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Causes of the 1980s Slump in Europe

UNEMPLOYMENT in Europe has reached levels in this decade that have not been seen since the Great Depression. The annual unemployment rate in the European Economic Community rose sharply in 1981 and continued rising to its 1984–85 plateau. In contrast, the U.S. unemployment rate, which also rose to a postwar record level, nearly regained its 1980 level by 1985, as shown below.[1]

	1980	*1981*	*1982*	*1983*	*1984*	*1985*
European Economic Community	5.8	7.7	9.3	10.4	10.9	11.2
United States	7.1	7.6	9.7	9.6	7.5	7.2

Table 1 details the unemployment record of six European countries from 1977 through 1985.

This huge rise of unemployment in Europe has had grave consequences, of course, not only for jobless individuals, but quite visibly for the quality of urban life in much of the north. It is therefore important that its causes and potential cures be understood. Yet the slump presents difficult problems for economic analysis.

We are grateful to various members of the Brookings Panel for useful advice on the presentation of our ideas.

1. The European Economic Community unemployment rate is the average of the rates in Belgium, Denmark, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, and the United Kingdom. Fall 1986 figures give faint signals that a European recovery is, or soon will be, under way, as the theory set forth in this paper predicts.

Table 1. Civilian Unemployment Rates in Europe, 1977–85
Percent

Country	*1977*	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
Belgium	7.5	8.1	8.4	9.1	11.1	13.0	14.3	14.5	13.8
France	4.8	5.2	5.9	6.4	7.7	8.7	8.8	9.9	10.7
Germany	4.0	3.8	3.3	3.4	4.8	6.9	8.4	8.4	8.4
Italy	5.4	6.1	6.7	7.2	8.0	9.7	10.9	11.9	12.6
Netherlands	5.4	5.4	5.5	6.2	8.8	11.8	14.3	14.2	13.2
United Kingdom	5.3	5.1	4.7	6.0	9.2	10.6	11.6	11.8	12.0

Sources: Commission of the European Communities, "Annual Economic Review 1985–86," in *European Economy*, no. 26 (Nov. 1985), Statistical Annex, table 3.

Economists have not succeeded in identifying the disturbance or disturbances responsible for the contraction of employment with the lens of conventional demand-oriented macroeconomic models and existing supply-shock models. The profession has proceeded to round up the usual suspects, but among these chronic offenders it is not readily apparent whodunit or indeed whether any of them dunit. The puzzle is forcing another rethinking of macroeconomic theory.

The persistence of the unemployment also poses a serious challenge to the theory of an equilibrium unemployment rate such as that invoked in hypotheses of a natural rate of unemployment. For five years in a row, European unemployment went from bad to worse, seeming to lack the usual gravitational pull back to its "natural" level (if still in its natural range) or more generally to any equilibrium level conceived to be independent of previous years' real wages. Moreover, though inflation fell rather steadily in most European countries, it did not fall fast enough, where it fell, to suggest that unemployment greatly exceeded such a history-free equilibrium path.

Several other curious features of the recent experience that a theory of the slump in Europe must encompass include the fall of labor's share of income, the spurt of productivity, and the vanished excess capacity.

This report takes up the problem of accounting for the slump, distilling a large part of our forthcoming monograph on that subject.[2] We go on to venture our preliminary thoughts on the further question of what, if anything, the countries of Europe could have done to prevent the slump or could do now to generate or hasten recovery.

2. Jean-Paul Fitoussi and Edmund Phelps, *Explaining the Slump in Europe: Open-Economy Theory Reconstructed* (Blackwell, forthcoming).

The Inadequacy of Conventional Explanations

A conspicuous candidate to explain the enormous rise of European unemployment is Europe's own fiscal policies. By now it is well understood that the budgetary deficits run in most European countries are in most cases induced by the depressed levels of economic activity. At the normal level of employment, most of these countries would show a budgetary surplus.[3] The obvious Keynesian hypothesis blames Europe's low employment on its concealed fiscal austerity.

On the empirical plane it can be countered that this hypothesis may be fine in theory, but it is unimportant in practice. The estimates in table 2 suggest that the inflation-adjusted all-Europe budget surplus did not exceed in the mid-1980s its 1980 level and appears in fact to have contracted. There is considerable variation in the budgetary experience of individual countries. If the intra-European pattern of fiscal stimulus matters, we should observe some corresponding variation in unemployment experience. In fact, there is remarkable uniformity in the rise in unemployment in individual European countries, as table 1 shows. Italy, for example, has exhibited little or no increase in its high-employment budget surplus, yet during the five-year slump its unemployment rate climbed 5.4 points, the average rise in Europe.

On the theoretical plane the Keynesian hypothesis fails a basic test for internal consistency. According to orthodox macroeconomic theory, reducing government spending or increasing tax rates, whether in an open economy with a freely fluctuating exchange rate or in a hypothetical closed economy, lowers nominal interest rates along with total demand for domestic output and thus total employment in the process of reducing the velocity of money—assuming that the supply of money is not permitted to change course in response.[4] But, in fact, nominal interest rates were not generally depressed in this period. As seen in table 3, nominal interest rates everywhere but Denmark were up, not down, in 1983 and even as late as 1985, compared with 1977. When compared with 1979, rates were higher in most countries in 1983 and again in 1985.

3. Olivier J. Blanchard and Lawrence H. Summers, "Perspectives on High World Real Interest Rates," *BPEA, 2:1984,* pp. 273–324.

4. In *IS-LM* terms, the fall of the *IS* curve produces a downward movement along an upward sloping *LM* curve, so interest and employment fall together.

Table 2. Measures of the Structural Budget Surplus in Excess of the 1980 Level as a Percentage of the High-Employment Gross Domestic Product, Europe and the United States, 1981–85[a]

Percentage points

Country	*1981*	*1982*	*1983*	*1984*	*1985*
			Conventionally measured surplus		
France	−1.0	−1.4	−1.5	−0.7	0.1
Germany	0.1	1.5	2.6	2.6	3.2
Italy	−3.5	−3.5	−1.3	−1.6	−2.5
United Kingdom	2.9	4.4	3.1	2.6	3.1
Weighted sum[b]	−0.2	0.5	1.0	1.0	1.4
United States	0.9	−0.4	−1.1	−1.4	−1.8
			Inflation-adjusted surplus		
France	−1.0	−1.4	−1.5	−0.9	−0.3
Germany	0.1	1.6	2.5	2.4	2.9
Italy	−5.0	−5.4	−3.2	−5.3	−6.9
United Kingdom	0.5	0.6	−1.9	−2.6	−1.7
Weighted sum[b]	−1.0	−0.6	−0.5	−0.9	−0.6
United States	0.4	−1.4	−2.2	−2.4	−2.9

Source: Organization for Economic Cooperation and Development, *Economic Outlook* (July 1984), table 8, and (May 1986), table 25.

a. A positive sign indicates a move toward restriction (surplus).

b. Weighted by the average U.S. dollar value of each country's GDP in 1980 prices.

Table 3. Nominal Money Market Rates, Europe and the United States, Selected Years, 1977–85[a]

Percent

Country	*1977*	*1979*	*1983*	*1985*
Belgium	5.49	7.97	8.18	8.27
Denmark	14.48	12.63	12.03	9.97
France	9.22	9.48	12.63	10.08
Germany	4.37	6.69	5.78	5.44
Italy	14.03	11.86	18.44	15.25
Norway	9.84	8.39	12.27	12.16
Sweden	9.96	8.19	10.85	13.85
United Kingdom	8.06	13.59	9.90	11.95
United States	5.54	11.20	9.09	8.10

Source: International Monetary Fund, *International Financial Statistics*, various issues.

a. Call money rate for all countries except France (Interbank money rate), Germany (Interbank deposit rate), United Kingdom (Treasury Bill rate), and United States (Federal Funds rate).

The evidence is all the more crucial when we reflect that, whatever the cause, the resulting contraction of employment per se would tend to slow the growth of nominal wages, thus to reduce the inflation premium in nominal interest rates that borrowers are willing to pay, and hence, other things equal, to lower interest rates. The rise of the average European nominal interest rate is thus doubly hard to square with the Keynesian fiscal hypothesis.

