Yugoslavia[a]			
	1986		1987	
Major SITC Group	Exports	Imports	Exports	Imports
0—Food and live animals	7.3	6.4	10.9	7.0
1—Beverages and tobacco	.8	.8	1.0	.7
2—Crude materials excluding fuels	4.2	8.0	5.2	8.3
3—Mineral fuels, etc.	5.6	24.8	6.0	17.2
4—Animal, vegetable oil, fat	.2	.4	.3	.2
5—Chemicals	8.1	10.1	9.9	14.3
6—Basic manufactures	17.4	12.7	19.8	15.5
7—Machines, transport equipment	42.2	30.6	32.5	31.0
8—Misc. manufactured goods	12.0	4.9	11.9	5.4
9—Goods not classified by kind	2.2	1.4	2.5	.3
All commodities	100.0	100.0	100.0	100.0

[a]For 1987, Czechoslovakia is omitted because data were not available.

[b]Data were derived from those reported by countries that trade with the nonreporters.

[c]Trade between the two Germanys is included.

Note: Detail may not add to totals shown because of rounding.

Source: National Institutes of Health, COMPRO database, UN routine; Statistisches Bundesamt, *Statistisches Jahrbuch 1988, fur die Bundesrepublik Deutschland* (Stuttgart und Mainz: Verlag W. Kohlhammer, 1988), p. 249; and International Monetary Fund, *International Financial Statistics Yearbook 1989* (Washington, D.C.: IMF, 1989).

Table 5

Percentage Distribution of Exports of Reporting NLCs by Major Commodity Group, to the CMEA and Other Destinations, 1986–87

	Czechoslovakia[a]		Hungary		Poland		Yugoslavia	
Major SITC Group	CMEA	Other	CMEA	Other	CMEA	Other	CMEA	Other
0—Food and live animals	.9	6.2	15.2	17.5	3.8	12.1	4.8	9.8
1—Beverages and tobacco	.5	.2	2.6	.6	.4	.7	.8	1.2
2—Crude materials excluding fuels	2.3	5.4	1.8	6.9	3.2	8.2	2.5	5.8
3—Mineral fuels, etc.	2.0	7.6	.6	8.0	10.8	13.1	1.1	2.5
4—Animal, vegetable oil, fat	0	.2	.5	1.3	0	.2	0	.1
5—Chemicals	4.8	9.1	8.6	14.3	7.6	6.3	10.6	12.1
6—Basic manufactures	12.5	29.5	8.0	19.4	10.3	22.5	17.4	29.1
7—Machines, transport equipment	62.1	31.8	48.4	18.8	47.9	25.7	43.3	24.4
8—Misc. manufactured goods	13.0	9.0	13.3	10.5	8.9	7.0	19.5	14.7
9—Goods not classified by kind	1.8	1.0	1.0	2.5	7.2	4.2	.1	.3
All commodities	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a]Data available for 1986 only.

Note: Detail may not add to totals shown because of rounding.

Source: National Institutes of Health, COMPRO database, UN routine.

Table 4 *continued*

NLCs Not Reporting to UN[b]							
Bulgaria, Romania and East Germany[c]				USSR			
1986		1987		1986		1987	
Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
5.8	8.6	6.8	7.5	1.1	10.1	1.5	13.4
1.0	1.0	.9	1.1	.3	.4	.3	.3
9.7	11.3	12.1	13.1	10.0	4.3	12.0	4.9
11.2	6.3	12.6	4.6	63.2	1.7	61.3	1.8
.4	.2	.3	.2	0	.6	0	1.0
12.3	12.3	12.1	14.9	5.0	9.0	5.5	12.2
20.7	15.4	22.4	16.9	8.6	19.1	10.9	23.8
25.9	36.9	17.4	34.5	10.5	42.1	7.4	32.5
12.6	6.0	14.8	5.2	.7	11.1	.7	8.3
.5	2.0	.6	2.0	.6	1.6	.5	1.7
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 6

Percentage Distribution of Imports of Reporting NLCs by Major Commodity Group, from the CMEA and Other Sources, 1986–87

	Czechoslovakia[a]		Hungary		Poland		Yugoslavia	
Major SITC Group	CMEA	Other	CMEA	Other	CMEA	Other	CMEA	Other
0—Food and live animals	3.1	13.5	1.5	10.3	1.4	14.8	3.1	7.0
1—Beverages and tobacco	.7	1.3	1.0	.9	1.2	1.1	.2	.3
2—Crude materials excluding fuels	5.8	12.7	6.3	7.4	6.7	9.1	12.8	8.5
3—Mineral fuels, etc.	39.7	2.0	33.9	3.8	38.4	3.9	28.8	15.7
4—Animal, vegetable oil, fat	.2	.7	0	.2	.1	.9	.3	.3
5—Chemicals	4.3	14.2	7.8	20.8	5.0	14.8	12.9	15.9
6—Basic manufactures	6.8	16.2	12.9	19.5	10.5	15.6	20.1	14.4
7—Machines, transport equipment	33.2	29.7	31.3	27.8	32.1	31.9	20.0	33.4
8—Misc. manufactured goods	3.5	7.8	3.9	8.6	4.6	7.3	1.8	4.5
9—Goods not classified by kind	3.0	1.8	1.4	.5	0	.6	0	.1
All commodities	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a]Data available for 1986 only.

Note: Detail may not add to totals shown because of rounding.

Source: National Institutes of Health, COMPRO database, UN routine.

Table 7
Revealed Comparative Advantage by Major Commodity Group, for Reporting NLCs and the United States, in Trade with Specified Areas, 1986–87

	Czechoslovakia[a]			Hungary		
Major SITC Group	CMEA	Other Countries	Total	CMEA	Other Countries	Total
0—Food and live animals	−.58	−.34	−.43	.82	.21	.45
1—Beverages and tobacco	−.18	−.71	−.35	.44	−.22	.25
2—Crude materials excluding fuels	−.45	−.38	−.42	−.55	−.09	−.26
3—Mineral fuels, etc.	−.91	.60	−.80	−.96	.31	−.65
4—Animal, vegetable oil, fat	−1.00	−.62	−.75	.92	.74	.79
5—Chemicals	.03	−.19	−.07	.06	−.24	−.14
6—Basic manufactures	.27	.32	.29	−.22	−.06	−.12
7—Machines, transport equipment	.28	.06	.24	.23	−.24	.06
8—Misc. manufactured goods	.56	.09	.44	.56	.04	.29
9—Goods not classified by kind	−.27	−.26	−.27	−.13	.61	.27

[a]Data available for 1986 only.

Note: Revealed comparative advantage is defined as $(X_{ij} - M_{ij})/(X_{ij} + M_{ij})$, where X and M represent exports and imports, the subscript i refers to SITC group, and the subscript j refers to country.

Source: National Institutes of Health, COMPRO database, UN routine.

relative to the values for other categories, the greater is the country's revealed comparative advantage in the commodity category concerned. For countries that have closely managed their trade, such as the members of the CMEA, "revealed comparative advantage" could differ appreciably from the comparative advantage that would manifest itself with free markets. Thus, for these countries "revealed comparative advantage" is employed advisedly and should be evaluated separately for the countries' trade within the CMEA and outside it.

Examination of the ratios in table 7 reveals—for the four NLCs reporting the desired data—some patterns that prevail in each country's trade with CMEA countries as well as with other countries. Czechoslovakia displays consistent comparative advantages in basic and in miscellaneous manufactures,[5] and a consistent comparative disadvantage in animal and vegetable oils and fat, and perhaps comparative disadvantages also in food and live animals, in beverages and tobacco, and in crude materials excluding fuels. Hungary exhibits a marked comparative advantage in animal and vegetable oils and fat and in food and live animals and a marked comparative disadvantage in crude materials other than fuels. For Poland, consistent comparative advantage obtains in miscellaneous manufactures and in food and live animals, with disadvantages in beverages and tobacco and in animal and vegetable oils and fat. Yugoslavia has noteworthy comparative advantages in miscellaneous manufactures and in beverages and tobacco, with disadvantages in nonfuel crude materials, in mineral fuels, and in animal and vegetable oils and fat.

This kind of analysis could, of course, be applied to subdivisions of the commodity categories in table 7, and might well reveal significant comparative advantages and disadvantages that are not manifested by the broader categories. Another caveat is that a marked comparative advantage in a commodity category does not assure a country of a trade surplus in that category. For such a surplus to exist, aggregate foreign demand for the commodities in question must be relatively strong.

U.S. Trade with the NLCs

What is the magnitude and nature of U.S. trade with the NLCs? As can be seen in table 8, trade with the NLCs comprises but a small fraction of U.S. trade in every major commodity category except U.S. exports of food. In the aggregate, only 1.2 percent of U.S. merchandise exports went to the NLCs during 1987–88, and only 0.7 percent of U.S. merchandise imports came from them. Once again, however, it is

Table 7 *continued*

Poland			Yugoslavia			United States		
CMEA	Other Countries	Total	CMEA	Other Countries	Total	All NLCs	Other Countries	Total
.44	0	.05	.29	.03	.09	.45	−.12	−.10
−.55	−.11	−.27	.60	.56	.57	−.57	−.13	−.14
−.38	.05	−.07	−.63	−.32	−.43	.75	.24	.24
−.58	.61	−.17	−.91	−.78	−.84	−.53	−.69	−.69
−.82	−.50	−.53	−.83	−.61	−.66	.81	.25	.26
.18	−.31	−.17	−.01	−.27	−.19	.13	.18	.18
−.04	.28	.19	.01	.21	.15	−.82	−.54	−.54
.17	−.01	.08	.44	−.28	−.01	.24	−.23	−.23
.29	.07	.16	.86	.43	.61	−.72	−.65	−.66
1.00	.81	.90	1.00	.58	.61	.13	.16	.16

Table 8
Percentage Distribution of U.S. Trade with the NLCs and the Rest of the World, by Major Commodity Group, 1987–88

	U.S. Exports		U.S. Imports	
Major SITC Group	NLCs	Rest of World	NLCs	Rest of World
0—Food and live animals	7.4	92.6	1.5	98.5
1—Beverages and tobacco	.5	99.5	1.7	98.3
2—Crude materials excluding fuels	1.6	98.4	.5	99.5
3—Mineral fuels, etc.	2.2	97.8	1.3	98.7
4—Animal, vegetable oil, fat	1.9	98.1	.2	99.8
5—Chemicals	1.3	98.7	1.4	98.6
6—Basic manufactures	.4	99.6	1.1	98.9
7—Machines, transport equipment	.4	99.6	.2	99.8
8—Misc. manufactured goods	.6	99.4	.9	99.1
9—Goods not classified by kind	.2	99.8	.3	99.7
All commodities	1.2	98.8	.7	99.3

Source: National Institutes of Health, COMPRO database, UN routine.

the potential that is of interest and that inspires more detailed examination of the trade flows.

