Title

The U.S. Basic Industries in the 1980s: Can Fiscal Policies Explain Their Changing Competitive Position?

Authors

Eichengreen, Barry
Goulder, Lawrence H.

Publication Date

1988-11-02

Peer reviewed

UNIVERSITY OF CALIFORNIA, BERKELEY

Department of Economics

Berkeley, California 94720

Working Paper 8897

THE U.S. BASIC INDUSTRIES IN THE 1980S: CAN FISCAL POLICIES EXPLAIN THEIR CHANGING COMPETITIVE POSITION?

Barry Eichengreen and Lawrence H. Goulder
UC Berkeley and Harvard University

November 2, 1988

Key words: basic industries, competitiveness, fiscal policy.

Prepared for the Carolina Public Policy Conference, Chapel Hill, North Carolina, February 19, 1988. The research reported here was supported in part by a grant from the U.S. Department of Labor. The authors also gratefully acknowledge support from the Pew Charitable Trusts. We thank Erik Beecroft for excellent research assistance.

JEL Classification: 631, 400, 321

The first half of the 1980s was not an easy period for American industry. Following mounting difficulties in the second half of the 1970s, between 1979 and 1984 the basic industries -- steel, motor vehicles, textiles and apparel -- each experienced alarming declines in output and employment. By 1985 import penetration had reached unprecedented levels: 25 percent of domestic steel consumption, 26 percent of domestic motor vehicle sales, and 33 percent of the domestic textile market.[1] The industries' deteriorating competitive position had an immediate impact on financial performance, as reflected in declining returns on equity and widespread bankruptcy among textile and apparel firms, by rehabilitation of a financially-troubled Chrysler Corporation under the shelter of a government-guaranteed loan, and by Chapter 11 reorganization of the nation's second largest steelmaker, LTV. The persistence and severity of the difficulties led industrialists and politicians to fear for the survival of basic industry in the United States.

In the last 24 months, this situation has shown signs of reversing itself. U.S. production costs have declined to such an extent that Honda can now produce cars more cheaply in the U.S. than in Japan; the firm has begun to contemplate exporting American-made autos to the Japanese market. Steel can now be produced for an estimated 18 percent less in the U.S. than in Japan.[2] In 1987, for the first time in years, the steel, automobile and textile industries all anticipated a positive return on equity, and the big three automakers registered record profits in the second quarter of 1988. Suddenly, financial distress culminating in widespread bankruptcy no longer appears to be an immediate problem. While the U.S. basic industries still have many difficulties with which to contend, they seem to be enjoying a respite from the crises of the last decade.

Businessmen and economists tend to subscribe to very different explanations for this turn of events. Businessmen emphasize private-sector determinants of competitiveness: changes in labor relations and work organization, in labor costs, and in labor productivity. In recent years many of the basic industries have introduced ambitious programs of belt-tightening and modernization. Despite financial difficulties, each has invested significantly in new technologies and in the rationalization of existing operations. In industries such as steel and motor vehicles, where workers have traditionally earned a premium over the average manufacturing wage, management has sought and labor has agreed to a variety of wage concessions. To increase labor productivity, staffing levels have been drastically cut at both blue-and white-collar levels, and innovative work structures have been introduced.

Economists, in contrast, tend to emphasize government policies affecting the state of the economy and the level of the dollar as determinants of U.S. basic industry performance. Since 1980, the combination of relatively expansionary fiscal and tight monetary policies in the U.S. has tended to raise U.S. interest rates, while contractionary fiscal policies abroad have put downward pressure on foreign interest rates. The increase in U.S. interest rates relative to interest rates abroad enhanced the attractiveness of dollar-denominated assets, putting upward pressure on the U.S. exchange rate. Between 1980 and 1985, the multilateral trade-weighted value of the dollar rose by 60 percent, leading to a 25 percent fall in the dollar value of the hourly earnings of German workers at the same time that U.S. hourly earnings were rising by 35 percent in the textile industry, by 28 percent in apparel, by 24 percent

in primary metals, and by 42 percent in transport equipment. With the dollar's decline since 1985, the same forces have been operating in reverse. In 1984, Japanese and German unit labor costs in dollars were only 83 and 89 percent of those in the U.S., respectively. As a consequence of the dollar's depreciation, by 1986 they had risen to 122 and 162 percent of U.S. costs. In 1987 they were projected to rise to 142 and 193 percent, respectively.[3] These numbers illustrate vividly how exchange rate fluctuations can influence competitiveness.

A balanced analysis of the performance of the basic industries requires attention to both private-sector initiatives and government policies. In the first part of this paper, we sort through these factors and examine the ways they influence performance. Following Eichengreen (1988), we begin with an overview of recent trends and then examine several private-sector and public-policy determinants of competitiveness. In the second part of the paper, we employ a simulation model to assess the extent to which U.S. fiscal policy initiatives can explain the competitive difficulties and subsequent revival of the U.S. basic industries.

1. INTERNATIONAL COMPETITION IN THE PRODUCTS OF U.S. BASIC INDUSTRIES

1.1 Recent Trends

Figures 1 through 5 show trends and fluctuations in output, employment, productivity, investment and import penetration in the basic industries. A number of features of the output trends in Figure 1 stand out. First, output in all four industries exhibits a downward trend since the early-to-mid 1970s. Second, compared to textiles and apparel, output fluctuations in steel and automobiles are much more volatile over the

business cycle, reflecting steel's status as a capital good and the automobile's status as a major consumer durable. Third, only the automobile industry has shown much tendency to make up lost ground since the early 1980s. Fourth, there is no evidence of an output recovery in 1987. In all four sectors production declined in 1986 relative to 1985. To the extent that financial performance improved, profits derive from higher prices and/or lower costs, not from increased sales.