In orthodox theory, the sole defensible ground left for the Keynesian fiscal hypothesis is the position that had Europe not shifted (or had it shifted less) to its tighter fiscal policy, output, interest rates, and the velocity of money would have gone still higher. This more complex hypothesis requires at least one other contractionary shock besides fiscal tightness—one that *raises* nominal interest rates while it *contracts* employment. If there were none, the fiscal push toward lower employment would imply a fall of interest rates, when, in fact, they rose.[5] There has to be a contractionary shift in the supply or demand for real cash balances, due to disturbances to the supply price of output or to pure monetary shocks.

It is apparently necessary to conclude that the proposed Keynesian explanation, fiscal tightness, is seriously incomplete or that the orthodox theory of how fiscal policy affects the economy is seriously inadequate. An implication of the analysis that follows is that in fact both conclusions are correct.

The favored solution to the puzzle in Europe itself is what we might call the Pigouvian solution. It is really a class of solutions all resting on the hypothesis of what has come to be called real wage rigidity. That hypothesis, though it can be traced back to Pigou, presumably draws some of its current inspiration from the early formulations of implicit or explicit employment contracts in which no motive arises for anything less than full indexation of the contractual nominal wage to the consumer price index. Since European labor markets are characterized by immobility, which makes long-term contracts desirable, and since the European labor force is heavily unionized, which means that the institutional apparatus for the implementation and enforcement of contracts is at

5. The other disturbances must not all be describable as upward shifts of the *IS* curve, the *LM* curve unchanged; otherwise, the interest rate and employment would still be implied to move up or down together, contrary to observation. The *LM* curve must shift in.

hand, Europe is fertile ground for the hypothesis that the money wage rates of existing employees will insistently keep pace with the consumer price level even when supply shocks or other real shocks render the real wage invariance inconsistent with employees' continuation at work with full pay. In this view, only new entrants can lever the average real wage upward or downward.

Economists who have examined and endorsed this hypothesis compare the real wage (conceptually, the wage in terms of consumables) with the high-employment wage as proxied by an estimate of the marginal productivity of labor (also expressed in consumables). If the real wage somehow rises—"rigidity" here is an ill-chosen term for resilience, since an optimal response of the real wage to the change in some elasticity or even sheer animal spirits is not really precluded—or the marginal productivity falls, this widening of the "real wage gap," the percentage excess of real wage over marginal product, is hypothesized to explain the associated fall of employment.

Some updated calculations of the real wage gaps in European countries in the 1980s have recently been reported by Michael Bruno, based on work with Jeffrey Sachs.[6] The calculations, shown in table 4 after a rebasing to 1973, are cited by both Bruno and Sachs as evidence that despite "adverse supply shocks," the wage gap "remains high in most European economies."[7] However, the evidence fails to explain why unemployment in Europe, major and minor countries alike, was so much higher even as late as 1983, 1984, and 1985 than it was in 1979–80. For the six countries for which Bruno could make complete calculations, five—Germany, Italy, Sweden, Norway, and Denmark—had markedly lower real wage gaps by 1983 than they had in 1979, although unemployment rates were vastly higher. Indeed, by 1983 two of them—Italy and Sweden—had returned to and even bettered their wage gap marks of 1973. Denmark, too, nearly returned to 1973 levels. Nevertheless, it remains possible that one can find other evidence of adverse supply

6. Michael Bruno, "Aggregate Supply and Demand Factors in OECD Unemployment: An Update," *Economica,* vol. 53 (Supplement, 1986), pp. S535–S552. See also the discussion of the real wage gap in Jeffrey Sachs, "High Unemployment in Europe," Working Paper 1830 (National Bureau of Economic Research, February 1986). The basic methods are in Bruno and Sachs, *Economics of Worldwide Stagflation* (Harvard University Press, 1985).

7. Sachs, "High Unemployment in Europe," p. 20.

Table 4. Real Wage Gaps, Europe and the United States, Selected Years, 1979–83
Percent, 1973 = 0

Country	*1979*	*1981*	*1983*
Belgium	23.6	27.1	n.a.
Denmark	9.5	8.3	1.1
France	11.1	14.7	n.a.
Germany	8.1	11.9	5.7
Italy	−3.6	−6.3	−9.5
Norway	18.6	9.0	7.5
Sweden	3.6	1.2	−4.4
United Kingdom	11.8	19.5	21.8
United States	0.8	2.1	2.4

Source: Adapted from Michael Bruno, "Aggregate Supply and Demand Factors in OECD Unemployment: An Update," *Economica*, vol. 53 (Supplement, 1986), pp. S535–S552.
n.a. Not available.

effects from external or internal shocks, evidence not manifest in the neoclassical and highly aggregative investigations of the role of real wages that have thus far been undertaken.

The gap method seems too unreliable, in fact, to warrant treating the evidence it generates as decisive. An increase in the gap is neither necessary nor sufficient as an indication of supply-side effects acting to contract employment. An employment-contracting demand disturbance may push up the average real wage in the process, because prices are faster to respond than are wages, as Keynes supposed in his *General Theory*, or because the workers laid off are disproportionately from among the low-paid, but that is not sufficient evidence of a rise in anyone's real asking price at high (full) employment or a fall of anyone's marginal product at full employment.[8] The gap methodology must hope that employment declines initiated by supply-type shocks will be evidenced by unusually large rises in the real wage gap, but not all such shocks raise the real wage gap. An upward disturbance to *price* markups, for example, will presumably contract employment; but such a rise of markups will reduce or leave unchanged the real wage gap because it will presumably reduce or leave unchanged the real wage, depending on the degree of indexation, and leave unaffected labor's marginal product.

8. For a comprehensive study, see Jean-Paul Fitoussi and others, "Real Wages and Unemployment," Report to the European Economic Community (Brussels, December 1985).

We conclude that the wage gap evidence leaves open a huge range of possibilities. It could be, as we discuss below, that there has been a fall in the real price of investment goods during the 1980s, which tends by itself to raise the product wage and thus the wage gap, but that the effect has been covered up and possibly offset by a rise of markups.

In view of the diminished barriers and market imperfections affecting the international flow of goods and capital in recent decades, and the consequently heightened sense of international interdependence, it is understandable that early in the discussion of Europe's unemployment problem the U.S. recession came under suspicion as a major cause of Europe's slump. But the circumstantial evidence pointing to the American slump collapsed as America began to recover while Europe did not. If America's slump were the source of Europe's, recovery in America would produce recovery in Europe. A locomotive that can push a train in reverse will certainly pull it when put in forward gear.

When analysts probing the question of American influence considered the specific fiscal and monetary shocks thought to underlie the recession and recovery in America, conventional open-economy macroeconomic analysis did not give the "right" results for the claim that U.S. policies were hurting Europe. The orthodox macroeconomic model of the operative international transmission mechanisms interprets the policy shifts in America—the tighter money and the fiscal stimuli—as stimulative, not contractionary, for the rest of the world. In the standard two-country extension of the Mundell-Fleming model of open Keynesian-type economies, any foreign fiscal stimulus to foreign expenditure, in pulling up the "world" real interest rate, boosts the nominal interest rate and thus also the velocity of money not only in the foreign country but in the home country as well; given the money supply at home, the foreign stimulus thereby generates an export-led expansion of output and employment at home, supported by the needed depreciation of the home currency.[9] In this same orthodox model, a foreign shift to tight money shunts some foreign expenditure to the home country and drives up the world real rate of interest; given the home money supply, the resulting rise of the nominal interest rate at home and the velocity of money at home generates an export-led expansion of home output,

9. Robert A. Mundell, "A Reply: Capital Mobility and Size," *Canadian Journal of Economics and Political Science,* vol. 30 (August 1964), pp. 421–31.

likewise supported by a depreciation of the home currency. On this theory, then, both elements of the American fiscal-monetary mix were expansionary for Europe.[10]

A plan of escape from the disconcerting implications of the orthodox international model has been conceived in the recent literature. It is theoretically possible that the reduction in the quantity of money demanded due to higher interest rates—the orthodox channel bringing stimulus to the home country—is outweighed by the rise of the price of "the imported good" in the "home country" (that is, Europe) due to the appreciation of the foreign currency (the dollar) resulting from the fiscal stimulus and tight money policy mix abroad (that is, in America); that price rise increases the home demand for money at each level of home output (gross domestic product) and interest rate, thereby contracting employment.[11] It is also theoretically possible that the expansionary effect of the policy mix abroad is offset by the rise in the price of the intermediate goods imported from abroad, again due to foreign currency appreciation; that price rise, in pushing up the supply price of home output at given nominal wage rates, likewise increases the home country demand for money and is thereby a contractionary influence on employment at home.[12] There is the additional possibility that the rise in the home country's consumer price index due to the above two price effects

10. The argument turns on the semi-reduced form *LM* equation in which the demand (M_D) for the existing stock of money, M, is a Hicksian function of gross domestic product, Z, the associated GDP deflator, P_Z, and the nominal interest rate given by the world real rate, r^*, plus the expected rate of domestic inflation, p_Z^e, which, like the price level, P_Z, is a (nondecreasing) function of employment, N.

$$M_D = P_Z(N)L[Z(N),\ r^* + p_Z^e(N)],\ dN/dr^* = -(\partial M_D/\partial N)^{-1}L_2P_Z > 0.$$

A state-of-the-art analysis distinguishes between the American product interest rate and the European product interest rate, and must make the proviso that the latter does not fall despite the rise of the former. See the appendix to Maurice Obstfeld, "Floating Exchange Rates: Experience and Prospects," *BPEA, 2:1985,* pp. 369–450. Note also that tight money without fiscal stimulus might lower both product rates if the American *IS* curve is upward sloping.