From table 9 it seems that the NLCs as a group have craved U.S. foodstuffs more than any other major commodity category offered by this nation. While this may indeed be true, any such judgment can be only tentative, because the United States has restricted the exportation of high technology goods to the Warsaw Pact countries. Absent such restrictions, the trade pattern might have been appreciably different. Even with the restrictions, machines and transport equipment have been the second largest U.S. export category in U.S. trade with the NLCs as a group.

To these generalizations there are some notable exceptions. Food and live animals comprise only a small proportion of U.S. exports to Czechoslovakia,

Table 9
Percentage Distribution of U.S. Exports to NLCs by Major Commodity Group, 1987–88

Major SITC Group	Bulgaria	Czecho-slovakia	East Germany	Hungary	Poland	Romania	U.S.S.R.	Yugo-slavia	All NLCs
0—Food and live animals	52.8	1.0	59.3	10.6	37.4	3.0	66.1	10.6	49.2
1—Beverages and tobacco	3.7	5.0	0	3.5	2.8	0	0	1.1	.6
2—Crude materials excluding fuels	11.7	31.7	4.3	2.9	10.0	50.3	6.5	13.2	10.6
3—Mineral fuels, etc.	0	0	0	0	3.2	28.7	2.5	11.6	5.2
4—Animal, vegetable oil, fat	0	0	0	0	.2	0	1.1	.1	.7
5—Chemicals	7.0	12.9	3.1	21.8	11.5	4.3	12.5	8.8	11.2
6—Basic manufactures	2.3	7.9	11.1	8.8	2.8	1.0	1.6	3.8	2.5
7—Machines, transport equipment	20.6	32.7	19.1	43.5	15.4	11.7	6.3	47.8	15.4
8—Misc. manufactured goods	2.3	6.9	3.1	6.5	3.2	1.0	3.3	2.1	3.1
9—Goods not classified by kind	0	3.0	1.2	1.8	13.6	.3	.1	1.0	1.4
All commodities	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Detail may not add to totals shown because of rounding.
Source: National Institutes of Health, COMPRO database, UN routine.

Hungary, Romania, and Yugoslavia, and machines and transport equipment a small proportion of U.S. exports to the Soviet Union. Crude materials bulk large among U.S. exports to Romania and Czechoslovakia.

As for imports, the largest shares of U.S. imports from the NLCs as a group are in basic manufactures and miscellaneous manufactures (table 10). Again, marked exceptions exist. Miscellaneous manufactures account for only a small share of U.S. imports from Bulgaria, East Germany, and the Soviet Union, and basic manufactures for only a very small share from Bulgaria. Food and live animals, beverages and tobacco, mineral fuels, and chemicals each account for the largest or second largest share of U.S. imports from some countries.

Just as the pattern of U.S. exports to these countries has been influenced by restrictions on high technology items, so has the pattern of U.S. imports been influenced by U.S. import barriers. This influence may have been severe in the case of imports from Bulgaria, Czechoslovakia, East Germany, Romania, and the Soviet Union, for they have been among the communist countries whose exports to the United States have been subjected to much higher duties than those applied to U.S. imports from other countries in general. Reduction of these higher duties to the levels applied for other countries, a likely step if liberalization proceeds, would open the U.S. market much wider to imports from these five countries. In addition, both U.S. exports and U.S. imports could well be enlarged by the relaxation of the government management of trade in the NLCs.

Because of such governmentally induced distortions of trade patterns, the data in table 7 on U.S. comparative advantage with the NLCs should be viewed as merely suggestive. What the data do suggest, rather strongly, is a marked U.S. comparative advantage in animal and vegetable oils and fat and in crude materials excluding fuels, and a lesser comparative advantage in food. Notable U.S. comparative disadvantages seem to exist in both basic and miscellaneous manufactures. This pattern accords fairly well with the ranking of commodity categories by comparative advantage ratios reported in the table for U.S. trade with countries other than the NLCs, a finding that inspires greater confidence in the tentative conclusions offered here.

Aside from the pattern of U.S. trade with the NLCs, how large is the U.S. share of the NLC market for imported goods? And how does the U.S. share compare with those of the leading exporters to the NLCs? Table 11 presents data on the imports supplied to each NLC by its leading non-CMEA supplier and by the United States, along with data on the exports of each NLC to its leading export market and to the United States.

Table 10
Percentage Distribution of U.S. Imports from NLCs by Major Commodity Group, 1987–88

Major SITC Group	Bulgaria	Czecho-slovakia	East Germany	Hungary	Poland	Romania	U.S.S.R.	Yugo-slavia	All NLCs
0—Food and live animals	7.7	11.0	0	22.8	44.6	2.0	1.2	5.7	10.3
1—Beverages and tobacco	44.9	1.6	0	.6	.4	.3	4.6	3.0	2.5
2—Crude materials excluding fuels	.0	1.1	1.8	.6	.3	.6	9.2	0.5	2.1
3—Mineral fuels, etc.	5.1	0	4.9	.3	0	52.6	28.8	1.4	18.6
4—Animal, vegetable oil, fat	0	0	.9	0	.1	0	0	0	0
5—Chemicals	25.6	3.3	25.1	8.3	5.8	1.4	24.0	4.7	8.8
6—Basic manufactures	3.8	39.0	48.4	20.1	22.6	15.6	26.5	21.7	22.3
7—Machines, transport equipment	5.1	13.2	9.0	22.5	9.8	5.1	2.2	21.1	11.8
8—Misc. manufactured goods	7.7	29.1	9.4	24.2	15.0	22.2	1.8	40.0	22.4
9—Goods not classified by kind	0	2.2	.9	.5	1.2	.3	1.6	1.8	1.1
All commodities	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Detail may not add to totals shown because of rounding.
Source: National Institutes of Health, COMPRO database, UN routine.

The outstanding feature in the table is the dominance of West Germany. West Germany is the primary source of imports for every NLC except Romania, and is the leading purchaser of exports from every NLC except Romania and Yugoslavia. It is not surprising that West Germany seems to be experiencing greater economic stimulus from the liberalization underway in Eastern Europe and the Soviet Union than any other country outside the liberalizing area. The relatively intense two-way trade between West Germany and virtually all of the NLCs testifies to strong commercial relationships on which West Germany can build as liberalization advances.

By contrast, the United States is not a first-echelon competitor for the international trade of any of the NLCs except perhaps Romania. This is true not only for aggregate exports and imports but for nearly all of the major commodity categories. Only in beverages and tobacco do U.S. sales exceed those of West Germany in more NLCs than not, and the dollar volumes involved in this category are very small.

Creditworthiness of the NLCs

Among the lessons to be learned, or relearned, from the international debt crisis of the early 1980s is that debt crises are an enemy of trade. Economies forced to undertake harsh adjustments in order to meet external debt obligations generally reduce their imports, and the import reductions can substantially exceed any increases in their exports. The NLCs have been no exception to this rule. In the early 1980s the commercial banks—alarmed by Polish and Romanian debt reschedulings and by a general deterioration in the perceived creditworthiness of the East European countries—undertook to curtail their loans to the region. This action, together with historically high interest rates, sharply reduced the foreign exchange available to the region for the purchase of imports. Between 1980 and 1982 the dollar value of merchandise imports into Eastern Europe (including Yugoslavia) plunged by 13 percent, and the 1982 level was not recovered until 1986.[6]

This abrupt adjustment on the part of the East European countries shifted their collective international current-account balance from sizable deficit into comfortable surplus and restored the confidence of creditors in the capability of these authoritarian societies to do what was necessary to meet their external obligations. By 1985 lending had resumed. Between 1984 and 1989 the gross external debt in convertible currencies of the East European countries (excluding Yugoslavia) increased by 68 percent, from $59.6 billion to $100.2 billion, while for the Soviet Union the increase was 113 percent, from $22.5

Table 11

Trade of NLCs with Their Primary Non-CMEA Trading Partners and the United States, by Major Commodity Category (SITC Group), 1987