Trends in employment, in Figure 2, display somewhat greater stability than the trends in output in Figure 1. Textile and apparel employment by now has been in slow but steady decline for decades. Recent years are notable for the relative stability of textile and apparel employment, which varied little between 1985 and 1986. The recovery of auto industry employment associated with the post-1981 economic expansion was finally halted and reversed in 1986. Employment in the steel industry is distinctive by virtue of the rapidity and persistence of its decline.

These trends combined to achieve an increase in average labor productivity, most notably in steel (Figure 3.)[4] Productivity growth in the steel industry is especially impressive. The 20 percent decline in industrial capacity between 1982 and 1986 was accompanied by a 51 percent reduction in the number of salaried employees. Where in 1982 the U.S. industry required more than ten manhours to ship a ton of steel, by 1986 that figure had been cut to less than seven. Part of the improvement resulted from the elimination of featherbedding, part from concentrating operations in the most efficient plants, and part from ongoing modernization and investment in new capacity.[5]

That investment behavior is shown in Figure 4, which depicts investment in the basic industries as a share of total manufacturing investment. Textile industry investment remains remarkably stable as a share of the manufacturing total. Auto industry investment, in contrast, displays exceptional cyclical volatility. But both series display little trend in the period since 1974. The steel industry investment share, in contrast, shows a virtually unbroken decline since the mid-1970s. In none of these industries do developments since 1985 represent a break with the recent past.

Figure 5 shows import penetration ratios (shares of domestic sales or apparent consumption accounted for by imports). In all three industries the upward trend in import penetration is quite dramatic -- and, from the perspective of domestic industry, alarming. Yet recent trends in import penetration have varied considerably across industries. The textile import share shows almost uninterrupted upward movement over the period, with no apparent tendency to reverse course in recent years. The same is true for apparel: in 1986, for the first time, imported apparel and fabric account for more than 50 percent of the U.S. market. Vehicle imports rise until the negotiation of voluntary restraint agreements with Japanese producers in 1981, after which they roll back at least temporarily. After 1984 they resume their upward trend. The share of imports in domestic sales of steel has fallen noticably since 1984, with the decline of the dollar and the implementation of the Reagan Administration's voluntary restraint agreements restricting sales by foreign producers.

1.2 Growth of Competing Supplies and Lagging Domestic Demand

A dominant feature of international competition in the products of the basic industries has been entry into the international arena of new national suppliers. The United States now imports textile products from more than 100 countries. Steel is sold internationally not just by Japan and Europe but by Brazil, Korea, Mexico and a host of other developing countries. The American automobile industry is bracing itself for imports not just from Europe, Japan and Korea but from Brazil, Mexico, Taiwan, Malaysia and Thailand.

While the U.S. auto and iron and steel industries continue to suffer mainly from OECD import competition, the U.S. textile and apparel industries find themselves competing mainly with the newly-industrializing countries (NICs). The impact of developing-country competition is already evident even in autos and in iron and steel, however. Table 1 shows the composition of U.S. vehicle imports. Notable is the rise in the share of imports from suppliers other than Japan and the major European producers, from 1/2 percent in 1985 to more than 5 percent in 1986, mainly reflecting ready acceptance of the Korean Hyundai.[6] The trend is sure to continue: Isuzu has begun to ship its Trooper from Taiwan to the U.S.; within two years Toyota, Nissan, Fuji Heavy and Daihatsu are all expected to begin exporting cars from Taiwan, while Mitsubishi exports from Malaysia are currently slated for 1989.

In the case of textiles and apparel, the effects of developing-country competition are even clearer. The share of global capacity accounted for by the industries of the European Community and Japan has fallen dramatically. National strategies vary, but in a number of

industrial countries, notably Japan, policy has encouraged the elimination of excess capacity and has not interfered with the decline in industry employment. Compared with other industrial countries, U.S. industry has maintained itself well. In contrast, the share of global capacity accounted for by the developing countries of Asia increased enormously over the period.

U.S. basic industries have suffered serious difficulties because they have been caught in a squeeze between this growth of competing supplies and lagging domestic demand. The share of domestic spending devoted to the products of each of the basic industries has been in steady decline for decades. Domestic steel consumption as a share of GNP has declined most dramatically, especially after 1972. Common explanations include the tendency of the steel intensity of production to fall as the economy matures, and the development of increasingly attractive steel substitutes such as the plastic and concrete tubing used in construction, the aluminum and plastic used in the production of food and beverage containers, and the plastics used in autombile production. Similarly, U.S. consumer expenditure on clothing and shoes as a share of GNP has been in steady decline, from more than nine percent in 1960 to less than seven percent in recent years. The common explanation is that the income elasticity of demand for apparel is less than unity. Motor vehicle apparent consumption as a share of GNP has been the most stable, declining only marginally over the last two decades.