11. See, for example, William H. Branson and Willem H. Buiter, "Monetary and Fiscal Policy with Flexible Exchange Rates," in Jagdeep S. Bhandari and Bluford H. Putnam, with Jay Levin, eds., *Economic Interdependence and Flexible Exchange Rates* (M.I.T. Press, 1983), pp. 251–85.

12. Betty C. Daniel, "The International Transmission of Economic Disturbances under Flexible Exchange Rates," *International Economic Review,* vol. 22 (October 1981), pp. 491–509.

will then drive up home wage costs owing to indexation arrangements, explicit or implicit, in private contracts or public legislation; such cost increases clearly add to the contractionary influence upon employment in the home country and will be the decisive factor if the degree of indexation, or degree of real wage rigidity, is close enough to one.[13]

But is Europe, whose gross product and productivity roughly equal those of the United States and whose list of products and output mix are not terribly dissimilar, "dependent" upon America through these trade channels to an important degree? A critical degree? Certainly the European consumer is a net importer of a few American-made goods—films and aircraft, among others—and the European producer relies on the importation from America (or American competitors) of such inputs as oil and natural gas. But it is implausible that a rise of, say, 20 percent in the price of imports amounting to, say, 5 percent of gross product might cause employment to fall from 94 to 89 percent of the labor force and output to fall by a much larger percentage amount. Moreover, since starting its descent in the spring of 1985, the dollar has moved back to the real exchange rate prevailing at the beginning of the decade, yet the European economy, though it may have started a partial recovery, has not shown remotely the degree of improvement that the import dependency hypothesis would lead us to expect. The conclusion seems inescapable that *trade* dependency cannot be the channel through which the American policy mix is largely or significantly responsible for the slump in Europe. Yet nothing in this conclusion rules out the possibility that the U.S. policy mix is nevertheless a principal source of that slump. In what follows we point out other channels through which the policies adopted in the United States must have played a big role.

New Hypotheses of Interdependence

Our thesis is that the fiscal and monetary disturbances occurring in the United States in the early 1980s did indeed cause much, perhaps most, of the rise of European unemployment in the years 1981 to 1984. The shocks in question were the renewed shift to tight money around 1981; the three-stage "Reagan tax cut" on personal incomes in 1982,

13. See, for example, Victor Argy and Joanne Salop, "Price and Output Effects of Monetary and Fiscal Policy under Flexible Exchange Rates," *International Monetary Fund Staff Papers*, vol. 26 (June 1979), pp. 224–56.

1983, and 1984; and the investment tax inducements legislated in 1981 and amended in 1982.

We reach this conclusion from a consideration of the many supply-side transmission mechanisms, heretofore unnoticed, that must have been actuated by the American policy mix through channels other than trade dependency. We argue that, primarily through the channel of the real interest rate but through other channels as well, the policy shocks in America had impacts in Europe upon the markup in customer markets, the real price of investment goods output, and the demand for capital and for hoarded labor. These effects in turn had serious repercussions on European employment. These neglected mechanisms of interdependence go a long way toward explaining the recent slump in Europe. The remaining part must be explained by a reexamination of Europe's own policies.

EFFECTS ON PRICE MARKUPS

One such mechanism rests upon a view of Europe and America as competing, actually or potentially, in customer markets rather than perfect, or perfectly informed, markets. In this view, firms setting their markups need not obey the classical law of one price. Differently situated firms may be satisfied with different prices for a time; only with the slow drift of customers from higher-priced to lower-priced firms as information spreads is there a tendency toward one price. Moreover, in this frictional environment, prices are not competed down to the classical level as long as real interest rates are positive, since a firm's investments in market share are subject to diminishing returns like any other investment; prices thus remain above marginal cost and pure profits persist.[14] To facilitate the extension of this theory to international markets we suppose that arbitrage costs are low enough to force the individual firm to set just "one price" across markets.

In the customer-market model detailed in our forthcoming book, the American policy mix had an adverse impact on the markup required by European firms competing for customers against American firms in

14. For the basic model see Edmund S. Phelps and Sidney G. Winter, Jr., "Optimal Price Policy under Atomistic Competition," in Phelps and others, *Microeconomic Foundations of Employment and Inflation Theory* (Norton, 1970), pp. 309–37. Some important empirical findings favorable to the theory are given in Robert E. Hall, "Market Structure and Macroeconomic Fluctuations," in this issue of *BPEA*.

world markets. The real rate of interest expected by firms was perhaps the major channel here. The unprecedentedly strong rise of real interest rates around 1981–82 to record-setting levels in both the United States and Europe, reported in table 5, can be attributed largely to the American fiscal stimulus, especially the new investment subsidies. The American shift to tighter money may also have played a part in 1980 and beyond, though it is doubtful that this tool could hold up real rates for very long; it would instead depress employment until real rates were pulled back to normal, or possibly below. The sharp elevation of actual and, presumably, of expected real interest rates, we argue, induced firms in Europe to widen their markups since it increased the opportunity cost of "investing" in greater or maintained market share through restraint in present prices at a sacrifice in present cash flow. There being no important demand stimulus to offset it, the result of the price push was a fall of employment in Europe.

A significant piece of evidence that this increase in markups occurred is the percentage change between 1981 and 1984 in the share of income going to wages:

France	*Germany*	*Italy*	*United Kingdom*	*United States*
−2.6	−4.7	−1.2	−4.0	−0.5

As is well known, during the 1970s, when real interest rates fell to record lows, labor's relative share was rising to postwar highs. Customer-market theory takes the mystery out of this unusual fluctuation in shares.

The aggregate share data point to a much smaller rise of markups by American firms, if indeed any rise at all. The customer-market model actually predicts the disparity between the European and U.S. markups and even allows for a net fall of the American markup. The explanation lies in a second transmission channel, the real exchange rate between Europe and America. In our model, fiscal stimulus and tight money in America both generate a nominal appreciation of the dollar against the European currency. The implied loss of competitiveness and consequent prospect of losing customers to overseas competitors induces the American firms, other things equal, to shave their markups and thus to moderate the prospective erosion of their market share.[15] The remaining

15. This connection is the focus of a one-country model in Edmund Phelps, "The Significance of Customer Markets for the Effects of Budgetary Policy in Open Economies," *Annales d'Economie et de Statistique*, vol. 3 (September 1986) pp. 101–117.

Table 5. Long-Term Real Interest Rates, Europe and the United States, 1980–84[a]
Percent

Country	*1980*	*1981*	*1982*	*1983*	*1984*
France	0.8	2.4	6.2	5.0	5.9
Germany	2.9	5.0	5.8	4.9	5.4
Italy	−3.6	−0.7	5.9	4.6	4.4
United Kingdom	−0.1	5.5	7.3	6.1	5.8
United States	2.0	6.8	8.7	8.0	9.0

Source: IMF, *World Economic Outlook 1984* (April 1985), table 2-7.
a. Annual averages of excess of nominal rate over expected inflation. Expected inflation is proxied by a weighted average of the rate of inflation in the current quarter and the next two quarters, with the deflator of private final domestic demand being used as the price variable.

loss of competitiveness, which the reduction of America's markup relative to Europe's is insufficient to offset, is an implied gain of competitiveness for European firms. That windfall gain induces the European firms to widen their markups and thus to slow the prospective rise in their market share. Since neither set of firms completely offsets the change of their competitiveness in their markup responses, the implication is a real as well as nominal appreciation of the dollar. Hence, the two forces—real interest rates and real exchange rates—both pulled the European markup in the same upward direction, but pulled the American markup in opposing directions. It in no way weakens the theory, therefore, to find evidence, shown in table 6, of an actual decrease of the markup by American firms in manufacturing, transportation, and communication industries, a sector that is highly exposed to foreign competition. The same table also gives evidence of a stronger rise of the European markup in that sector than in the economy as a whole, as predicted.