Millions of Dollars

Description	0- Food and live animals	1- Bev. and tobacco	2- Crude materials excl. fuels	3- Mineral fuels etc.	4- Animal, veg. oil, fat	5- Chem-icals	6- Basic manu-factures	7- Machines, transport equip.	8- Misc. manuf. goods	9- Goods not classified by kind	All commod-ities
Bulgaria											
Exports to: West Germany	24	11	17	15	0	13	29	13	52	24	197
United States	3	23	0	4	0	8	2	3	4	0	47
Imports from: West Germany	22	1	20	4	2	176	175	423	43	10	875
United States	33	5	10	0	0	9	2	26	3	0	88
Czechoslovakia											
Exports to: West Germany	85	7	126	206	3	128	333	84	164	39	1,175
United States	13	1	1	0	0	3	31	10	25	2	86
Imports from: West Germany	44	2	30	8	3	245	214	723	74	25	1,367
United States	0	3	17	0	0	9	3	12	3	1	47
East Germany											
Exports to: West Germany	345	8	1,284	0	0	409	843	391	380	40	3,700
United States	0	0	1	1	1	22	50	9	11	1	96
Imports from: West Germany	341	13	1,043	0	0	703	522	1,311	122	65	4,119
United States	28	0	5	0	0	3	0	15	3	1	54
Hungary											
Exports to: West Germany	189	12	69	52	3	92	175	148	167	40	947
United States	54	1	2	1	2	27	58	76	67	0	288
Imports from: West Germany	40	2	42	9	1	313	272	583	109	0	1,372
United States	39	4	3	6	0	67	16	99	16	1	251
Poland											
Exports to: West Germany	206	2	107	141	8	94	348	136	190	73	1,304
United States	133	1	1	0	1	12	71	63	38	0	319
Imports from: West Germany	113	3	49	6	20	248	210	413	74	0	1,136
United States	68	2	20	0	0	3	5	28	12	0	139
Romania											
Exports to: Italy	25	0	17	597	0	34	59	44	97	2	874
United States	19	2	5	404	0	8	131	36	175	2	782
Imports from: Egypt[a]	0	0	14	131	0	0	0	0	0	0	146
United States	4	0	101	47	0	11	1	25	3	1	192
U.S.S.R.											
Exports to: West Germany	20	19	288	2,835	1	223	396	73	26	116	3,998
United States	3	20	50	107	0	118	142	8	9	12	470
Imports from: West Germany	241	2	62	11	11	735	1,573	1,428	237	79	4,379
United States	860	0	57	54	19	264	23	130	69	1	1,477
Yugoslavia											
Exports to: Italy	263	4	230	53	2	142	533	182	78	0	1,487
United States	35	23	3	13	0	29	147	177	279	26	732
Imports from: West Germany	30	3	48	21	3	471	412	1,174	130	0	2,293
United States	107	8	89	63	1	92	27	292	33	1	713

[a]According to the IMF, *Direction of Trade Yearbook*, 1989, Iran is Romania's primary supplier of imports, and Egypt is second. Because neither Iran nor Romania reports commodity category detail to the U.N., data are reported here for Egypt. It happens that the U.N. trade data, which perhaps are incomplete for Egypt, show Romania importing less from Egypt than from the United States.

Note: Detail may not add to totals shown because of rounding.

Source: Primary non-CMEA trading partners were identified from IMF, *Direction of Trade Statistics Yearbook*, 1989. Data on trade between the two Germanys are from Statistisches Bundesamt, *Statistisches Jahrbuch 1988 fur die Bundesrepublik Deutschland* (Stuttgart und Mainz: Verlag W. Kohlhammer, 1988), p. 249. Other data are from National Institutes of Health, COMPRO database, U.N. routine. Only Hungary, Poland and Yugoslavia reported 1987 trade data in the U.N. routine. Data for the remaining five countries (Bulgaria, Czechoslovakia, East Germany, Romania, and the U.S.S.R.) are based on data reported to the U.N. by countries that trade with the five.

Table 12
Reserves as a Percentage of Annual Imports[a] in Eastern Europe and the U.S.S.R., 1981–89

Area	1981	1982	1983	1984	1985	1986	1987	1988	1989[p]
Bulgaria	29	35	44	52	62	38	32	42	31
Czechoslovakia	27	20	28	30	30	28	32	30	26
East Germany[b]	49	48	72	84	130	145	189	191	165
Hungary	20	18	33	41	54	47	30	25	19
Poland	13	19	28	36	35	37	55	61	53
Romania	4	6	11	14	8	16	42	21	27
Total Six	21	23	36	44	55	55	66	63	57
U.S.S.R.	30	35	39	42	50	60	58	54	48
Total Seven	25	29	38	43	52	58	62	59	53

[p]preliminary
[a]Reserves are deposits in Bank for International Settlements area banks, and imports are those paid for in convertible currencies.
[b]Excluding transactions with West Germany.
Source: *Financial Market Trends*, vol. 45, February 1990, pp. 25–26.

billion to $48.0 billion.[7]

Should these countries be entrusted to carry much more debt in the near future, or might lenders encounter a quicksand of arrears, reschedulings, and losses? On the one hand, liberalization should allow more efficient use of resources and more rapid growth. On the other hand, less authoritarian governments will have less power to extract the wherewithal to pay foreign debts on schedule in circumstances such as the early 1980s. And the transition from centrally directed to market-oriented economic systems can be difficult, temporarily reducing output and employment and boosting inflation, thereby imperiling the liberalization itself.

For assistance in evaluating the burdensomeness of the debt currently outstanding, one can, of course, consult the conventional indicators, such as those presented in tables 12 to 15. The higher the ratio of reserves to imports (table 12), the easier it is for a country to avoid a liquidity crisis in the event of either a sudden decrease in foreign-exchange receipts (from, say, a decrease in exports) or a sudden increase in foreign-exchange outlays (from, say, a rise in interest rates on outstanding debt). A rule of thumb is that reserves should amount to 25 percent or more of imports. Only Hungary falls short, although the figure for Poland is inflated by deposits that have been pledged as collateral and thus are not freely available to the nation.[8]

Another indicator is the ratio of net interest payments to exports (table 13), which is interpreted as the share of a country's export receipts that must be devoted to interest payments on external debt. For Czechoslovakia, East Germany, Romania, and the Soviet Union, the ratio seems comfortably low, and, except for the Soviet Union, considerably lower than in the early 1980s. For Poland, the high ratio correctly signals an extraordinary debt burden.

A somewhat broader and more popular indicator encompasses not only interest but also principal payments in relation to export receipts (table 14). This "debt service ratio" is about the same as, or lower than, it was in 1981 or 1982 for most of the countries, but has doubled for Bulgaria and remains very high for Poland.

While these three indicators all contribute to the evaluation, many analysts rely most heavily on the ratio of net debt to exports (table 15). In general, it is thought that a ratio (percentage) of less than 100 represents a light debt burden, a ratio of 100 to 200 a medium burden, and a ratio of more than 200 a heavy burden.[9] By this scale, the debt burden is light for Czechoslovakia and Romania, moderate for East Germany and the Soviet Union, and heavy for Bulgaria, Hungary, and Poland.

In sum, the various indicators suggest that Czechoslovakia, East Germany, Romania, and the Soviet Union could readily assume more debt, as of end-1989, but that Bulgaria, Hungary, and especially Poland, are less capable of doing so. Indeed, in March of this year Bulgaria suspended principal payments on $10 billion of debt owed to major

Table 13
Net Interest Payments as a Percentage of Exports in Eastern Europe and the U.S.S.R., 1981–89

Area	1981	1982	1983	1984	1985	1986	1987	1988	1989[p]
Bulgaria	7	7	6	3	3	6	10	12	14
Czechoslovakia	10	11	8	6	5	4	5	5	5
East Germany[a]	23	19	13	9	7	6	7	8	8
Hungary	24	18	13	13	15	17	20	21	20
Poland	78	62	52	50	49	42	39	40	49
Romania	20	20	14	12	9	7	6	4	1
Total Six	28	24	18	16	15	14	15	15	16
U.S.S.R.	8	7	4	4	4	5	5	6	7
Total Seven	19	16	11	10	10	10	10	11	12

[p]preliminary
[a]Including transactions with West Germany.
Source: *Financial Market Trends*, vol. 45, February 1990, p. 25.

Western banks. And Poland has already sought relief from making its scheduled debt payments, which represent a burden comparable to that borne by the most heavily indebted countries of Latin America. Accordingly, in the secondary market, bank loans to Poland have been selling at huge discounts, amounting to about 85 percent in March, while discounts of 15 and 20 percent have been reported on loans to Hungary and Bulgaria, respectively. The debt of Yugoslavia, for which no debt burden indicators are presented here, has also sold at sizable discounts, amounting to more than 40 percent this spring.[10] More generally, the risk premia (or spreads over LIBOR) charged by commercial banks on loans to the NLCs rose during 1988 and 1989 as debt burden indicators generally turned somewhat less favorable and as social turmoil spread in these countries.[11]

Partly because of the rise in risk premia charged the NLCs on borrowed funds, it seems appropriate for at least some of these countries to seek to attract a higher proportion of their future foreign financing in the form of equity rather than debt. Unlike the interest on debt, which falls due by contract regardless of changes in the borrower's circumstances, dividends on equity may legitimately be slashed if the paying firm's circumstances turn adverse. Thus, with more of their foreign financing from equity investors, the NLCs would have more flexibility to reduce their outflow of income payments in the event of recession or other adversity. Moreover, the risk of providing financing for these countries would be spread more widely, beyond the foreign banking sector.

This is not to say that equity financiers, such as participants in joint ventures, are oblivious to a country's indebtedness. Heavy indebtedness on the part of a government, in particular, may generate fears of a host of measures the government might take, in search of the wherewithal to service its debt, that would reduce the rate of return on equity investments. Among these measures could be higher taxes on profits and various controls designed to enhance the country's net foreign-exchange receipts, such as controls over what firms may import or requirements that they export a minimum percentage of their output. And more generally, overindebtedness almost by definition implies an inability, for the time being, to generate a competitive return on additional capital investment, whether the additional capital takes the form of loans or equity. Thus, while a heavily indebted country may seek to attract equity capital, its success will surely be compromised by its indebtedness.

Prior to the liberalization, of course, it was not indebtedness so much as government barriers that deterred foreign equity investment in Eastern Europe and the Soviet Union; under communism, it is the state, and not private entrepreneurs, that is to own the basic means of production. To the extent that this principle and other barriers to private investment are abandoned, and to the extent that the NLCs offer a

Table 14
Debt Service Ratios[a] in Eastern Europe and the U.S.S.R., 1981–89

Area	1981	1982	1983	1984	1985	1986	1987	1988	1989[p]
Bulgaria	20	23	20	17	15	32	34	39	40
Czechoslovakia	17	20	20	17	17	17	18	16	17
East Germany[b]	75	67	46	41	41	46	50	72	70
Hungary	42	37	36	45	53	65	50	54	45
Poland	188	183	147	109	96	63	79	76	88
Romania	36	46	35	25	27	27	30	23	15
Total Six	63	63	51	43	41	42	43	47	46
U.S.S.R.	23	20	14	16	20	24	23	23	23
Total Seven	43	41	33	29	31	33	33	35	35

[p]preliminary
[a]All interest and amortization on medium- and long-term debt as a percent of one year's exports.
[b]Including transactions with West Germany.
Source: *Financial Market Trends*, vol. 45, February 1990, p. 26.