One way out of this bind is to export basic-industry products. To date, U.S. exports have been minimal. Exports of steel products account for a mere one percent of U.S. production, although there is some prospect

The first half of the 1980s was not an easy period for American industry. Following mounting difficulties in the second half of the 1970s, between 1979 and 1984 the basic industries -- steel, motor vehicles, textiles and apparel -- each experienced alarming declines in output and employment. By 1985 import penetration had reached unprecedented levels: 25 percent of domestic steel consumption, 26 percent of domestic motor vehicle sales, and 33 percent of the domestic textile market.[1] The industries' deteriorating competitive position had an immediate impact on financial performance, as reflected in declining returns on equity and widespread bankruptcy among textile and apparel firms, by rehabilitation of a financially-troubled Chrysler Corporation under the shelter of a government-guaranteed loan, and by Chapter 11 reorganization of the nation's second largest steelmaker, LTV. The persistence and severity of the difficulties led industrialists and politicians to fear for the survival of basic industry in the United States.

In the last 24 months, this situation has shown signs of reversing itself. U.S. production costs have declined to such an extent that Honda can now produce cars more cheaply in the U.S. than in Japan; the firm has begun to contemplate exporting American-made autos to the Japanese market. Steel can now be produced for an estimated 18 percent less in the U.S. than in Japan.[2] In 1987, for the first time in years, the steel, automobile and textile industries all anticipated a positive return on equity, and the big three automakers registered record profits in the second quarter of 1988. Suddenly, financial distress culminating in widespread bankruptcy no longer appears to be an immediate problem. While the U.S. basic industries still have many difficulties with which to contend, they seem to be enjoying a respite from the crises of the last decade.

Businessmen and economists tend to subscribe to very different explanations for this turn of events. Businessmen emphasize private-sector determinants of competitiveness: changes in labor relations and work organization, in labor costs, and in labor productivity. In recent years many of the basic industries have introduced ambitious programs of belt-tightening and modernization. Despite financial difficulties, each has invested significantly in new technologies and in the rationalization of existing operations. In industries such as steel and motor vehicles, where workers have traditionally earned a premium over the average manufacturing wage, management has sought and labor has agreed to a variety of wage concessions. To increase labor productivity, staffing levels have been drastically cut at both blue-and white-collar levels, and innovative work structures have been introduced.

Economists, in contrast, tend to emphasize government policies affecting the state of the economy and the level of the dollar as determinants of U.S. basic industry performance. Since 1980, the combination of relatively expansionary fiscal and tight monetary policies in the U.S. has tended to raise U.S. interest rates, while contractionary fiscal policies abroad have put downward pressure on foreign interest rates. The increase in U.S. interest rates relative to interest rates abroad enhanced the attractiveness of dollar-denominated assets, putting upward pressure on the U.S. exchange rate. Between 1980 and 1985, the multilateral trade-weighted value of the dollar rose by 60 percent, leading to a 25 percent fall in the dollar value of the hourly earnings of German workers at the same time that U.S. hourly earnings were rising by 35 percent in the textile industry, by 28 percent in apparel, by 24 percent

in primary metals, and by 42 percent in transport equipment. With the dollar's decline since 1985, the same forces have been operating in reverse. In 1984, Japanese and German unit labor costs in dollars were only 83 and 89 percent of those in the U.S., respectively. As a consequence of the dollar's depreciation, by 1986 they had risen to 122 and 162 percent of U.S. costs. In 1987 they were projected to rise to 142 and 193 percent, respectively.[3] These numbers illustrate vividly how exchange rate fluctuations can influence competitiveness.

A balanced analysis of the performance of the basic industries requires attention to both private-sector initiatives and government policies. In the first part of this paper, we sort through these factors and examine the ways they influence performance. Following Eichengreen (1988), we begin with an overview of recent trends and then examine several private-sector and public-policy determinants of competitiveness. In the second part of the paper, we employ a simulation model to assess the extent to which U.S. fiscal policy initiatives can explain the competitive difficulties and subsequent revival of the U.S. basic industries.

1. INTERNATIONAL COMPETITION IN THE PRODUCTS OF U.S. BASIC INDUSTRIES

1.1 Recent Trends

Figures 1 through 5 show trends and fluctuations in output, employment, productivity, investment and import penetration in the basic industries. A number of features of the output trends in Figure 1 stand out. First, output in all four industries exhibits a downward trend since the early-to-mid 1970s. Second, compared to textiles and apparel, output fluctuations in steel and automobiles are much more volatile over the

business cycle, reflecting steel's status as a capital good and the automobile's status as a major consumer durable. Third, only the automobile industry has shown much tendency to make up lost ground since the early 1980s. Fourth, there is no evidence of an output recovery in 1987. In all four sectors production declined in 1986 relative to 1985. To the extent that financial performance improved, profits derive from higher prices and/or lower costs, not from increased sales.

Trends in employment, in Figure 2, display somewhat greater stability than the trends in output in Figure 1. Textile and apparel employment by now has been in slow but steady decline for decades. Recent years are notable for the relative stability of textile and apparel employment, which varied little between 1985 and 1986. The recovery of auto industry employment associated with the post-1981 economic expansion was finally halted and reversed in 1986. Employment in the steel industry is distinctive by virtue of the rapidity and persistence of its decline.