The resulting shock to the supply price of output in Europe—the GDP deflator that businesses require to supply a given amount of domestic product—contracts employment in the standard way: the implied reduction of deflated, or real, cash balances, or liquidity, means a decline in the volume of output that the available liquidity will support.[16] The investment goods demanded by domestic firms from domestic firms must be reduced by a higher product interest rate or lessened real

16. Loosely put, the price deflator belonging in the semireduced-form *LM* equation is now some function $P_Z(N; r^*, e)$ containing the foreign real interest rate, r^*, and the real exchange rate, e. Both are driven up by the American policy mix, and both effects drive up P_Z.

Table 6. Departure of the Price-Wage Markup from Its 1970–80 Trend, Manufacturing, Transportation, and Communications Sector, Europe and the United States, 1981–84

Percentage point departure from trend

Country	*1981*	*1982*	*1983*	*1984*
France	3.13	2.86	5.97	10.91
Germany	−3.89	0.83	9.35	n.a.
Italy	5.31	5.13	1.32	8.94
United Kingdom	9.95	17.12	24.47	30.76
United States	−2.27	−6.60	n.a.	n.a.

Source: Authors' calculations using data from OECD, *National Accounts, 1972–84*, vol. 2, *Detailed Tables*.
n.a. Not available.

currency depreciation in order to clear the goods market. If in addition wages are to some degree tied to the consumer price index, which is also pushed up, the wage rise thus induced contributes a separate contractionary effect on employment. Of course, these two supply effects, both contractionary, may be opposed by an expansionary demand effect of the American policy mix, such as the orthodox demand-based model describes. But it is quite possible, indeed likely, that the supply effect will ultimately overcome the demand effect. That must be the outcome if the degree of wage indexation is sufficiently close to one or if the excess-supply-of-money function is sufficiently close to being perfectly inelastic.

THE PRICE OF INVESTMENT GOODS

Another way in which the American policy shifts contracted employment in Europe, at least in the early years, involves an altogether different mechanism and thus another model. The key variable is the relative price, or real price, of investment goods, but because a fall of the real price in Europe is inextricably linked to a rise of the real rate of interest in Europe, the latter is once again a channel through which the foreign disturbance is transmitted. A key notion is that in Europe, private contracts or public policy cause nominal wage rates to be tied, explicitly or implicitly, to the consumer price index, but not to any index of the price of capital goods. It will pay in understanding if we stylize the story to the hilt.

We begin with a particular two-sector model of a two-country world of Europe and America in which a single investment good and a single

consumer good are tradable in perfect, not customer, markets. In this model with complete tradability, the tight money shock in America, in causing a nominal appreciation of the dollar, tends to switch consumer demand to Europe, raising demand and prices there. But if we suppose full wage indexation in Europe, wages chase after the consumer price—the product wage in the consumer goods industry refuses to give—so consumer goods output resists increasing in Europe. If we further suppose that the "Reagan tax cut" stabilizes American consumer demand while Europe's "welfare state" insulates European consumer demand from any rise of unemployment or other loss of real income, it then follows by arithmetic that consumer goods output in America must also be resistant to the monetary shock. Hence, the shift to tight money in America reduces aggregate employment only by driving demand downward and inward along the Marshallian supply curve of America's capital goods industry—reducing the real price of U.S. investment goods and also, by the law of one price, the real world price of investment goods. The fall in the real world price of the investment good decreases the output of Europe's investment good industry as well. On Europe's side of the ocean, it might be noted, it is a purely nonmonetary mechanism contracting aggregate employment through the product wage in the investment goods sector. (The effect may fail to turn up in wage gap data if it is offset or outweighed by effects on markups of the sort analyzed in the customer-market model.)

This model with complete tradability portrays America and Europe as moving into the slump together, with more or less equal incidence. It also suggests that if America is rescued from its slump by money wage adjustment or by new investment subsidies, to which there might be a lagged response, so that investment expenditure in America recovers, then Europe and America will likewise come out of the slump together. In fact, there seems to have been a recovery of investment expenditure in the United States by 1985 alongside a presumably incomplete recovery from the slump, while Europe's slump continued unabated.

Our two-sector theory can accommodate this observed asymmetry, however, with the introduction of a nontradable capital good produced at least in Europe. In this model with incomplete tradability, the rise in the expected real rate of interest brought about by the new U.S. investment subsidies limits the expansion of demand and output for any nontradable investment goods produced in America, but causes a

Table 7. Real Price of Investment Goods Output, Europe and United States, 1981–85
Percentage deviation from 1970–80 trend values

Country	*1981*	*1982*	*1983*	*1984*	*1985*
France	−3.82	−4.46	−6.46	−7.36	−9.03
Germany	−0.43	−0.20	−0.10	n.a.	n.a.
Italy	−7.45	−10.67	−13.88	n.a.	n.a.
United Kingdom	−6.98	−7.99	−7.98	−7.65	−6.35
United States	−5.78	−8.73	−11.03	−14.05	−17.28

Source: Authors' calculations using data from OECD, *National Accounts, 1972–84*, vol. 2, *Detailed Tables*, and *Quarterly National Accounts*, various issues.
n.a. Not available.

contraction of demand and thus a decline of the real price and the output of the nontradable investment goods produced in Europe, since no new European subsidy offsets the increased real interest cost there.

Of course, such a stylized model is certain to be inaccurate. A critical step in the line of theorizing, for example, is the assumption that increased employment in the consumer goods sector serving to offset reduced employment in the investment goods sector would require a reduction of the product wage, which is impossible since the product wage is also the real wage, which is made sticky by full indexation. In fact, indexation in Europe is less than full. Further, any shiftability of the inputs of existing capital goods in Europe to the consumer goods sector would tend to boost the product wage in the latter sector and thus permit some increase of employment in that sector, real wage stickiness notwithstanding. Complete shiftability might eliminate any possibility of declines in real prices and in employment in the capital goods sector. So it is of interest to check both U.S. and European real prices of investment goods output. As table 7 shows, the price declines generally, as predicted. But the decline in Germany is too slight to be important. The prediction by the model that the relative price in Europe remains depressed along with the economy is borne out, but the further worsening of the relative price in the United States is anomalous. The measurement of quality-adjusted capital goods prices is notoriously problematic, though, so some of the anomalies may reflect data problems.

EFFECTS ON THREE KINDS OF CAPITAL

The last of our three broad explanations of the decline of European employment focuses on the effect of the sharp rise in real interest rates produced by the American policy mix on Europe's capital—in all its

various dimensions. The impact of increased interest rates on capital may not have been very important at first, but since it is cumulative, it may now be the most important of all.

In one of the transmission mechanisms at work here, the real interest rate impinges directly upon employment because a firm's stock of employees is like an investment in that it involves rising marginal recruitment and training costs. The employee stock is also like capital in that there is typically a reserve amount of it serving as spare capacity to meet unforeseen surges of demand. Hence, when the expected real interest rate increases, causing the future to be discounted more heavily, the firm seeking to maximize the discounted stream of profits must lay off, discharge, or early-retire some employees or else reduce the rate of new hiring. Our forthcoming monograph points out the sharp decrease of labor hoarding in Europe in late 1981 and 1982 and the resulting rise of output per employee following the sharp rise of real interest rates.

Another such mechanism involves investment in working capital. A rise of the real interest rate increases the cost of the working capital that any given amount of labor needs or at any rate will have available in order to produce. As a consequence, the supply price of output at the normal employment level is increased, given the prevailing money wage. If, in addition, there is some positive degree of wage indexation to the price level, this resistance to a real wage cut imparts a contractionary influence on employment of its own.[17]

A similar mechanism involves fixed capital. The American personal income tax cuts, in curtailing U.S. domestic saving, and the aggregate rise in American public spending, in diverting saving from investment, have tended, taken alone, to lessen world investment; and insofar as countries have permitted capital to be mobile, the world capital market has meted out cutbacks in every country. Furthermore, the American fiscal stimuli to investment have diverted to the United States a portion of world investment that would otherwise have been located elsewhere. The rise of real interest rates in Europe is the instrument by which the world capital market is reallocating capital to American shores.[18] As

17. The contractionary effects of the real interest rate are studied in Domingo Cavallo, "The Stagflationary Effect of Monetary Stabilization Policy in Economies with Persistent Inflation" (Ph.D. dissertation, Harvard University, April 1977).