Table 15
Net Debt/Export Ratios[a] in Eastern Europe and the U.S.S.R., 1981–89

	1981	1982	1983	1984	1985	1986	1987	1988	1989[p]
Bulgaria	67	59	44	22	50	143	175	196	263
Czechoslovakia	82	80	64	52	61	66	78	78	95
East Germany[b]	198	141	103	78	89	89	107	106	118
Hungary	160	148	143	147	211	312	324	290	326
Poland	502	466	483	459	546	570	556	504	532
Romania	135	152	134	95	100	98	76	32	−1
Total Six	195	183	166	146	174	205	218	202	211
U.S.S.R.	65	55	40	36	58	79	82	90	113
Total Seven	135	120	104	94	123	152	158	153	169

[p]preliminary
[a](Debt − Reserves)/Exports (goods only) in convertible currencies, as a percentage.
[b]Includes transactions with West Germany.
Source: *Financial Market Trends*, vol. 45, February 1990, p. 24.

sound economic and stable political environment, many profitable opportunities should arise that equity investors will find impossible to refuse.

U.S. Investment in the NLCs

Loans by U.S. commercial banks to the NLCs comprise only a small fraction of the banks' total capital and a minuscule fraction of their total assets. Thus, by contrast with its exposure to the LDC debt problem, the U.S. banking system is not vulnerable to any debt crisis that might erupt in the NLCs in the immediate future. As can be deduced from table 16, outstanding loans by the nine "money center banks" to the NLCs amounted to only 0.3 percent of their total assets and 3.6 percent of their total capital in September 1989.

U.S. direct investment in these countries has been even less formidable. At the end of 1988, only in Romania was the U.S. investment position such that the Commerce Department determined the figure could be published without disclosing data of individual companies, and there the amount was a mere $3 million.[12]

Table 16
Amounts Owed Nine U.S. Money Center Banks by Borrowers in NLCs, and Bank Assets and Capital, September 1989

Description	Millions of Dollars
Bulgaria	64
Czechoslovakia	11
East Germany	154
Hungary	197
Poland	205
Romania	26
U.S.S.R.	214
Yugoslavia	1,214
Total	2,085
Total bank assets	615,100
Total bank capital	57,200

Note: Amounts owed are after adjustments for guarantees and external borrowings. Bank capital includes equity, subordinated debentures, and reserves for loan losses.

Source: Federal Financial Institutions Examination Council, "Country Exposure Lending Survey: September 1989." (Washington, D.C.: Board of Governors of the Federal Reserve System, Statistical Release E.16 (126)).

These data confirm the impression conveyed by the trade data that U.S. commerce with the NLCs is but an infant. How the infant grows will depend largely on how it is nurtured.

Summary and Conclusion

The prospect of expanding commerce with the NLCs has aroused much interest in the more advanced industrial countries. Currently the NLCs account for only a small portion of world trade, and it is questionable whether their trade will enlarge very much in relation to their GNP. However, a substantial fraction of the trade that has gone on among these countries might be switched to trade with the rest of the world as trade and payments controls within the NLCs are relaxed. In addition, total trade of the NLCs should be boosted by any growth in GNP that is stimulated by their liberalizing economic reforms.

As for the composition of NLC trade, the exports of the Soviet Union are heavily concentrated in petroleum, but machines and transport equipment comprise the largest single category of exports for half of the NLCs and the largest single import category for all of them. However, their exports of machines and transport equipment are more important in their trade with each other than in their trade with other countries, which reportedly have applied higher standards for these items. Another major import category for a number of NLCs is petroleum, which in the past has been supplied to them by the Soviet Union at below-market prices.

Some inferences are drawn in the article regarding the comparative advantages of a few of the NLCs. Because of the likely influence of government controls over trade patterns, such inferences can be only tentative, but they are suggestive of patterns of specialization that might prevail as liberalization proceeds.

Trade with the NLCs comprises only a small fraction of total U.S. trade. Nearly half of U.S. exports to these countries is food, and most of U.S. imports from them is divided fairly evenly among basic manufactures, miscellaneous manufactures, and petroleum. The volume of this trade could be significantly expanded, and its pattern notably altered, as NLC governments relax their controls and as the United States both eases its restrictions on high technology exports and reduces its tariffs on imports from NLCs to the levels applied to imports from other countries generally. Current data suggest that the United States has marked comparative advantages in animal and vegetable oils and fat and in crude materials excluding fuels, and comparative disadvantages in basic and in miscellaneous manufactures, not only in trade with the NLCs but with the rest of the world.

In competition for the trade of the NLCs, the United States has not been in the front ranks. By contrast, among non-CMEA countries West Germany is the primary source of imports for every NLC except Romania, and is the leading purchaser of exports from every NLC except Romania and Yugoslavia. This dominance surely helps to explain why West Germany seems to be experiencing a significant economic stimulus from the liberalization.

The NLCs offer opportunities not only for trade but for investment. While liberalization should allow more efficient use of resources and more rapid growth at least in the long run, it is also true that less authoritarian governments will have less power to extract the wherewithal to pay foreign debts, and the liberalization process may be painfully disruptive for some of the NLCs. Indicators of creditworthiness suggest that some NLCs could readily assume more debt but that others are less capable of doing so, and

risk premia charged on loans to the NLCs generally rose during 1988 and 1989.

In any event, U.S. banks have loaned only a small fraction of their total assets and capital to the NLCs and thus have only a slight exposure to the risk of adverse developments there. U.S. direct investment outstanding in the NLCs is also very small, confirming the impression given by the trade data that U.S. commerce with the NLCs has yet to blossom. While the NLCs hardly represent a promised land for U.S. business, they should offer numerous profitable opportunities if liberalization proceeds within a reasonably stable environment.

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[1] General Agreement on Tariffs and Trade, *International Trade 88-89*, vol.II (Geneva: 1989), Tables IV.9, IV.12, IV.21, IV.24, IV.44, and IV.68.

[2] Ibid., Table I.3.

[3] Excluding Yugoslavia. Ibid., Table III.2.

[4] See: Bela Balassa and Marcus Noland. 1989. "The Changing Comparative Advantage of Japan and the United States." *Journal of the Japanese and International Economies*, vol. 3 (June), p. 175.

[5] "Miscellaneous manufactures" includes a variety of light manufactures, such as furniture, apparel, footwear, instruments, photographic equipment, watches and clocks, toys, sporting goods, silverware, jewelry, and musical instruments. "Basic manufactures" includes such items as rubber tires, paper and paper products, textiles, basic wood products, basic iron and steel products, and nonferrous metals and basic products thereof.

[6] Economic Commission for Europe, *Economic Survey of Europe in 1988–1989* (New York: United Nations, 1989), p. 258, and International Monetary Fund, *International Financial Statistics Yearbook 1989*, (Washington, D.C.: IMF, 1989), p. 753.

[7] *Financial Market Trends*, vol. 45, February 1990, p. 20.

[8] Ibid., p. 27.

[9] Ibid., p. 22.

[10] *Indicative Prices for Less Developed Country Bank Loans*, March 15, 1990 (New York: Salomon Brothers, Inc.), and staff at Salomon Brothers, Inc.

[11] *Financial Market Trends*, vol. 45, February 1990, pp. 31–32.

[12] *Survey of Current Business*, vol. 69, August 1989, p. 85.

The Changing American Attitude toward Debt, and Its Consequences

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The Congress and the President have been struggling with the federal government budget deficit for six years, thus far with little result. The fundamental reason for their failure is the fact that the American people no longer view the deficit as a significant problem. This represents a radical change in the attitude of Americans from thirty years ago, when even small deficits were viewed with great concern. People are not much concerned about our long string of trade deficits, either. Those working in industries affected by foreign competition are, of course, worried about their jobs; others may feel uneasy about Mitsubishi buying Rockefeller Center; but people in general are not clamoring for the steps needed to eliminate the trade deficit. Moreover, there is no perception of the linkage between the federal budget deficit and the trade deficit.

This article will describe the factors that have produced this change in American values and assess the consequences, both past and future. Although society's values most often refer to social issues, they also help to shape the macroeconomic options open to a democratic government.

Early Influences

Dean Acheson chose as the title for his autobiography *Present at the Creation*. He was referring, of course, to the creation of the Marshall Plan, NATO and other aspects of U.S. foreign policy in the years following World War II. I was present at the creation of the changed American attitude toward national debts.

It began in the Kennedy Administration in the early 1960s. The President had run on a platform of getting the American economy going again. His principal economic advisers, Walter Heller, Chairman of the Council of Economic Advisers, and Douglas Dillon, Secretary of the Treasury, argued that the way to achieve that objective was through a

major tax cut, which would stimulate economic growth and, in the process, increase Treasury revenues sufficiently that the tax cut would not result in any substantial increase in the federal deficit.

This was a radical idea in those days and President Kennedy was quite conservative in fiscal matters. It took a long time for his advisers to persuade the President that it made economic sense to cut taxes even though the government was already running a deficit. It took much longer to persuade the Congress. One of the key features of the Kennedy tax program was the investment tax credit. I remember being stunned to learn that the leading business organizations had testified against the investment tax credit. In part it was due to a preference for accelerated depreciation, but in part it reflected an uneasiness with the general idea of cutting taxes when the government budget was in deficit.

The popular view of the day was the view of President Eisenhower—that the federal budget was akin to a family budget and if the government ran deficits, trouble was certain to ensue. Walter Heller complained that what he called the "Puritan Ethic," an unreasoning fear of deficits, was keeping the government from following sound economic policies. And so a big educational effort was undertaken to deal with the "Puritan Ethic."