These trends combined to achieve an increase in average labor productivity, most notably in steel (Figure 3.)[4] Productivity growth in the steel industry is especially impressive. The 20 percent decline in industrial capacity between 1982 and 1986 was accompanied by a 51 percent reduction in the number of salaried employees. Where in 1982 the U.S. industry required more than ten manhours to ship a ton of steel, by 1986 that figure had been cut to less than seven. Part of the improvement resulted from the elimination of featherbedding, part from concentrating operations in the most efficient plants, and part from ongoing modernization and investment in new capacity.[5]

That investment behavior is shown in Figure 4, which depicts investment in the basic industries as a share of total manufacturing investment. Textile industry investment remains remarkably stable as a share of the manufacturing total. Auto industry investment, in contrast, displays exceptional cyclical volatility. But both series display little trend in the period since 1974. The steel industry investment share, in contrast, shows a virtually unbroken decline since the mid-1970s. In none of these industries do developments since 1985 represent a break with the recent past.

Figure 5 shows import penetration ratios (shares of domestic sales or apparent consumption accounted for by imports). In all three industries the upward trend in import penetration is quite dramatic -- and, from the perspective of domestic industry, alarming. Yet recent trends in import penetration have varied considerably across industries. The textile import share shows almost uninterrupted upward movement over the period, with no apparent tendency to reverse course in recent years. The same is true for apparel: in 1986, for the first time, imported apparel and fabric account for more than 50 percent of the U.S. market. Vehicle imports rise until the negotiation of voluntary restraint agreements with Japanese producers in 1981, after which they roll back at least temporarily. After 1984 they resume their upward trend. The share of imports in domestic sales of steel has fallen noticably since 1984, with the decline of the dollar and the implementation of the Reagan Administration's voluntary restraint agreements restricting sales by foreign producers.

1.2 Growth of Competing Supplies and Lagging Domestic Demand

A dominant feature of international competition in the products of the basic industries has been entry into the international arena of new national suppliers. The United States now imports textile products from more than 100 countries. Steel is sold internationally not just by Japan and Europe but by Brazil, Korea, Mexico and a host of other developing countries. The American automobile industry is bracing itself for imports not just from Europe, Japan and Korea but from Brazil, Mexico, Taiwan, Malaysia and Thailand.

While the U.S. auto and iron and steel industries continue to suffer mainly from OECD import competition, the U.S. textile and apparel industries find themselves competing mainly with the newly-industrializing countries (NICs). The impact of developing-country competition is already evident even in autos and in iron and steel, however. Table 1 shows the composition of U.S. vehicle imports. Notable is the rise in the share of imports from suppliers other than Japan and the major European producers, from 1/2 percent in 1985 to more than 5 percent in 1986, mainly reflecting ready acceptance of the Korean Hyundai.[6] The trend is sure to continue: Isuzu has begun to ship its Trooper from Taiwan to the U.S.; within two years Toyota, Nissan, Fuji Heavy and Daihatsu are all expected to begin exporting cars from Taiwan, while Mitsubishi exports from Malaysia are currently slated for 1989.

In the case of textiles and apparel, the effects of developing-country competition are even clearer. The share of global capacity accounted for by the industries of the European Community and Japan has fallen dramatically. National strategies vary, but in a number of

industrial countries, notably Japan, policy has encouraged the elimination of excess capacity and has not interfered with the decline in industry employment. Compared with other industrial countries, U.S. industry has maintained itself well. In contrast, the share of global capacity accounted for by the developing countries of Asia increased enormously over the period.

U.S. basic industries have suffered serious difficulties because they have been caught in a squeeze between this growth of competing supplies and lagging domestic demand. The share of domestic spending devoted to the products of each of the basic industries has been in steady decline for decades. Domestic steel consumption as a share of GNP has declined most dramatically, especially after 1972. Common explanations include the tendency of the steel intensity of production to fall as the economy matures, and the development of increasingly attractive steel substitutes such as the plastic and concrete tubing used in construction, the aluminum and plastic used in the production of food and beverage containers, and the plastics used in automobile production. Similarly, U.S. consumer expenditure on clothing and shoes as a share of GNP has been in steady decline, from more than nine percent in 1960 to less than seven percent in recent years. The common explanation is that the income elasticity of demand for apparel is less than unity. Motor vehicle apparent consumption as a share of GNP has been the most stable, declining only marginally over the last two decades.

One way out of this bind is to export basic-industry products. To date, U.S. exports have been minimal. Exports of steel products account for a mere one percent of U.S. production, although there is some prospect

that, with the dollar's fall, this share will increase (U.S. export tonage rose from 929,000 tons in 1985 to 1.1 million tons in 1987).[7] Exports of transport equipment are similarly slight, although there is evidence of change: Honda has begun to export motorcycles from its Marysville, Ohio plant and to use the U.S. rather than Japan as the source of autos sold in Taiwan and South Korea; Mazda similarly has announced plans to export U.S. units to Taiwan. Honda, Mazda and the Big 3 U.S. automakers all are considering the export of cars from their U.S. plants to Japan, while Chrysler is laying plans to export cars to Europe. Overall, U.S. vehicle exports rose by more than eight percent between 1986 and 1987.

1.3 Labor Costs, Labor Productivity and Work Organization

Relative costs of production are a leading determinant of how much of this limited market is captured by American producers. Much of the debate over the international competitiveness of U.S. basic industries revolves around labor costs and labor productivity. Figure 6 shows trends over the last two decades in the average hourly earnings of employees in the U.S. basic industries relative to all manufacturing employees. The contrast between high-wage steel and autos and low-wage textiles and apparel is striking. Textile and apparel industry wages are less than 75 percent of the manufacturing average and trend slowly downward over the period. Steel and auto industry wages are more than 125 percent the manufacturing average and trend upward until the early 1980s. Earnings in steel then decline sharply as the industry's difficulties mount after 1982; in contrast, auto industry wages show little movement relative to the manufacturing average.