18. The drain on Europe's capital stock is emphasized in Edmund S. Phelps, "Appraising the American Fiscal Stance," Temi di Discussione 56 (Banca d'Italia, Rome, November 1985).

fixed capital gradually leaves Europe, it drives up the supply price of output, given some money wage level, although it also drives up the demand price for output, given the supply of money. In a Keynesian model positing some source of stickiness in the behavior of the average money wage, it is quite plausible that the supply effect prevails over the demand effect, with the net result that employment contracts.[19] Again, if money wages are indexed to a degree to the consumer price level, there is an additional induced rise of the supply price of output and an independent contractionary effect on employment arising from this connection. Indeed, if wages were fully indexed to the consumer price level, the decline in the marginal productivity of labor brought about by the erosion of the capital stock would collide with the sticky real wage to cause a certain decline of employment.

Still other mechanisms triggered by the increase of the real rate of interest tend to contract employment. Because of the increased risk of bankruptcy, the most endangered firms may face prohibitive borrowing terms or even credit rationing. Also, reduced cash flow constricts equity-financed investment. The gradual impairment of productivity that results may in time force such firms to shut down. Employment of overhead labor in the economy as a whole thus declines as entire plants or firms disappear, even if aggregate output and aggregate direct-labor employment holds up. (The closing of such firms and plants is not a clear welfare gain, contrary to shortsighted analysis, since they will not be there if and when their capacity is again in demand.) However, the rise in the supply price of output induced by this slowdown of capital formation also acts to contract output and, as other supply shocks may do, quite possibly to contract employment as well.

Europe's Own Policies Reexamined

It is only reasonable, in a total accounting for the slump in Europe, to leave some room for Europe's own macroeconomic policies. But for which policies? As noted earlier, the conventional view that Europe's

19. The analysis of a capital-stock shock along these lines has close parallels to the analysis of an "oil shock" in Edmund S. Phelps, "Commodity-Supply Shock and Full-Employment Monetary Policy," *Journal of Money, Credit and Banking,* vol. 10 (May 1978), pp. 206–21.

tight fiscal policy is to blame for the slump is certainly faulty in the orthodox theory, for on such a theory there would have been a fall of interest rates, not a rise, if European fiscal tightening had been the main contractionary disturbance. At best, on the orthodox theory, the fiscal hypothesis is insufficient, other hypotheses being needed in addition. But how important or unimportant is it?

At worst, on orthodox theory, the European fiscal hypothesis is dead wrong. Europe's tightness cannot be said to be even *a* cause, let alone the *whole* cause. That would be the case if the European shift toward tightness in the early 1980s, with its consequent downward effect on both worldwide nominal interest rates and worldwide employment, had been offset or outweighed by the American shift in the same period toward stimulus through the personal income tax cuts and through the income effects of the fiscal incentives to invest. Calculations of the inflation-adjusted structural budget surpluses in excess of 1980 levels, expressed as a percentage of high-employment GDP, suggest that there has been such an offset:[20]

	1981	*1982*	*1983*	*1984*	*1985*
France, Germany, Italy, United Kingdom	−1.0	−0.6	−0.5	−0.9	−0.6
United States	0.4	−1.4	−2.2	−2.4	−2.9
Weighted sum	−0.3	−1.0	−1.4	−1.7	−1.8

The worst case of all for the fiscal hypothesis would arise if fiscal tightening in Europe were incapable of reducing the world real interest rate and as a consequence unable to reduce the nominal interest rate and thus the velocity of money in Europe. In that case, exports and import-competing production would swell up, in the reverse of export crowding out, to take the place of the withdrawn fiscal stimulus, which would thus be ineffective. (This is the small-country flexible rate case in the Mundell-Fleming model.)

Our unorthodox theories imply that both these cases are too extreme—that fiscal tightening in Europe did make a difference for European employment and that the contractionary influence was not simply a negative demand effect offset by the positive demand effect of America's fiscal easing.

20. We weighted the corresponding data for France, Germany, Italy, and the United Kingdom by their 1980 GDPs to get the average for that group.

The view that Europe's budgetary surplus was "offset" by America's budgetary deficit ignores customer markets. A $150 billion surplus in Europe and a deficit of that amount in the United States do not cancel each other out in the customer-market model since both disturbances cause real depreciations of the European currencies. A European country's fiscal austerity, in weakening its currency, induces its producers to push up their markups, with contractionary effects on employment due to reduced real cash balances. This is additive to the real depreciation already caused by U.S. policies. It is immediately clear that the above "worst case" founders on the same limitation. Even if the European full-employment surplus is small in the global scale of things—what is $150 billion put next to world wealth and world capital?—the resulting Belgian franc depreciation matters for Belgian firms.

The above two extreme cases, in which European fiscal tightness cannot be said to be a cause of European unemployment, also ignore the likely transience of the swings in the real exchange rate. If the dollar is expected with time to retreat, the real interest rate, adjusted for the inflation expected in relative prices (what might be called the product interest rate), is thus elevated in America and depressed in Europe. This reduction in the European product interest rates tends to pull down the nominal interest rate and with it the velocity of money in Europe, and reduces employment there.[21] The customer-market model gives a rationale for expecting that Europe's real exchange rate will tend to come back. The slow migration of customers from American firms to European firms tends to pull it back and simultaneously to bring back the law of one price. Another rationale is the impoverishment of the United States by its fiscal prodigality and the enrichment of the rest of the world. An exodus of wealth hurts the relative price of home-produced nontradable goods.

It can now be seen that, in our customer-market model, a European fiscal tightening that approaches the American fiscal easing moderates the resulting worldwide rise of real interest rates and, even more, the product interest rate in Europe. In this respect, Europe's tightening acted to moderate the contractionary rise of markups in Europe. But this mechanism is only one of those governing the net effect of Europe's

21. A one-country model displaying these results is presented in Phelps, "The Significance of Customer Markets."

fiscal stance on Europe's employment. Our customer-market model shows that an increased fiscal stimulus or decreased fiscal tightening by a country, even a country large enough to drive up world real rates of interest, would be expansionary at home whether or not contractionary abroad through the supply-price effects discussed in the previous section. Some of the domestic expansionary effect is "stolen" from abroad, and the effect on world output may be weak owing to global crowding out, or even negative if global supply-price effects swamp global demand effects.[22]

Europe's own tight money policy may also have had a role in the recent slump. Because Europe's slump coupled reduced employment with higher interest rates, nominal as well as real, it is inescapable that there occurred a decrease in the supply of real cash balances or an increase in the demand for real balances—hence an inward shift of the *LM* curve of Europe; otherwise, both interest rate and employment are up or both down, contrary to the facts. The foregoing supply-price mechanisms are one class of reasons for believing that the real supply of cash balances declined. (The European product deflator, with which the nominal money supply is deflated in the supply-and-demand-for-money equation, rose a few percentage points relative to the downward trend around 1981 when the new set of American policies was being introduced.) But another way for the real supply of cash balances to be shrunk is through slowing of the growth rate of the money supply. Shown below are the growth rates of the money supplies in the four major countries of Europe and in the United States.

	1978	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
France, Germany, Italy, United Kingdom	13.3	12.8	10.1	10.8	10.0	10.1	8.3	9.0
United States	8.5	8.3	8.0	9.4	9.3	12.5	8.0	9.1

There is a surprising similarity here, but Europe did not receive the dollop of liquidity in 1983 that the United States did, and these growth rates of the broad money stock have to be weighed against a much slower decline of the inflation rate in Europe than in the United States.

The final question that must occupy us, then, is why Europe has

22. We have not discussed here the implications of our two-sector model regarding the effectiveness of increased public spending and tax cuts, which are not uniformly conventional.

adopted a generally tight fiscal policy and a monetary policy that seems to have been, subject to the vicissitudes of financial innovation and random meanderings in the velocity of money time series, tighter during 1981–85 than the American policy.