My small role was to talk to the banking groups that regularly visited the Treasury. We argued that there certainly were times when an increase in the deficit would be inappropriate. If the economy were operating close to capacity, an increase in the deficit could be inflationary, and would raise interest rates and squeeze out private investment. But in the conditions of 1962 and 1963, when the economy was operating well below capacity, a tax cut would raise total output and increase private investment, without enlarging the deficit significantly.

The popular view of the day was that if the government ran deficits, trouble was certain to ensue.

In the event, the Kennedy tax cut was a triumph. In the first three years that the tax cut was in effect, 1964–66, the growth rate of real GNP averaged 5.6 percent, federal government revenues rose by 23 percent, and the fiscal 1966 deficit was slightly less than in fiscal 1963.

This was the first of five factors that changed American attitudes toward the federal debt, and perhaps the most important, because if the Kennedy tax cut had been viewed as a failure, subsequent U.S. fiscal history would have been very different and the "Puritan Ethic" might be alive and well today.

Theoretical Justifications

The second factor changing attitudes was the emergence of the doctrine that large deficits were needed to control federal government spending. A principal advocate of this position was Milton Friedman. He argued that deficits were not important; what was important was the percentage of the GNP absorbed by federal government spending. Government deficits would not be inflationary if the Federal Reserve refused to monetize the debt, and the presence of large deficits would constrain spending. What Friedman did not emphasize was that this combination of a loose fiscal policy and a tight monetary policy would, in an economy operating close to capacity, drive up interest rates, squeeze out private investment, and make American industry less competitive in world markets.

The large deficits have had the effect that Friedman anticipated. Because of the rise in military spending, total federal government spending as a percent of the GNP was higher in the last year of the Reagan administration than it was in Carter's last year. However, excluding the military, entitlement programs, and interest costs, the remainder of the budget declined as a percentage of the GNP. More important, the deficits have restrained the Congress from initiating new social programs. President Bush has been talking about establishing a new space program, improving the educational system, initiating a war on drugs, and aiding the Eastern European countries. Because of the deficit, however, only nominal amounts of money are being allocated to these programs. The United States is not in a financial position to undertake new initiatives or address new challenges. Because of the restraint on spending, conservatives who traditionally have opposed government deficits are now comfortable in defending a policy of continuing deficits.

The *Wall Street Journal* has been a constant advocate of this position on its editorial pages. The following is from an editorial of January 31, 1990:

> Spending measures the government's real command over resources; it's a secondary matter whether it's financed by taxes, by borrowing or by even higher taxes with a budget surplus. While we'd like something a lot more surgical, an item veto for example, the deficit has been the only spending restraint we've had. The inexorable climb of outlays as a percent of GNP was checked by holding the line on taxes even at the expense of a budget deficit. Revenues are already climbing back toward their postwar high. On that ground alone it's time to cut them again, letting the people who earned the money decide how to consume, save and invest.

Other Contributing Factors

The third factor affecting attitudes has been the massive net inflow of foreign savings, totaling about $800 billion during the past seven years, which has mitigated the effect of the deficits on interest rates and private investment. Without this $800 billion in foreign savings, interest rates in the United States would have been much higher and the man in the street would be much less complacent about the deficits than he is today.

The fourth factor changing attitudes toward debt is the apparent success of the Reagan economic policies. I say "apparent" because we lack historical perspective, but without question a good feeling is widespread in the country. The unemployment rate is low. The inflation rate and interest rates are high by historical standards, but they are so much lower than they were in the early years of the decade that they seem quite satisfactory. For example, students today cannot relate to the fact that the mortgage rate on a house built in 1970 is 5½ percent—they think anything below 10 percent is pretty good. The very fact that the economy is in the eighth year of economic expansion with no recession in sight has caused people to discount concerns about the deficits.

The fifth and a very important factor changing attitudes toward debt, is the fact that the United States has not had a major depression in fifty years. This has made people much less cautious in financial matters. The clearest examples are in corporate finance, with many major companies taking on levels of debt that would not permit them to survive a serious depression. Some are even having trouble dealing with a slower growth rate. The top managers of American companies in the 1950s and 1960s were people who had come to maturity during the Great Depression. The willingness of today's managers to leverage their companies must seem to them to be reckless behavior, and the willingness, until recently, of investors to buy the bonds of such highly leveraged corporations must seem to them to be naive. The fact that nobody under the age of sixty has any memory of the Great Depression has contributed substantially to the new attitudes about debt.

The massive net inflow of foreign savings has mitigated the effect of the deficits on interest rates and private investment.

The Consequences

Having discussed the reasons for the changed American attitude toward debt, I would like to turn to the consequences of that change. Economic theory tells us that if the government runs large deficits when the economy is running close to capacity, the result will be high interest rates, the squeezing out of private investment, and a slower rate of growth in productivity and real income. All of these consequences are clearly apparent in the 1980s, mitigated only by the large inflows of foreign capital.

Since World War II the U.S. economy has had two economic expansions that lasted more than seven years. It may be instructive to compare the first seven years of the present expansion (1983–89) with the first seven years of the earlier expansion (1961–67).

During the 1961–67 period the federal government budget deficits averaged 0.8 percent of the GNP versus 4.5 percent in the 1983–89 period, almost six times as large. At the same time, the gross private savings rate dropped from 17.2 percent during the 1961–67 period to 15.8 percent during 1983–89, which means that the burden of the deficits on our capital markets in the 1980s was even greater than the ratios

of the deficits to the GNP would suggest. During the 1961–67 period, U.S. government long-term bond yields averaged 4.25 percent and the bank prime lending rate averaged 4.8 percent. These interest rates seem almost impossibly low today, but they are not very low relative to the rates that have prevailed in recent years in Japan and Germany, our major competitors.

Given the high cost of capital, it is not surprising that the investment performance of the United States in the 1980s was the poorest of any decade since World War II and that the rate of growth of productivity and real income was also the poorest. Net fixed domestic investment as a percentage of GNP during the 1983–89 period was only 72 percent of the 1961–67 level, and net fixed nonresidential domestic investment as a percentage of the GNP was only 58 percent of the 1961–67 level. We shall note later that the rate of growth of output per person in the nonfarm business sector during 1983–89 was 56 percent of the 1961–67 level. These domestic investment figures tell only part of the story. During the 1961–67 period the United States invested more abroad than foreigners invested in the United States, in an amount averaging 0.8 percent of the GNP. Net foreign investment during 1983–89 averaged a *negative* 2.7 percent of the GNP.

One of the most worrisome aspects of the large international deficit is that the United States has lost sovereignty over its financial markets.

Since 1983 the level of investment in the United States has clearly been subpar despite the fact that in the past seven years the economy has enjoyed net imports of foreign savings totaling more than $800 billion. If this inflow had been associated with an exceptionally high level of investment in state-of-the-art plant and equipment, this country's future prospects would be greatly enhanced, but the facts clearly indicate that this inflow was consumed rather than invested.

While a national budget deficit is clearly not like a family's budget deficit, an international deficit is very similar. A family can consume beyond its income as long as its credit remains good. The same is true of a nation in international transactions. The credit of the United States has been amazingly strong during the past seven years. This has led one prominent economist to argue that the United States can sustain current account deficits indefinitely at around the $100 billion level. I am skeptical of this proposition. My experience suggests that the fact that something has gone on for several years is no basis for assuming that it can go on forever.

When I was a graduate student in the 1950s, a common theme was that the world was going to have a perpetual shortage of dollars. When I arrived in the Treasury in 1961, I found that the dollar shortage was over. Foreign central banks had more dollars than they wanted to hold. The span of time between perpetual dollar shortage and dollar glut was very short.

One of the most worrisome aspects of the large international deficit is that the United States has lost sovereignty over its financial markets. The year 1987 was a case in point. In the spring of 1987 the inflow of private foreign capital suddenly dried up. Private foreign investors were unwilling to finance our deficit at prevailing interest rates and exchange rates. The dollar dropped and the deficit was financed entirely by an inflow of foreign central bank funds, as these banks sought to dampen the rate of decline of the dollar. While private foreign investors had been absorbing 30 percent or more of our new bond issues, central banks do not buy bonds; they invest short-term. As a consequence long-term bond yields rose by 150 basis points and this, in turn, triggered the great stock market collapse of 1987.

Prospects

The United States is currently vulnerable to another financial shock stemming from any change in the attitudes of private foreign investors. The major interest rate advantage that the United States offered in earlier years has largely been eliminated for German investors and is very much smaller for Japanese investors. The dollar has fallen by 18 percent against the deutsche mark since September, although it has thus far been steady against the yen. There could well be ahead of us another period in which the demand for U.S. assets by private foreign investors dries up. Again the United States would experience a sharp decline in the dollar and a rise in long-term interest rates. Despite an easing in Federal Reserve policy,

long-term government bond yields have increased 75 basis points since December 20. At least in part, this rise in long-term yields reflects a recognition by the market that U.S. assets may be less attractive to foreign investors than they have been in the past. This is a matter of concern, since the economy in 1990 may be less capable of absorbing financial shocks than it was in 1987.

In 1981 the United States had net investment income of $34 billion, meaning that income on U.S. foreign investment exceeded income on foreign investment in the United States by that amount. This was a substantial American asset, the product of decades of heavy investment abroad. It permitted the country to run a trade deficit that in 1989 dollars would amount to $700 for every American family, and still balance its international accounts. In seven years this asset was dissipated; net investment income turned negative in 1989. At some point in the future, the United States will have to run a trade surplus in order to cover the interest payments due on the debt that we incurred so that we could consume more than we produced in the 1980s.

It should not be surprising that the poor investment performance of the 1980s has been associated with a poor productivity performance, the poorest of any major industrial country. Productivity growth during this expansion has been only 56 percent of the level of 1961–67, roughly the same proportion as the relative rates of growth of fixed nonresidential investment. Real compensation per hour in the nonfarm business sector rose by 20 percent during the expansion in the 1960s but only by 5 percent during this expansion.