It is in steel that recent developments constitute the most dramatic break with the past. The trend continues: in February 1987 the United Steel Workers' membership took an eight percent pay cut following a six-month strike against USX. The new contract, which runs for four years, reduces the company's labor costs by about $2.50 an hour, with $2 to be restored by 1991. For its part, USX agreed to modernize several plants previously considered candidates for closure, to limit the extent of outsourcing, and to provide profit sharing.[8]

What is not evident in Figure 6 is an explanation for the recent turnabout in the competitiveness of U.S. autos and steel. For years, auto and steel industry executives argued that the difficulties experienced by these sectors were due in considerable measure to the high wages they were forced to pay relative to other manufacturing industries. Despite steps in the direction of wage moderation, there is no evidence of dramatic developments on the wage front post 1984 that can help explain the steel and auto industries' return to profitability. If the source of the steel and auto industries' recovery lies here, it must be found in the relative cost of domestic and foreign labor (due to exchange rate changes and other factors considered in Section 1.4 below) or to changes in the productivity of U.S. labor due to changes in work organization and technology.

The auto industry's initial response to competitive difficulties was to emphasize technology. As epitomized by the strategy adopted by General Motors in 1979, the idea was to rely on computers and robots to achieve a reduction in unit labor costs. In the succeeding eight years, GM spent some $60 billion on plant, equipment and vehicle design. Many of the high-tech plants have had nagging problems, as epitomized by GM's well-

publicized difficulties with its showcase Buick City complex in Flint, Michigan. The failure of the technology-intensive strategy is now widely blamed for GM's loss of market share and for the lag in its labor productivity compared to Ford.

One alternative to the technological solution is innovative forms of work organization and management: quality circles, team production and Japanese management styles. GM is now a leader in this counterrevolution: its joint venture with Toyota, New United Motor Manufacturing (NUMMI), in Fremont, California is the best-known example of the Japanese approach. Workers in Fremont are organized into teams possessing unprecedented control over their jobs. Only four job classifications are distinguished. As of the summer of 1986, this plant used only 8 percent more labor hours than its extremely efficient sister plant in Japan and only half the labor hours that had been required when the plant was under GM's sole management, despite the fact that NUMMI makes use of considerably less automation than the average U.S. auto plant. Quality generally exceeds the best from GM's most highly automated factories.[9]

In light of this astonishing performance, GM plans to install teams in all of its plants. In the first half of 1987, more than 30 GM assembly plants sent managers and UAW officers to study NUMMI. GM's gigantic Saturn plant in Tennessee plant will have only five job classifications and will refer to workers as partners. Conversely, because workers at GM's Norwood, Ohio plant were unwilling to accept teams, the company chose to close Norwood and maintain its Van Nuys, California plant despite that the two factories produced the same car and Norwood made them for some $600 less.

In the steel industry, although the scope for team production may be more limited, the same trend is evident. When Rouge Steel recently opened a new continuous caster, transferring workers there from existing operations, the union agreed to a major compression of job classifications.[10] Several steel firms and the United Steel Workers have received training grants from the U.S. Department of Labor to teach participation techniques. The success of these programs led to the formation of a joint planning committee to continue the process.

More typical of the steel industry than quality circles are incentive pay and profit sharing. Birmingham Steel Corp. has had great success with a productivity enhancement scheme which uses pay incentives tied to productivity. Starting with nonunion workers and a base pay of $8 an hour, employees can earn up to 150 percent more in supplements. Workers who are 30 minutes late for their shift lose that day's incentive pay. Those who miss a day of work for any reason other than a death in the family lose their bonus for the week. The lost bonus money is split among members of the production unit receiving incentives. Executives claim that the scheme is responsible for Birmingham Steel's emergence as one of the lowest cost steel producers in America.[11]

As the example of GM's Norwood and Van Nuys factories reveals, labor sometimes opposes the introduction of teams. Another example of this phenomenon occurred in the fall of 1986, when GM asked workers at its Pontiac, Michigan truck and bus plant to accept a Japanese-style production system. When union leaders rejected teams but GM attempted to implement them nonetheless, a four day strike ensued. Reasons for worker resistance vary. Some workers object that management is moving too quickly to modify

established conventions. Others suspect that teams are simply a device to get them to work harder. Labor leaders resist simplifications of work rules and job classifications which reduce union control over the production process. For their part, lower-level managers can be reluctant to give up traditional powers.

The employer response is to offer incentives for the acceptance of team production or to link acceptance to other decisions affecting job security. In the case of the Pontiac, Michigan factory cited above, GM offered to make the plant the source of a new truck to be added to the company's line. Company-wide agreements negotiated in the fall of 1987 between the UAW and GM and Ford include employment security guarantees, under which workers can be laid off only as a consequence of auto sales declines. To obtain these guarantees, workers declared a willingness to accept work practice changes. Other provisions of the agreements provide for plant-level committees of workers and supervisors to hammer out changes in work rules. Chrysler and the UAW have similarly negotiated plant-level agreements that permit teamwork and reduce job classifications.[12]