The Persistence of the European Unemployment

National unemployment rates commonly exhibit a certain amount of serial correlation, or autoregressivity, familiarly called persistence. As Keynes cautiously observed in his *General Theory,* it does not generally happen that, at some point after a disturbance, prices and quantities spurt to their new equilibrium positions. Two reasons for this phenomenon, search costs and nonsynchronization in wage or price setting, have been understood as far back as the beginnings of natural rate theory. If, owing to a barrage of shocks and an episode of disequilibrium confusion, workers are no longer in their long-run allocation over the firms in the economy, achievement of that allocation will involve a lengthy search; there will be from this initial point an equilibrium path along which the initially excessive structural unemployment is only gradually worked down to the steady state. (The term equilibrium here denotes a correct-expectations, or surprise-free, scenario.) The recovery is also made gradual, of course, if market circumstances dictate nonsynchronous, or staggered, wage or price setting and thus an overhang at each moment of old commitments. Later, certain nonlinearities were brought in as an explanation of serial persistence. It would be premature to conclude from the recent experience that there is no truth, or very little, in these standard models, which are associated, somewhat by coincidence, with natural rate theory. But the recent failure of employment conditions to improve until at least 1986, the sixth year of the recent slump, seems to require new explanatory elements.

Our vision of the persistence of unemployment in Europe posits a considerable degree of real wage stickiness, whether loosely implemented through private understandings or enforced by public provisions for indexation. If, to take the extreme case, the real wage of an employee is a constant and if, as a consequence, the real cost savings (also expressed in consumer goods) to the firm of laying off an employee, which is the true cost of using the employee in production in view of any

benefits paid to the laid off, is likewise a constant, in the sense of having been earlier predetermined for the course of his employment, a decline in the real marginal-revenue productivity of labor as a result of developments such as a rise of markups, a real depreciation of the currency, a fall of the real price of capital goods output, or a contraction of the capital stock will cause some employees to be laid off. Further, unless the real marginal productivity schedule is restored, laid-off workers will remain laid off for the balance of their years as employees. In this extreme case of real wage stickiness, it is only the entrance of new workers, insofar as they can make deals for employment at reduced real wages in view of the reduced marginal-revenue productivity of labor, that will erode the average value of the real wage; but this statistical adjustment will do nothing to put laid-off workers back to work. To the extent that customer markets inhibit the rise of new firms to absorb the young while contracts protect existing laid-off employees from being passed over for recall in favor of hires of cheaper workers from the outside, new entrants will end up bearing a share of the economy's unemployment—indeed an increasing share as new entrants accumulate and the laid-off take the places of retiring workers.[23]

In the expectational sense, the equilibrium unemployment rate is thus increased, and the natural rate with it. Yet their "long-run" values need not have increased. (Also, it is not implied that the equilibrium rate increased as much as the actual rate.)

This extreme view of labor markets in Europe is, of course, oversimplified. Real wages do not move sluggishly in Europe; they appear to jump a bit. Relatedly, formal wage arrangements in Europe do not provide full indexation; countries there differ in the degree of indexation. Nor is there anywhere in the theoretical literature a complete rationale for the use of such employment contracts or more general versions of them.

If our theory is right, the promise of an end to the swollen budgetary deficits in the United States, with the consequent steady weakening of the dollar against the European currencies, together with the phasing out of the U.S. fiscal incentives to invest, with the consequent drop in

23. See, for example, the overlapping-worker model in Pierre Dehez and Jean-Paul Fitoussi, "Wage Indexation and Macroeconomic Fluctuations," in Wilfred Beckermann, ed., *Wage Rigidity and Unemployment* (Johns Hopkins University Press, 1986), pp. 201–17.

world real rates of interest in 1986, points toward a recovery of employment in Europe starting in 1986. If indeed recovery occurs, it will not be evidence that Europe does not suffer from the severe persistence problem that we are inclined to infer from the recent experience.

Some Tests of the Present Theory

Three tests of our theories that the disturbances in the United States in the early 1980s contributed importantly to the slump in Europe come to mind immediately.

Our emphasis upon upward disturbances to the supply price of European output, especially the output of consumer goods, raises the question of whether there is any evidence of a surge of European price levels in the 1980s above their generally decelerating trend. European GNP deflators suggest that European inflation stayed surprisingly high in 1981 and 1982, as shown below.

	1968–77	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*
France, Germany, Italy, United Kingdom	8.2	8.7	9.0	11.1	9.8	9.4	7.2	5.6
United States	6.5	7.3	8.8	9.1	9.6	6.5	3.8	3.9

The same development is evident from the consumer expenditure deflators. Only some fraction of the increase in the supply price, it should be noted, will be passed on in the actual price; some of the incidence will be borne by the producers, with output falling precisely because neither buyer nor seller is willing to bear the whole burden.

A second test is to look at regions other than Europe. After all, if the disturbances in the United States have been important enough to cause a large rise of the unemployment rate in Europe, then their effect will presumably also show up in employment in other market-type economies, unless these countries have turned to expansive domestic policies. Unemployment rates for Canada and Japan are shown below.

	1980	*1981*	*1982*	*1983*	*1984*	*1985*
Canada	7.5	7.5	11.1	11.9	11.3	10.5
Japan	2.0	2.2	2.4	2.6	2.7	2.6

The rate in Canada is vastly higher than its 1980 level even as late as 1985. On its own much-reduced scale, Japan shows a similar dynamic.

The pattern does not appear to differ much in Australia and Taiwan, the other two countries with accessible unemployment rate series. The situation in Latin America is well known and apparently conforms broadly to the prediction here.

Finally, some econometric results developed in our forthcoming monograph show that a Phillips-type regression equation to explain the rate of inflation in the United States, France, and Germany performs significantly better over the available sample period if the explanatory variables include both the long-term expected real rate of interest and a measure of the country's international competitiveness; the short-term real rate performed even better. These variables entered positively and negatively, respectively, as predicted.

European Policy Choices, Past and Present

Through the various channels we have cited, the American disturbances caused a rise of the consumer price level in Europe at any given level of employment. That price rise may have prompted an inflation-fighting posture on the part of the European policymaker rather than a stance to combat unemployment. In trading off between the steady level of employment and the steady rate of inflation to have, policymakers might prefer to give up some employment in return for a lesser elevation of the inflation rate.[24] Alternatively, if policymakers are seen as confronting a transient bulge of the natural unemployment rate, their preference might be for a transient rise of actual unemployment to moderate the lasting, or asymptotic, inflation rate resulting.[25] Martin Feldstein, among others, appears to view the American shocks as having this sort of indirect influence upon the European unemployment rate.[26]

Although an interesting and perhaps ultimately useful theory, this

24. See, for example, Arthur M. Okun, "The Role of Aggregate Demand in Alleviating Unemployment," in William G. Bowen and Frederick H. Harbison, eds., *Unemployment in a Prosperous Economy,* A Report of the Princeton Manpower Symposium (Princeton University, May 13–14, 1965), pp. 67–81.

25. Jeffrey D. Sachs, "High Unemployment in Europe: Diagnosis and Policy Implications," Working Paper 1830 (National Bureau of Economic Research, February 1986).

26. Martin Feldstein, "The U.S. Budget Deficits and the European Economies: Resolving the Political Economy Puzzle," *American Economic Review,* vol. 76 (May 1986, *Papers and Proceedings, 1985*), pp. 342–46.

view is not easy to square with the fact that the inflation rate in Europe has not been grudgingly allowed to rise; it has come down sharply, from an average of 8.9 percent in 1978–79 to an average of 5.4 percent in 1984–85 in terms of the GNP deflator for France, Germany, Italy, and the United Kingdom.

Interpreted as deliberate and errorless behavior, the slump was aggravated by an effort to bring down the inflation rate during an unlucky bulge, if not a permanent rise, in the natural rate of unemployment. An alternative interpretation is that the fall of the inflation rate and the excess slump that went with it were the result of disinflationary monetary and fiscal policies that accidentally went too far. In any case, actual unemployment was pushed above a swollen natural rate. Either way, the decision to allow as large a rise of the unemployment rate as was forecast in annual and semiannual reviews could be criticized as so severe a hardship on the present generation as to be unjustifiable by any known and respected intergenerational social welfare criterion.