With such an abysmal record of real income growth, why do Americans feel good about the 1980s? I think there are four reasons. First, the almost negligible real income growth dates back to 1973, the year of the first oil price shock. During the previous twenty-six years, 1947–73, real compensation per hour doubled. During the following sixteen years it rose by only 5 percent. Americans no longer expect a rapid rise in real income, as they did in the 1960s. Second, the decline of the inflation rate and interest rates from the high double-digit levels of the early 1980s is viewed, quite properly, as a success of economic policy. But there is no perception that the current levels of the inflation rate and interest rates are very high by historical standards. Young people find the cost of housing to be very high, and it is much higher in real terms than it was for my generation; but they do not understand that it is the higher mortgage rates rather than the higher purchase price of housing that is the source of the problem. Third, the labor force participation rate for women has risen by almost 30 percent since 1973. The United States has many more two-earner families, and this has helped to mask the fact that real income per person has made little progress. Fourth, the poor U.S. economic performance was also masked by the large trade deficits that permitted us to consume more than we as a nation produced.

A prolonged reluctance of private foreign capital to finance our trade deficit would produce a declining dollar and sharply higher long-term interest rates.

Americans are a much less compassionate people than we were in the 1960s. We are now much less willing to sacrifice for the benefit of the disadvantaged, at home or abroad. The reason, I believe, is that with real incomes rising at 3 percent a year during the 1960s, Americans felt affluent. Today after sixteen years of little growth in real incomes the sense of affluence has gone and along with it some of our compassion for others.

In the American democracy, with all of its checks and balances and diffused power, we are often not able to act except in a crisis environment. While the economic policies of the 1980s have carried with them considerable costs, the costs are long-term in their impact, not the stuff to generate crises. The most likely disturbance to capture the attention of the American people would be a prolonged reluctance of private foreign capital to finance our trade deficit, which would produce a declining dollar and sharply higher long-term interest rates. We had a taste of this in 1987. More may come.

In the early 1960s economists of all persuasions agreed with President Kennedy's theme of the need to get the economy going again. In a congressional hearing in 1964, Keynesians argued that fiscal policies were too restrictive in the 1950s and monetarists complained that the Federal Reserve had not permitted the money supply to grow fast enough. They agreed on the need for more expansionary policies to

enable the economy to reach its full potential. I shared this conventional wisdom.

President Eisenhower and William McChesney Martin, Jr., who presided over fiscal and monetary policies during most of the 1950s, were indeed conservative men. However, if we look at the economic statistics of the 1950s in the perspective of history, we might wonder why economists of that era were so unanimously dissatisfied with the results. During the 1950s we had an average rate of growth of real GNP of 4.1 percent, the unemployment rate averaged 4.5 percent, the increase in the Consumer Price Index averaged 2.3 percent per year. Not too shabby, but the dramatic numbers were those for productivity and real incomes. During the decade of the 1950s, output per hour rose by almost 30 percent, an average of 2.6 percent per annum, and real compensation per hour rose by almost 37 percent, averaging 3.2 percent per annum. We are unlikely to achieve that kind of economic performance in the 1990s.

In retrospect, I have reluctantly come to the conclusion that the country would be a lot better off today if we in the Kennedy Administration had failed to destroy the "Puritan Ethic" in the early 1960s.

The Case for Junk Bonds

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Assistant Vice President and Economist, Federal Reserve Bank of Boston. *This paper provides a defense of a controversial type of financing, junk bonds. It does not provide a comprehensive discussion of the opposing view.* *The author is grateful to Jessica Laxman, Adam Rosen, and Simeon Hyman for research assistance.*

An important financial innovation of the 1980s was the emergence of original-issue junk bonds, securities of below investment grade with high initial yields to maturity. Such securities are not totally new. Fallen angels, securities that have lost their investment-grade rating, have been familiar since the inception of the corporate bond market because not all firms live up to the initial expectations of investors. Before the establishment of the original-issue junk bond market, firms that did not qualify initially as investment-grade borrowers could not issue long-term bonds. In the past these firms relied almost exclusively on short-term bank loans for debt financing, but now many such enterprises can obtain long-term financing in national credit markets.

Junk bonds are an extension of a trend to substitute publicly traded securities for bank loans, a process called disintermediation. Investment-grade firms, for example, substituted commercial paper for bank loans. As well-established firms found their credit ratings equaling or exceeding those of commercial banks, they were able to raise funds more economically by issuing instruments directly in the open market. Over time, such borrowers have become less dependent on depository institutions as a source of funds. While below-investment-grade firms have lower credit ratings than banks, by placing tradable securities directly with investors they can obtain debt with longer maturities than commonly available from banks.

Junk bonds nevertheless are under attack, with opponents arguing they facilitate excessive leverage. While junk bonds have substituted for some bank lending, both sources of debt financing have grown rapidly during the 1980s as firms have become more leveraged. Greater leverage reduces a firm's tax burden because of the tax deductibility of interest payments, but it also increases the probability of default. The recent increase in large corporate bankruptcies stems in part from firms' choice of riskier capital structure.

In response to the problems created by defaults or near defaults of highly leveraged firms, savings and loans are now prohibited from holding junk bonds. Bills before Congress would also limit other financial intermediaries' investments in junk bonds and eliminate corporate tax deductibility of interest payments on junk bonds. This article contends that such asset restrictions may be counterproductive, limiting access to public credit markets for below-investment-grade firms without reducing their demand for debt. As a result, they will turn to substitutes for junk bonds, such as bank loans, to meet their financing needs. This may limit the firms' ability to raise long-term funds, since bank loans generally have short maturities.

The first section of this article shows that junk bonds are a natural extension of the disintermediation occurring in other financial markets. The second section describes the evolution of the junk bond market. The third section argues that bank loans are close substitutes for junk bonds; therefore, regulating junk bonds alone will not prevent highly leveraged transactions. The final section concludes that further regulation of junk bonds could limit the ability of below-investment-grade firms to raise long-term funds.

I. Changing Corporate Borrowing Patterns

The major sources of debt financing for businesses are corporate bonds, commercial paper and bank loans. These instruments differ in maturity, number of borrowers, and quality of borrowers. While the corporate bond market and the commercial paper market have been major sources of debt financing, until the establishment of the junk bond market they were primarily available to large, creditworthy companies. In 1988, about 1,000 investment-grade bonds were issued by nonfinancial corporations, with an average size of $44 million.[1] Similarly, the commercial paper market generally provides large denomination funds for firms with investment-grade ratings.

Most small and mid-sized firms are not large enough or financially strong enough to issue investment-grade debt and, therefore, depend on commercial banks for their debt financing. Table 1 shows the terms of commercial and industrial loans extended by commercial banks during the second week of November 1989, as surveyed by the Federal Reserve System.[2] As estimated from the survey, commercial banks held approximately 142,000 loans with less than one year to maturity with an average size of $311,000, and approximately 20,000 loans with more than one year to maturity and an average size of $260,000. Thus, bank loans are generally smaller and of shorter maturity than corporate bond issues.

Only 12 percent of the commercial and industrial loans surveyed by the Federal Reserve had more than one year to maturity. Bank loans are predominantly short-term floating-rate instruments or fixed-rate loans with short maturities (the average fixed-rate short-term loan was only 30 days) because most bank liabilities are also both floating-rate and short-term. Banks can minimize their interest rate risk by issuing loans with characteristics that match those of their liabilities. While this strategy minimizes interest rate risk for banks, it increases the risks to borrowers who must fund long-term projects with short-term loans.[3]

Table 1
Terms of Lending at Commercial Banks
Survey Conducted November 6–10, 1989

	Amount (Billions of Dollars)	Average Size (Thousands of Dollars)	Weighted Average Maturity
Short-Term	44.0	311	53 Days
Fixed	24.8	554	30 Days
Floating	19.3	199	117 Days
Long-Term	5.2	260	43 Months
Fixed	.9	114	49 Months
Floating	4.3	359	41 Months

Source: *Federal Reserve Bulletin*, March 1990.

Disintermediation

Before the development of the commercial paper market, most short-term funding for firms was provided by commercial banks. For firms that qualify for investment-grade ratings, issuing commercial paper has become a competitive alternative to bank financing. Firms have increasingly bypassed banks, with the commercial paper market expanding from $25 billion in 1979 to $85 billion by 1988. Banks have lost much of this business because they do not have a competitive advantage in providing funds, as com-

mercial paper rates paid by investment-grade firms are virtually the same as certificate of deposit rates paid by banks. Banks specialize in evaluating and monitoring credit risk, a service not highly valued for firms where the risk of default is very low. For firms with the highest credit rating, investors are willing to supply funds at rates at or below those of banks.

Disintermediation has not been confined to corporate bonds and commercial paper issued by the most creditworthy firms. Mortgages, student loans, and consumer loans are frequently repackaged and issued directly to financial market participants. Banks have even promoted repackaging of financial assets by developing an active loan sale market, wherein commercial and industrial loans are sold without recourse to other banks in a manner similar to the underwriting services provided by investment banks. Although most of these loans have been short-term loans to investment-grade firms, they have included loans issued to firms with below-investment-grade ratings.

With so many borrowers seeking to extend their sources of credit beyond banks, the trend toward disintermediation naturally expanded to firms that sought long-term financing but did not qualify for investment-grade ratings. The breaking down of traditional banking relationships also encouraged the substitution of junk bonds for bank loans. Banks typically have provided funds to below investment-grade firms, because banks specialized in gathering and analyzing credit risks of firms. Banks frequently supplemented their lending services with cash management, payroll, and other financial services that solidified the banking relationships. Greater competition among financial intermediaries and a trend towards separate pricing of banking services have enabled firms to unbundle these activities. Thus, firms could seek long-term financing from other sources without sacrificing the banking services that firms required.

Changes in the Composition of Corporate Debt

The changing composition of corporate financing is shown in table 2. Two major trends appear in the table. First, all forms of debt financing have grown rapidly. Second, disintermediation has been important: commercial paper and high-yield debt have grown more rapidly than bank loans to businesses.