In one of the first systematic comparison of labor productivity across plants in which work is organized along different lines, Katz et al. (1987) surveyed work practices and productivity in 53 plants of one of the major U.S. auto manufacturers. They employed two proxies for labor efficiency: number of production-worker labor hours per vehicle in final vehicle assembly plants, and number of supervisors per production worker.[13] The authors regress these dependent variables on measures of the flexibility of work rules, the extent of worker participation in shop-floor decisions, plant wages relative to wages in the local labor market, the unemployment

rate in the local labor market, and the plant-specific absentee rate. They find that the extent of participation in shop-floor decisions consistently displays a negative association with labor hours required per unit of output, although the statistical significance of the correlation varies. Surprisingly, the presence of teams by itself appears to have a negative impact on productivity. Thus, worker participation in decision making rather than a particular organization of labor input seems to have done most to enhance productivity. Moreover, Katz et. al.'s findings serve as a warning that team methods, when introduced with inadequate preparation, may be counterproductive.[14]

1.4 Macroeconomic Policy and the Real Exchange Rate

Over the decade of the 'eighties, the exchange rate has emerged as perhaps the critical variable affecting the international competitiveness of U.S. industry (see Figure 7). Between 1981 and 1985, the multilateral trade-weighted value of the dollar rose by more than 60 percent against foreign currencies. The conventional explanation for the dollar's rise stresses the U.S. macro-policy mix. The mechanism is as follows. The budget deficits experienced under the Reagan Administration increased domestic aggregate demand. Excess demand for traded goods could be satisfied by importing them from abroad -- in other words, by running trade deficits. But the demand for nontraded goods like housing and certain services had to be rationed by increasing their relative price; hence a rise in the dollar was needed to switch expenditure away from nontraded goods and toward now cheaper imports. The mechanism can also be viewed from the perspective of U.S. savings and investment. Budget deficits imply

a decline in national saving relative to national investment (assuming no offsetting rise in private saving). The demand for limited liquidity drives up U.S. interest rates, making investment in the United States increasingly attractive to foreigners. The dual result is a capital inflow as foreigners fill the gap between domestic savings and domestic investment, and a rise in the exchange rate as foreigners bid for dollar-denominated assets. Thus, dollar appreciation was the result of domestic policies elevating the level of U.S. real interest rates relative to those prevailing abroad.

Through the beginning of 1984, this conventional story helps to explain the dollar's rise, especially when augmented with the effects of restrictive monetary policy at home and tight fiscal policy abroad. But between 1984 and its 1985 peak, the dollar continued to rise at rates that cannot be explained by the real interest rate differential between the United States and abroad (Hooper and Mann, 1987, pp. 51-52). The failure of real interest differentials to explain this portion of the dollar's rise led some economists to characterize it as a speculative bubble: like Wall Street speculators, foreign-currency traders in their optimism bought the dollar in expectation of its continued rise simply because they thought others would do the same (Frankel and Froot, 1987). The dollar's collapse since the summer of 1985 reflects partly the bursting of this bubble, partly deficit-reduction initiatives in the U.S. along with increased government spending abroad (notably in Japan), partly more expansionary U.S. monetary policy, and partly the growth of debt to foreigners that must be serviced.

These exchange rate swings have had a profound impact on comparative domestic and foreign unit labor costs. Figure 8 shows indices of German and Japanese earnings converted into dollars. Both indices but German labor costs in particular show dramatic downward movement in the period of dollar appreciation after 1980. German labor costs in dollar terms decline by more than 20 percent over the first half of the 1980s, a period during which U.S. labor costs rose by roughly 33 percent due to wage inflation. It is easy to see how swings of this magnitude could pose serious problems for German industry's American competitors. As the dollar begins to fall in 1985, the dollar value of foreign labor costs rises dramatically. The near doubling of the dollar value of rest-of-OECD labor costs between their 1984-85 trough and early 1987 could do much to relieve the competitive pressures faced by U.S. industry.

To pinpoint the effect of exchange rate changes on labor costs, the dollar value of earnings should be adjusted for changes in labor productivity. Recent estimates of comparative unit labor costs in dollars which make this adjustment (Table 3) only reinforce the conclusion derived from simple earnings comparisons. Throughout Europe, the dollar value of labor costs falls very dramatically during the period of dollar appreciation (taken here as 1980-84). As the dollar reverses field, relative foreign unit labor costs in dollar terms rise equally dramatically, more than doubling in the case of Germany.

The paradox is that these swings in exchange rates and labor costs have not had a greater impact on U.S. import prices. Despite the dollar's dramatic fall in 1987, U.S. semifinished steel prices rose by no more than 5.2 percent over the calendar year.[15] Figure 9 juxtaposes the

indices of the dollar value of German and Japanese earnings from Figure 8 with indices of the prices of U.S. imports of steel, autos and motor vehicles. Since 1984, import prices have risen very little compared to the dollar value of German and Japanese wages. Only in the case of motor vehicles is the upward trend in import prices pronounced.

Various explanations can be offered. First, the dollar has fallen much further against the currencies of America's OECD trading partners, such as Germany and Japan, than against the currencies of the South Asian NICs (see Cox, 1986; Feldstein and Bachetta, 1987).[16] Since auto imports are drawn from Japan and Europe while textile imports are drawn primarily from the NICs, it follows that vehicle prices should have risen more dramatically than textile prices. Another explanation cites efforts on the part of foreign suppliers to defend their market shares.[17] Rather than alienate their long-standing customers, foreign producers may hesitate to quickly alter prices in response to exchange-rate swings, preferring to absorb the short-run effects in profits. Insofar as they similarly had hesitated to lower their export prices during the period of dollar appreciation, foreign suppliers might view the dollar's subsequent depreciation as simply bringing their costs and prices back into line, and therefore as requiring no change in prices.