A more radical view of the European policy response is that, whatever its motives may have been, it bears no responsibility for the slump since a policy regarded as more stimulative would have done no good. Of course, if the rise of the unemployment rate to around 11 percent is interpreted as precisely the rise of the natural rate and that rate is in turn assumed to be permanent, the transient effectiveness of an easier monetary policy might be regarded as of little or no merit when the inflation rate was already high to begin with. But if the rise of the natural rate is presumed to be temporary because the disturbances are presumably temporary, then this radical view is a claim that Keynesian measures of demand stimulus cannot be expected to cushion the rise of the unemployment rate even temporarily.

Our view is that general fiscal stimulus in Europe could exert the conventional expansionary demand effect upon European employment and an expansionary markup effect from the supply side. It would also have supply effects through its effect on the real interest rate and might reduce further the real price of investment goods, effects tending to reduce employment; but the net effect can be assumed to be expansionary. The predominant empirical judgment, certainly, is that fiscal stimulus does have some positive near-term employment effects. Such a stimulus might be used to hasten the recovery and perhaps also to galvanize private forces for recovery. Neither is there anything in the

analysis of this paper that would deny a similar role to easier money. It is true that the effectiveness of such stimulus would be fleeting, or hypertransient, if European wages were fully indexed to the consumer price index with small time lags. But such is not the case. Indexation is less than full, and some lags are long.

Still, the disturbances transmitted to Europe from the United States have not fully ceased, only moderated. For a full recovery Europe may have to bargain for further reductions in the budgetary deficits that are still propping up real interest rates in the United States and the world.

Comments and Discussion

Jeffrey Sachs: The paper by J.-P. Fitoussi and E. S. Phelps is interesting and potentially important. Its main theme is that the U.S. policy mix of fiscal expansion and monetary contraction in the first half of the 1980s had a contractionary effect on the European economies and was a major factor in the rise of European unemployment. That interpretation runs counter to a common (though by no means universally held) view that the U.S. policy mix stimulated European output by inducing an appreciation of the dollar and a consequent boom in European exports.

At the core of the debate about the international transmission of U.S. policies is the following issue. The U.S. policy mix both raised world interest rates and induced a strengthening of the dollar. The first effect would generally be contractionary for Europe, through a reduction in investment demand if nothing else, while the second effect would tend to be expansionary, through a rise in net exports. In the most basic Mundell-Fleming model, the exchange rate (that is, expansionary) effect necessarily dominates, leading to what the authors term the "orthodox" view that the U.S. policy mix has benefited Europe. The contribution of the authors is to introduce new channels of interest rate and exchange rate linkages that bolster the case that the overall effect has been contractionary.

While the authors may be on to something important, the paper is nonetheless problematic for several reasons. First, it is not self-contained and is instead a sneak preview of a forthcoming monograph by the two authors. Thus, it is difficult to assess the precise assumptions underlying their analysis and the generality or persuasiveness of their arguments. Second, the authors offer no real empirical testing of the arguments, so that on a question that is known to be theoretically ambiguous (the direction of effect of U.S. policy on European output and employment),

the reader is left with a series of mostly undocumented assertions that certain effects have dominated other effects. Third, the authors improperly jump from their conclusion that U.S. policies have had contractionary effects on Europe to the conclusion that U.S. policy has been the main factor raising European unemployment. There are many additional factors, consistent with the authors' analysis, that could help to explain the European slump.

Finally, the authors overstate the novelty of their conclusions. Many authors, including Michael Bruno and myself, have pointed out that the U.S. fiscal expansion cum monetary contraction might be expected to have a contractionary effect in Europe in view of Europe's high degree of wage indexation and its other labor market institutions conducive to real wage rigidity.[1] Thus, the "orthodox" view is somewhat less than orthodox after all.

To understand the new Fitoussi and Phelps channels and how they compare with existing mechanisms already stressed in the literature, it is useful to introduce an augmented version of the static Mundell-Fleming model. Although the underlying Fitoussi-Phelps models (as they are described in words) are generally dynamic, they can at least be represented, albeit crudely, in this static setting. The "orthodox" model consists of an aggregate demand equation, an aggregate supply equation (or price markup equation), a money demand equation, and the assumptions of perfect capital mobility and nominal wage rigidity:[2]

$$
\begin{aligned}
(1)\quad &(a)\quad q = \psi(e + p^* - p) - \sigma r && \text{(aggregate demand)}\\
&(b)\quad p = w + \gamma(q - \bar{k}) && \text{(aggregate supply)}\\
&(c)\quad m - p = \phi q - \beta r && \text{(money demand)}\\
&(d)\quad w = \bar{w} && \text{(nominal wage ridigity)}\\
&(e)\quad r = r^* && \text{(perfect capital mobility)}
\end{aligned}
$$

1. Bruno and I demonstrated that a fiscal expansion in one country would be negatively transmitted to the rest of the world under conditions of high wage indexation. See Michael Bruno and Jeffrey Sachs, "Supply versus Demand Approaches to the Problem of Stagflation," in H. Giersch, ed., *Macroeconomic Policies for Growth and Stability* (Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1981); Gilles Oudiz and I discussed this issue at some length in "Macroeconomic Policy Coordination among the Industrial Economies," *BPEA, 1:1984*, pp. 1–64. Bruno and I also stressed the point at some length in *Economics of Worldwide Stagflation* (Harvard University Press, 1985), particularly in chapter 6.

2. All variables are in logarithms, except for the (real) interest rate r. The definitions are: q, output; e, exchange rate in units of home currency per unit of foreign currency; p, price of home goods; k, capital stock (taken as fixed); m, money supply. Starred variables are "foreign country" variables. The variables p^*, $\bar{w}$, r^*, and $\bar{k}$ are exogenous.

It is easy to see in this model that a rise in world interest rates, r^*, is *necessarily expansionary* for the home country (we will take Europe as "home"). Substitute equations 1b, 1d, and 1e into 1c to rewrite the money market equilibrium condition as: $m - \overline{w} = (\phi + \gamma)q - \gamma\overline{k} - \beta r^*$. Thus, when r^* rises, money market equilibrium requires that q also rise, in the amount $dq = [\beta/(\phi + \gamma)]\, dr^*$, since m, w, and k are assumed to be fixed. The rise in q is brought about by a currency depreciation ($de > 0$). Money market equilibrium requires that the depreciation be large enough so that the expansionary demand effects of $de > 0$ outweigh the contractionary demand effects of dr^*. Since both expansionary U.S. fiscal policies and contractionary monetary policies raise r^*, each piece of the U.S. policy mix contributes to the home expansion in the "orthodox" case.

This expansionary result can be changed by transmission channels that allow m, w, or k to change in response to the rise in r^*, or that cause a wedge to be driven between changes in w and changes in p when r^* rises. Let me briefly mention some possibilities. If the monetary authorities resist the currency depreciation by reducing m, then q can fall, since $dq = [\beta/(\phi+\gamma)]dr^* + [1/(\phi+\gamma)]dm$ (still holding w, k fixed). In fact, it is easy to show that if m is tightened sufficiently to keep e unchanged after a rise in r^*, then q must fall. Second, if indexed nominal wages rise in response to the depreciation of the currency, then, again, q may fall. If the consumer price index is a weighted average of home and foreign prices, $p_c = \lambda p + (1-\lambda)(p^* + e)$, and if wages are fully indexed, with $w = p_c + \overline{w}$, then it is easy to show that q *must* fall after a rise in r^*.

The authors' arguments stress reasons why the markup of p over w might rise with a rise in r^*. Suppose that marginal production costs are given as in equation 1b, so that $c = w + \gamma(q - k)$, where c is the (log) marginal cost of production. Instead of the competitive assumption that $p = c$, the authors suppose (though apparently in a more sophisticated dynamic setting) that imperfectly competitive firms set prices as a weighted average of c and of their competitors' prices, $p^* + e$, where $p = \zeta c + (1-\zeta)(p^* + e)$. This so-called "customer-market" view implies that even for unchanged output and nominal wages, p will rise after a rise in r^*, since the currency depreciation will induce European firms to raise their markups. Again, starting from $m - p = \phi q - \beta r^*$, we have $dq = (\beta/\phi)\, dr^* - (1/\phi)dp$. With a large enough rise in the European markup, European output will fall.