As investment-grade firms successfully bypassed banks for both their short-term and their long-term financing needs, it was inevitable that firms with lower ratings should try to do the same. While some below-investment-grade firms have issued commercial paper, most still obtain their financing from banks. However, the long-term financing needs of below-investment-grade firms have not been met by banks. Since 1979, these firms have increasingly turned to long-term financing through the high-yield bond market.

Evolution of the Junk Bond Market

The junk bond market has followed the trends occurring in bank financing. During the past decade banks have increasingly financed highly leveraged transactions such as takeovers and recapitalizations. By the end of the 1980s, these transactions represented a significant portion of commercial and industrial loans for some banks.

Table 2
Corporate Debt Outstanding

	1979		1988	
	Billions of Dollars	Percent	Billions of Dollars	Percent
Investment-Grade Corporate Bonds and Private Placements	310	55	702	48
Commercial Paper	25	4	85	6
High-Yield Bonds	28	5	183	12
Bank Loans	204	36	502	34

Source: Board of Governors of the Federal Reserve System, *Flow of Funds.*

Most junk bonds issued in 1979 financed working capital, in place of bank loans. Table 3 describes the junk bonds issued in 1979, the first year with a significant number of new issues. Of the ninety-three issues, we were able to examine prospectuses for fifty-three. An analysis of the prospectuses in conjunction with news releases and other financial reports showed that only 11 percent of the issues (10 percent of dollar value) was used exclusively for acquisitions. Proceeds of most issues were used for working capital, consistent with the trend toward greater securitization in financial markets.

In 1988, junk bond financing of acquisitions was much greater. Of the $23 billion in junk bonds categorized in this study, only 20 percent of the new issues (9 percent of dollar value) was not planned for use in acquisition financing, while 64 percent was to be used exclusively for new acquisitions or to retire debt from previous acquisitions. The number of issues to be used for investments not related to acquisitions actually dropped. The amount of proceeds increased, however, reflecting the larger average size of junk bond issues. Most of the largest issuers in 1988 used the proceeds to finance takeovers.

Table 3
Amount and Purpose of Junk Bond Issues, 1979 and 1988

	Number of Issues	Amount (Millions of Dollars)
1979 Junk Bond Issues		
All Junk Bonds	93	2,653
All Junk Bonds Categorized	53	1,733
Percent of Category:		
Proceeds used exclusively to finance takeovers	11%	10%
Portion of proceeds to finance takeover or possible future takeovers	11%	25%
Proceeds not used to finance takeovers	78%	65%
1988 Junk Bond Issues		
All Junk Bonds	223	39,182
All Junk Bonds Categorized	137	22,858
Percent of Category:		
Proceeds used exclusively to finance takeovers	64%	76%
Portion of proceeds to finance takeover or possible future takeovers	16%	15%
Proceeds not used to finance takeovers	20%	9%

Source: IDD Information Services and company prospectuses.

Junk bonds are attractive as a financing vehicle for takeovers. Bank loans frequently have stringent underwriting standards and collateralization requirements that junk bond investors may not require if they receive a higher return. National banks and many state-chartered banks are not permitted to hold equity positions in firms, while junk bond investors may receive equity positions that enable them to share the benefits of successful ventures. To eliminate this advantage, many bank holding companies acquire equity and mezzanine financing similar to junk bonds in their nonbank subsidiaries, enabling the holding company to maintain a stake in all tiers of the transaction. Banks traditionally have been unwilling to acquire a takeover loan that represents a significant portion of their capital. However, as will be discussed later, banks are becoming more willing and able to finance takeovers.

Credit Rating Deterioration

Both the credit rating of junk bond issues and their importance to takeovers have changed substantially from 1979. Table 4 shows Standard & Poor's initial credit ratings for junk bonds issued in 1979 and in 1988: BB, B, or CCC, with BB the rating for a junk bond with the lowest probability of default and CCC the rating for a junk bond with the highest probability of default.

The proportion of rated junk bonds issued in 1979 in the higher rating categories is greater than for junk bonds issued in 1988. In 1979 only 5 percent of the total value of junk bonds issued had the lowest rating, CCC, and those issues were smaller than the average issue. None of the categorized issues whose proceeds were used to finance takeovers in 1979 had a CCC rating. In contrast, 17 percent of the total value of junk bonds issued in 1988 had the lowest credit rating and they were the largest issues. All five of the largest issues in 1988 were used to finance takeovers or restructuring to forestall a takeover attempt. Where the proceeds could be categorized, 25 percent of the issues devoted exclusively to finance takeovers had a CCC rating, while only 9 percent of the issues not used in takeovers had a CCC rating. Furthermore, securities in the largest category, B, are now of

Table 4
Standard & Poor's Initial Ratings for Junk Bonds, 1979 and 1988

Category	Amount (Millions of Dollars)	S & P Rating (Percent) BB	B	CCC	Not Rated
1979 Junk Bond Issues					
All Junk Bonds	2,652.5	14.1	43.3	4.9	37.7
All Junk Bonds Categorized	1,732.8	16.1	32.5	7.6	43.8
Proceeds used exclusively to finance takeovers	165	24.2	54.5		21.2
Portion of proceeds used to finance takeovers or possible future takeovers	425	14.1	37.6		48.2
Proceeds not used to finance takeovers	1,142.8	15.7	27.4	11.5	45.5
1988 Junk Bond Issues					
All Junk Bonds	39,181.5	8.4	66.7	17.4	7.5
All Junk Bonds Categorized	22,858.2	8.3	64.9	21.7	5.0
Proceeds used exclusively to finance takeovers	17,390.7	6.8	64.3	24.6	4.4
Portion of proceeds used to finance takeovers or possible future takeovers	3,393.7	5.9	77.0	14.7	2.4
Proceeds not used to finance takeovers	2,073.8	25.3	50.6	9.4	14.7

Source: IDD Information Services and company prospectuses.

lower quality. Since 1982, Standard & Poor's has augmented the general rating with + or − to differentiate issues further. Since 1982 an increasing share of the B category has been designated B−. The higher proportion of securities with a CCC or B− rating shows that the rating agencies believe that the quality of original junk bond issues has been declining.

Given the lower credit ratings for recently issued junk bonds, one can probably expect a default rate higher than in the 1979 sample, particularly if the economy does not continue to perform as well as it has over the past ten years. A significant proportion of junk bonds issued in 1979 defaulted, despite their better initial credit ratings (table 5). Of the issues whose status could be verified, 23 percent have defaulted or have been converted under distressed conditions. This is consistent with findings by Asquith, Mullins and Wolff (1989), who analyzed a smaller sample of junk bonds from 1979. None of the bonds initially used to finance takeovers defaulted, however. Table 6 shows the defaults, classified by initial rating. No clear relationship emerges between initial ratings and defaults, with bonds with the lowest rating having the lowest default rates. In a larger sample, however, lower initial ratings might indicate a higher probability of default.

The trend toward more acquisition-related financing and lower credit standards is not unique to junk bonds. Banks have also become increasingly aggressive lenders for takeovers and restructuring. The number of highly leveraged transactions financed by banks, and the number of highly leveraged loans past due, have been increasing. Despite the loss potential of highly leveraged debt, both for holders of junk bonds and for banks, these loans can be profitable. Defaults do not mean that all the principal is lost, only that the timely payment of interest is not made. Most troubled firms restructure, resulting in some losses to debt holders but still paying a significant proportion of the principal value. When creditors cannot reach agreement, the firm is forced into bankruptcy. Altman (1989) estimates that even in bankruptcy junk bonds sell for 45 percent of their face value one month after default. Banks that

Table 5
Status of Junk Bond Issues of 1979, Classified by Use

	Still Outstanding	Called	Converted or Defaulted	Status Not Verified
Total Number of Junk Bond Issues	27	29	17	20
Issues Categorized	17	17	6	13
Proceeds used exclusively to finance takeovers	4	0	0	2
Portion of proceeds used to finance takeovers	1	1	1	3
Proceeds not used to finance takeovers	12	16	5	8

Source: IDD Information Services and company prospectuses.

hold more senior debt positions would expect substantially higher payments from firms in default. Despite defaults, with the very high interest rates that these loans and junk bonds pay, lenders that carefully monitor the risks of their portfolios can earn high profits.

III. Regulating Junk Bonds

Recent legislation prohibits financial intermediaries such as national banks and savings and loans from holding junk bonds after an adjustment period to liquidate existing positions. Proposals to eliminate the tax deductibility of interest paid on junk bonds would further discourage the issuance of these securities. These asset restrictions have been focused on junk bonds because of their use in highly leveraged transactions and their association with takeovers, particularly hostile takeovers. Alternative debt financing is available, however, and few highly leveraged transactions will be prevented by legislation narrowly focused to discourage investors from holding junk bonds. This section argues that such asset restrictions are not effective because bank loans are close substitutes for junk bonds and these restrictions do not alter the incentives firms have to assume more leverage.

The importance of junk bonds for financing takeovers is often overstated. Table 7 provides the number and value of junk bond issues, corporate acquisitions and hostile takeovers from 1985 to 1988. The total value of junk bonds issued includes those issued for other purposes as well as those issued for takeovers and restructuring. The value of acquisitions includes publicly announced takeover values as ascertained by *Mergerstat Review*. The table overstates the role of junk bonds in acquisitions, since other

Table 6
Status of Junk Bond Issues of 1979, Classified by Initial S & P Credit Rating

Initial Credit Rating	Still Outstanding	Called	Converted or Defaulted	Status Not Verified
BB	4	3	2	0
B	15	10	8	8
CCC	1	4	1	2
NR	7	12	6	10
TOTAL	27	29	17	20

Source: IDD Information Services.