Moreover, only a portion of foreign production costs is affected by exchange rate swings. The dollar cost of energy and other commodity prices quoted in dollars is unaffected by swings in the U.S. exchange rate. The importance of this factor is evident in Table 3, on comparative steel production costs. For Japan, which imports its energy, 27 percent of variable costs are dollar denominated. For Europe, the comparable figure

is 36 percent. Holding labor costs fixed, we would anticipate that a change in the dollar/yen exchange rate would change the dollar marginal cost of Japanese steel production by less than 3/4 of the value of the dollar/yen swing, for Europe by less than 2/3. For this energy-intensive basic industry, there is good reason to anticipate that exchange-rate pass through would be less than one for one.

It is likely that all of these factors have contributed at least to some extent to the stability of U.S. import prices in the face of a steadily declining dollar. The problem for analysts is not a scarcity of explanations but that the recent behavior of import prices represents something of a break with the past. These same explanations presumably applied in previous periods of dollar fluctuation. Yet standard equations which successfully predicted previous movements in import prices and quantities are less successful in predicting recent movements in U.S. import prices and quantities (see Krugman and Baldwin, 1987; Mann, 1986; Hooper and Mann, 1987).

Despite the relative stability of import prices, exchange rate swings can still have a pronounced impact on the export side. The textile and apparel industries provide a case in point. Exports of apparel had been increasing since 1971. But in 1982, with the dollar's rise, they dropped abrupted by a quarter. A similar phenomenon is observable in textile exports which, having risen since 1976, fell by 24 percent in 1981.[18]

1.5 Trade Policy

The competitive position of the U.S. basic industries has been significantly affected by changes in tariff and nontariff barriers to U.S. imports of competing products.

Voluntary restraint agreements with foreign textile producers first negotiated in the 1930s have been maintained ever since. The present arrangement, known as the Multifiber Agreement (MFA), was concluded as part of the 1973 GATT round of negotiations. Where previous agreements had encompassed only certain countries and products, which encouraged developing countries to shift out of the production of restrained items such as cotton textiles in favor of unrestrained man-made fibers and apparel, the MFA was designed to be comprehensive. Governments were permitted to impose unilateral import controls in the event of "market disruption" (defined as serious damage to the domestic industry) and to negotiate lower rates of import growth for items upon which domestic producers were particularly dependent. Quotas were established through the negotiation of bilateral agreements covering more than 80 percent of U.S. textile and apparel imports. For example, the MFA initially restricted the growth of textile imports from Japan to five percent annually and from Taiwan, Hong Kong, South Korea and Malaysia to 7 - 7 1/2 percent per annum. New entrants and small suppliers were treated more generously.

Increasingly, the source of U.S. textile imports has shifted from Japan and Europe to Asia, notably Hong Kong, Taiwan, South Korea and China, which currently supply about half of U.S. textile imports. This shift has been accompanied by a surge in import penetration: import growth averaged 15 percent per annum between 1981 and 1985. Several factors contributed:

the bilateral agreement with the People's Republic of China permitted quota growth of 10 percent per annum; the NICs shifted resources into the production of those few goods still not under quota; and production shifted to countries such as Sri Lanka and Mauritius for which quotas did not exist. The sharp appreciation of the dollar after 1981 heightened the incentive for foreign exporters to respond in these and other ways.

At the end of 1983, under intense industry pressure, the Reagan Administration moved to establish 300 new textile quotas and to tighten enforcement. Despite the fact that the rate of growth of textile imports fell to less than seven percent in 1985, pressure from the industry led Congress to pass a restrictive textile quota bill in 1986 and to attempt to override the President's veto, compelling the Administration to negotiate preemptive agreements with Korea, Taiwan and Hong Kong. These limited import growth to approximately one percent per annum compared to nearly nine percent from 1981 to 1984, and extended coverage to silk blends, ramie and linen, fibers into which foreign producers have moved in response to previous restrictions.

A new restraint agreement with China, now the leading supplier of textiles to the U.S., proved more difficult to conclude. Textile exports are the main source of foreign exchange earnings for the Chinese, who also may be less sensitive to U.S. political pressures than the Koreans and Taiwanese. The result of these negotiations was only announced on December 19, 1987.[19] Under the provisions of this agreement, to run from 1988 through 1991, the growth rate of China's exports will be cut to three percent from their 19 percent average that prevailed since middle of 1983.

Steel imports have been regulated in similar fashion.

A distinguishing characteristic of steel quotas is their definition in terms of market shares. European producers agreed to restrain their U.S. sales to specific shares of U.S. apparent consumption. VRAs were negotiated with other major suppliers including Japan, Mexico, Brazil and South Africa, by the end of 1985 covering some 80 percent of the U.S. market. These agreements were designed to reduce the import share of domestic sales from the 25.2 percent reached in 1985 to no more than 20.5 percent. On coming into full effect in calendar year 1986, they reduced the import share to 23.0 percent. This was a significant drop, albeit one smaller than anticipated as a result of quota-induced shifts among product categories and suppliers.