Another way that p may rise for unchanged w and q is for interest rates to enter the aggregate supply (that is, price) equation, in the form: $p = w + \delta r + \gamma(q - \bar{k})$. Why should the price markup over wages rise if interest rates increase? The authors offer two explanations. First, in their customer-market view, firms raise prices in response to a rise in r^* because they become less interested in using low prices today to build a large clientele in the future, because the future is now more heavily discounted. A second reason that r might enter the price equation is if the firm's production technology implies a lag between inputs and outputs. Suppose, for example, that the labor input at time t produces output at $t+1$, with the Cobb-Douglas technology $Q_{t+1} = L_t^{\alpha} \bar{K}^{1-\alpha}$. A competitive firm will choose L_t to maximize $Q_{t+1}/(1+r) - (W_t/P_t) L_t$, which results in a price equation $p_t = w_t + r + [(1-\alpha)/\alpha] (q_{t+1} - \bar{k})$.[3]

The implications of r in the price equation should be clear. Since $dq = (\beta/\phi)dr^* - (1/\phi)dp$, any factor that tends to push up domestic prices will tend to reduce dq and perhaps even result in $dq < 0$.

A useful way to think about all of these various effects is that the rise in r^* reduces demand while the induced rise in e raises demand by improving the country's competitiveness. Factors that tend to raise p in response to the rise of r^* and e (such as wage indexation, links of prices to competitors' prices, or interest rate effects) all work to reduce or eliminate Europe's gain in competitiveness and make it more likely that the direct negative effect on r^* will dominate. To see how all of the various effects work together, substitute the following equations for equations 1b and 1d:

(2)	(a)	$c = w + \delta r + \gamma(q - k)$	(marginal cost)
	(b)	$p = \zeta c + \gamma(1 - \zeta)(p^* + e)$	(customer market pricing)
	(c)	$w = \theta p_c$	(wage indexation)
	(d)	$p_c = \lambda p + (1-\lambda)(e + p^*)$	(consumer price index)

Solving equations 1a, c, and e, with equations 2a–d, we get the general expression:

$$(3) \qquad dq = -\Delta^{-1}[-\psi\beta\zeta(1-\theta) + \psi\zeta\delta + \sigma(1-\zeta) + \sigma\zeta\theta(1-\lambda)],$$

where

$$\Delta = [\psi\phi\zeta(1-\theta) + \psi\zeta\gamma + (1-\zeta) + \zeta\theta(1-\lambda)] > 0.$$

3. Simply equate $\delta Q_{t+1}/\delta L_t$ to $(1 + r)(W_t/P_t)$; solve for L_t; and replace the optimal L_t in the production function to find $Q_{t+1} = c_o \bar{K} [(1+r)(W_t/P_t)]^{-\alpha/(1-\alpha)}$, where c_o is a constant. Taking logarithms, approximating log $(1+r)$ by r, and ignoring log c_o, we get the stated equation.

Note the following points: high wage indexation ($\theta \approx 1$) is a sufficient condition for negative transmission; price "followership" ($\zeta \approx 0$) is a sufficient condition for negative transmission; and a high value of δ results in negative transmission.

The interest rate effect in the price equation helps to reconcile the rise in European unemployment with the high but declining measured wage gaps observed for several European countries. Remember that the wage gap seeks to compare the percentage deviation of actual real wages from the full-employment equilibrium wage. If $\bar{L}$ is full employment, and $Q_{t+1} = L_t^{\alpha} K^{1-\alpha}$, the full-employment wage is given by $(W_t/P_t)^f = \alpha (K/\bar{L})^{1-\alpha}/(1+r)$. However, if as is conventional, $(W_t/P_t)^f$ is calculated on the basis of $Q_t = L_t^{\alpha} K^{1-\alpha}$, without a production lag, $(W_t/P_t)^f$ will be measured as $\alpha(K/\bar{L})^{1-\alpha}$. Thus, when r rises, the conventional measure of the wage gap will overstate $(W_t/P_t)^f$, since it will not recognize that the higher r has reduced the true full-employment wage, and it will thereby understate the true wage gap.

While the authors focus their attention on the direct effects of the U.S. policy mix, there is little reason to doubt many additional influences on European unemployment, including the contractionary European policies in the wake of the high inflation of the late 1970s and the second OPEC price shock of 1979–80 (remember, for example, that the U.K. depression took hold well before the Reagan policy mix even started); the contractionary European policies in response to the rise in p_c induced by the dollar appreciation; and the continuing low levels of investment in Europe (until quite recently) in light of the continuing European profit squeeze.

The authors focus most of their attention on the cyclical aspects of the U.S. policy mix, but they do mention the longer-term effects of high r^* on k, the European capital stock. In the models I have discussed, a fall in k surely produces a fall in q. The rise in r^* thereby has a longer-term depressing effect on European output via k, and this effect is made more severe by European real wage rigidity. Indeed, for a strictly fixed W/P (and assuming no productivity growth), a rise in r^* can lead to an unchecked decline in k, since the quasi rents per unit of capital will remain consistently below the now-higher cost of capital. It should be noted that in several European economies (Germany being the preeminent example), the persistently low investment rates in recent years mean that the economies are near to full capacity as judged by factory utilization rates, despite record high levels of unemployment.

Both for the cyclical reasons discussed earlier and the longer-term effects on k, the U.S. policy mix will tend to be most devastating for economies with labor market institutions that reduce the responsiveness of real wages to external shocks and to internal unemployment. While a comparative analysis of the recent OECD unemployment experience in light of the authors' arguments must await a later day, it does seem apparent that flexible real wage countries, such as Japan and corporatist Norway and Sweden, were able to turn the U.S. policy mix into export-led growth (as in the "orthodox" model), by virtue of the fact that real wages fell enough to make room for higher r^*. In the less flexible cases, such as France and the United Kingdom, the authors' "unorthodox" conclusions are most apparent.

General Discussion

Several participants addressed the question of the continued existence of a real wage gap in Europe. Robert Gordon agreed with Fitoussi and Phelps that real wage rigidity cannot explain continued high European unemployment. He noted that there has been substantial real wage moderation in Europe since 1979; indeed, wage gap indexes for European manufacturing are now substantially lower than those for U.S. manufacturing. Gordon also pointed out a flaw in wage gap estimates based on the widely used OECD data, in which self-employment income is treated as profits. Although shifts out of self-employment in both Europe and Japan have increased the share of employee compensation in GNP, the share of employee compensation and self-employment income together has not changed much. Charles Schultze reported that EEC data, which apportion self-employment income between labor and capital, show only a small rise in labor's share for the economy as a whole in most European countries and for Europe as a whole. The same data do show widespread increases in labor's share within manufacturing, implying labor's share outside of manufacturing is declining. Jeffrey Sachs commented that changes in labor's share bear no one-for-one relationship with changes in the wage gap. Indeed, if the aggregate production function is Cobb-Douglas, increases in real wages will produce only a temporary increase in labor's share; the increase will disappear as employers shed workers whose marginal productivity falls short of the new higher wage. Much of the recent decline in labor's share, Sachs

continued, reflects the growth in unemployment. More careful estimates of the wage gap based on production function analysis show that it is still positive and significant in most of the large European countries. Those estimates do show, however, that the current wage gap is limited to manufacturing. Why wages have fallen less in manufacturing than in services has not been adequately studied.

Schultze noted that, regardless of what the relative price data presented by the authors show, European capital goods production has not suffered disproportionately in recent years. Between 1980 and 1985 the production of investment goods fared no worse than total industrial production in France and Italy and did much better in Germany. Among the four large European countries, only in the United Kingdom did the relative production of investment goods decline.

Peter Kenen commented that, given the pressure on European markups when the dollar was weak in the late 1970s, it is hardly surprising that those markups have risen in the past few years. More recently, the rise of the yen against the dollar appears to have squeezed Japanese manufacturers' margins; dollar prices of Japanese products have not risen nearly as much the yen has appreciated. In Kenen's view, the authors' framework was more elaborate than necessary for explaining the common-sense short-run response of markups to exchange rate fluctuations.

Richard Cooper was disturbed by the basic thrust of the paper, which he saw as laying Europe's economic problems at America's feet. U.S. policy affected Europe both through interest rates and through exchange rates. The Europeans could have offset any negative real effects on their economies by adopting more expansionary monetary or fiscal policies, but chose not to. Cooper cited two considerations that inhibited German policymakers. First, preoccupation with the size of the public debt, which was, in fact, small by the standards of many other countries, ruled out expansionary fiscal policy. Second, concern with the inflation that might accompany too rapid a depreciation of the currency led policymakers to resist more expansionary monetary policy. Kenen suggested that another drag on German fiscal expansion has been the government's desire to reduce the size of the public sector and its fear that any increases in government expenditure would not be temporary.