Table 7
Number and Value of Junk Bond Issues, Net Merger Announcements, and Hostile Takeovers

	Junk Bonds			Net Merger Announcements		Successful Hostile Takeovers	
Year	Number of Junk Issuers	Number of Junk Issues	Value (Millions of Dollars)	Number	Value (Millions of Dollars)	Number	Value (Millions of Dollars)
1988	169	223	39,181.5	2,258	246,875.1	27	38,474.4
1987	263	321	37,801.2	2,032	163,686.3	18	18,630.3
1986	369	442	45,604.2	3,336	173,136.9	15	7,613.7
1985	257	328	20,694.5	3,001	179,767.5	14	8,232.3

Source: *Mergerstat Review*, IDD Information Services.

junk bonds are included and those acquisitions whose value could not be ascertained are not included. In 1988, net merger announcements totaled $247 billion, while junk bonds issued for all purposes totaled $39 billion: the value of junk bonds relative to the total value of acquisitions had dropped to 16 percent in 1988 from a high of 26 percent in 1986.[4] The data suggest that most takeovers are financed by sources other than junk bonds.

Acquisitions are financed mostly by bank loans, internal funds and investment-grade debt. Of the ten most active acquirers from 1978 through 1985 (*Mergerstat Review* 1986), one firm had no debt outstanding and the other nine all qualified for investment-grade rating. These acquirers included Merrill Lynch & Co., General Electric, and W.R. Grace & Co. Junk bond restrictions will not diminish other important sources of acquisition financing, such as bank lending or investment-grade debt issues.

Hostile Takeovers and Junk Bonds

Successful hostile takeovers comprise less than 1 percent of the total number of takeovers, yet they have been the source of much policy debate. They are also frequently associated with junk bonds, even though hostile takeovers are usually financed by other sources of funds.[5] Table 8 shows the initial financing for nineteen successful hostile takeovers from 1985 through 1987 (40 percent of the successful hostile takeovers during this period) for which financial information was available. Sixteen of the nineteen hostile acquisitions used no junk bonds initially. Investment-grade bonds and internal funds were used in seven. The primary source of initial financing was bank loans, used in thirteen of the cases and accounting for over 50 percent of the total amount raised for initial financing. Recently the importance of bank loans has increased further as a number of large takeovers have been structured to avoid using junk financing. As was shown in table 7, the total value of newly issued junk bonds in 1988 was $6 billion less than in 1986, while the value of acquisitions in 1988 was $73 billion more than in 1986.

In the case of the hostile takeovers shown in table 8, many of the bank loans were liquidated quickly, either through asset sales or issuance of new debt or equity. At the end of one year, however, junk bonds and non-rated debt accounted for only 20 percent of the initial price of the successful takeovers. Junk bonds are a significant source of funds, but a majority of successful hostile takeovers are financed by other means.

In hostile takeovers, bank loans and junk bonds are very close substitutes as a source of financing. Almost 50 percent of initial issues of junk bonds in table 8 were retired by the following year, in a manner very similar to bridge loans. While many bank loans are converted to junk bonds in the year following the acquisition, investment-grade debt, asset sales, and internal funds are also major ways of retiring bank loans.

Effects of Discouraging Junk Bond Financing

Restrictions on junk bonds will change the composition of debt financing without necessarily reducing acquisitions significantly. Bank loans and investment-grade debt will still be available to finance takeovers, and the incentives for firms to acquire

Table 8
Financing of Nineteen Successful Hostile Takeovers between 1985 and 1987[a]

	At Time of Transaction	One Year After Transaction			Percent of Total Cost of Transaction[b]
		Newly Issued	Retired	Net Total	
Junk Bonds					
Total Dollars	595.5	1,355	281.8	1,668.7	11.86
Number of Takeovers	3	4	2		
Investment-Grade Bonds					
Total Dollars	1,875	604	1.1	2,477.9	17.19
Number of Takeovers	3	3	1		
Bank Loans					
Total Dollars	7,747.9	160	5,531.5	2,376.4	16.49
Number of Takeovers	13	2	13		
Privately Placed and Nonrated Debt					
Total Dollars	1,252.83	675.5	550.4	1,377.9	9.56
Number of Takeovers	6	2	4		
Commercial Paper					
Total Dollars	500		500		
Number of Takeovers	1	0	1	0	
Stock Sales					
Total Dollars	1,760		200	1,560	10.83
Number of Takeovers	5	0	1		
Internal Funds					
Total Dollars	330	560	60	830	5.76
Number of Takeovers	4	5	1		
Asset Sales					
Total Dollars		3,417		3,417	23.71

[a]Complete information was available for only 19 of the 47 successful hostile takeovers from 1985 to 1987.
[b]Total cost of transactions was $14.4 billion.
Source: IDD Information Services and bond prospectuses.

other firms will remain. Enterprising lawyers, accountants, and investment bankers will find substitutes for junk bond financing.

If the purpose of restricting junk bonds is to reduce corporate leverage, it is unlikely to achieve its goal. From the mid 1970s to the present, corporate leverage rose with banks, commercial paper, and investment-grade bonds providing most of the debt. Leverage today is comparable to that of the late 1960s and early 1970s, a period when all debt consisted of bank loans and investment-grade bonds, and original-issue junk bonds were unknown. The availability of junk bond financing is not a major reason for higher leverage.

If the purpose of restricting financial intermediaries from holding junk bonds is to limit their exposure to risk, it is not likely to be effective. "Safe" assets such as government bonds and real estate loans can cause an intermediary to fail if the institution is not appropriately diversified. First Pennsylvania failed because of capital losses on government securities. Banks in Texas and New England have learned that large losses can occur on real estate loans. Despite these losses, one would not advocate prohibiting banks from holding government bonds and real estate loans. Instead, banks should carefully monitor the risk inherent in their portfolios of assets relative to their capital positions, and if they are overexposed, seek further diversification.

In commercial and industrial lending, banks essentially provide debt financing for businesses lacking investment-grade ratings. Historically, banks have profited from such lending despite the high risk of default, by monitoring their credit risk and diversifying their portfolios. Similarly, junk bonds, if appropriately monitored, can compensate investors for their higher default risk. They provide access to public capital markets for firms that previously relied

solely on banks and other financial intermediaries for their external financing. In addition, junk bond financing is longer-term than that commonly available from bank loans.

Junk bonds can improve the diversity of a bank's portfolio. Most bank lending is tied to the region where the bank is located. Diversification outside the region requires setting up expensive loan offices or purchasing loans that other banks do not want to keep in their portfolios. Just as the development of the secondary mortgage market made mortgage loans more liquid, junk bonds make commercial and industrial loans more liquid. The secondary mortgage market was actively promoted by public policy, however, while public policy if anything has deterred the growth of the junk bond market. Regulators frequently restrict the investments of institutions. Not allowing poorly capitalized institutions to purchase junk bonds may be advisable, but not allowing well capitalized institutions to purchase junk bonds may limit their ability to diversify.

IV. Conclusion

Disintermediation, whereby firms obtain funds directly in financial markets rather than from banks, can encourage a more efficient transfer of funds from lenders to borrowers. For example, the secondary market for mortgage loans insulated the housing market from many of the recent problems in the savings and loan industry. The purchasing of liquid mortgage instruments permitted mutual funds, pension funds, and insurance firms to increase their participation in home financing.

Until recently, only firms with investment-grade credit ratings could raise funds directly from credit markets. These firms have such low default risk that they can obtain funds at or below the rates on certificates of deposit. As a result, they rely much more heavily on commercial paper and corporate bonds than on bank loans. Less established companies have not had such access, relying instead on short-term, floating-rate bank loans. The original-issue junk bond market has provided below-investment-grade firms an opportunity to raise long-term funds in national credit markets. By issuing "junk" debt instruments, these firms are able to attract investors who previously had not actively financed commercial activities by relatively small firms.

Despite the advantages to below-investment-grade firms of disintermediating loans, opponents have sought to discourage investors by limiting which intermediaries can hold junk bonds and by eliminating the tax deductions for interest paid on junk bonds. Such asset restrictions do not discourage leverage or takeovers. However, they will encourage firms to substitute bank loans for junk bonds, because bank loans and junk bonds are close substitutes. These restrictions will not alter the motives for holding debt but will limit access by below-investment-grade firms to long-term financing through national credit markets.

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[1] These figures are approximations from the U.S. Securities and Exchange Commission, *SEC Monthly Statistical Review*, vol. 48, no. 2, February 1989, as follows:

	Public Non-Convertible Bond Offerings	
	Amount $ billions	Number
Total Business	$ 224.5	3927
Less: Financial and Real Estate	−139.1	−2625
Foreign	−4.5	−36
Junk Bonds	−37.1	−214
Total Nonfinancial Investment-Grade Bonds	$ 43.8	1052

[2] The survey does not include mortgage loans or foreign loans. Construction and land development loans are included in the survey but not reported in the table because they are not available by maturity.

[3] Borrowers can reduce this interest rate risk by hedging with interest rate futures or interest rate swaps (Felgran 1987). If borrowers can get long-term commitments from banks, with the aid of swaps they can create, at some transactions cost, an instrument that mimics long-term bonds. The Federal Reserve lending survey (table 1) shows, however, that long-term fixed or floating-rate agreements by banks are still relatively uncommon.

[4] "Net merger announcements" is calculated as total announcements in the year minus cancelled transactions in the year. As long as cancellations are stable over time, acquisition announcements should be a reasonable approximation for completions. Cancellations as a percent of gross announcements were 7 percent in 1985, 1987 and 1988 and 6 percent in 1986.

[5] The term "successful hostile takeovers" refers to tender offers by acquirers who successfully purchased the firm despite opposition of incumbent management. The list of successful hostile takeovers is taken from *Mergerstat Review*.

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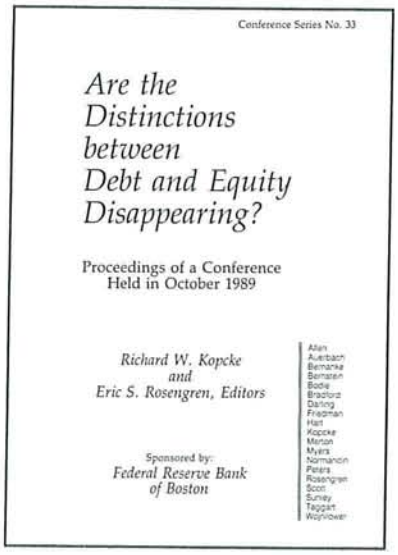

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