Explicit VRAs on vehicle imports are a relatively recent phenomenon. Japan first agreed to restrain car exports in the year beginning April 1, 1981 by limiting their rate of growth to 7.7 percent. The increase in Japanese exports was held at this level for two subsequent years, after which the ceiling was raised by 10 percent. Since 1985 MITI has continued to regulate automobile exports unilaterally rather than through agreements negotiated with U.S. authorities. In the fiscal year ending March 31, 1987, it restricted exports to the U.S. to 2.3 million units. In the next fiscal year the rate of decline of the dollar rendered the restraints largely redundant. The dollar's depreciation led Japanese automakers to raise their prices significantly, cutting into their sales. As of early 1988, Japanese exports were running at a rate of two million units a year, some 300,000 below restraint limits. Dealers agreed, however, to take their entire quota of passenger cars and hold them in inventory to prevent

MITI from reducing their allocation for the coming year. Ultimately, MITI agreed to retain the 2.3 million quota for another fiscal year.

Even if MITI's administrative guidance no longer affects the industry as a whole, it continues to affect individual producers. Daihatsu launched U.S. sales on December 1, 1987 with a binding quota of a mere 11,498 cars through March 31, 1988. It may be able to circumvent restrictions by exporting not from Japan but from its overseas plant in Taiwan, as may Nissan and Subaru may do likewise. Although labor cost differentials play a role, the likelihood of an increasing Taiwanese presence in the U.S. market also has been stimulated by U.S. quotas on Japanese exports and by MITI administrative guidance of the same.

Another factor contributing to the redundancy of the VRA is the growth of Japanese production on U.S. soil. Sales of Hondas, Toyotas and other Japanese vehicles assembled in North America take place partly at the expense of imports of the same brands, although whether the "crowding out" is one for one or considerably less is a matter of dispute. Donald E. Petersen, chairman of Ford, in October 1987 created a stir in Japan when he suggested that the import limit be cut by 600,000 cars for the fiscal year beginning April 1, 1988. His reasoning was that Japanese-owned plants in the U.S. would produce 1.2 million cars in that period, and since about 50 percent of their parts come from Japan they are equivalent to 600,000 imports.

Most standard rationales for protection do not provide a justification for reducing imports on the grounds that foreign suppliers have set up domestic plants. One standard, albeit controversial argument for protection is to defend industry employment because employees possess

skills that are not easily transferred to other sectors. This argument provides no grounds for additional restrictions on imports, since the growth of "transplants," as these migrant factories are called, only transfers employment among domestic auto plants. The standard infant-industry argument for protection -- that domestic automakers require only temporary protection to get up to Japanese standards -- has limited applicability to an industry now nearly a century old. The argument that the industry now requires protection to adjust to changing market conditions is undermined by the fact that it has now enjoyed such protection since 1981 and that it is already turning profits. Only the controversial national defence argument, that U.S. security necessitates U.S. automakers, and special compassion for the plight of auto company executives and shareholders would seem to justify such measures.

1.6 New Technology

In steel, the most important technological development of recent years has been the mini-mill.[20] Mini-mills use electric furnaces, in conjunction with continuous casters and a rolling mill, in contrast to integrated mills that rely traditionally on basic oxygen furnaces. In the basic oxygen furance, iron ore is charged into a furnace together with coke. (The ore may be pre-treated, either by being concentrated into pellets or by being cooked with the coke into sinter.) The blast furnace produces pig iron, which is raw iron with impurities such as excess carbon. The pig iron is poured into an oxygen converter, together with scrap, and oxygen is blown into the mixture, which removes the impurities. Finally, alloying elements are added and liquid steel is cast. In the electric arc furnace, in

contrast, steel scrap is melted, impurities are removed and liquid steel is cast all in a single step. Since most electric furnaces use scrap as their raw material, they require no equivalent of the blast furnace, so mini-mills can be constructed for a fraction of the capital cost of an integrated mill.

Mini-mill firms have additional cost advantages. Only a minority are organized by the USWA. The unionized minority pay relatively low wages and operate under more flexible work rules than their integrated competitors.[21] Most mini-mills have located in scrap-abundant areas that enjoy natural protection from integrated producers by virtue of transport costs. Most have concentrated on simple, low-value-added products such as wire rod and reinforcing bar that need not be produced to high metallurgical standards, leaving to integrated producers the flat-rolled sheet used in automobiles and appliances. Most have enjoyed, in contrast to their integrated breathran, financial success throughout the late 1970s and early 1980s. Currently mini-mills account for roughly 20 percent of domestic steel shipments (Table 4).

Increasingly, the technologies utilized by mini-mills and large integrated plants show a tendency to converge, although some such as Hogan (1987) question whether mini-mills will encroach significantly on product lines dominated by integrated firms. In January 1987, Nucor, one of the leaders of the mini-mill segment of the industry, announced plans to construct a state-of-the-art steel complex, slated for completion in 1989. Production will be based on a new technology that permits high-quality steel to be produced on a mini-mill scale, enabling that segment of the industry to produce flat-rolled steel products. The critical technological

breakthrough is a caster developed by a West German firm. The new machine employs a funnel-shaped mold (called a "tunnel furnace") which permits strip coming off the new caster to be passed directly to the strip mill, eliminating the need for slab reheating furnaces and a roughing mill and achieving a saving of capital and operating costs of at least 50 percent.[22] Since the furnace and mill are adjoining, the hot strip mill should receive slabs at a consistent temperature, facilitating the production of more consistent and higher quality steel.

Integrated producers have responded with new techniques of their own. To protect their market among the automakers, in the first half of 1986 they opened five new electrogalvanizing lines designed to provide the automobile industry with corrosion resistant, uniformly formable steel. Chrysler, for example, plans to convert most of its exterior panels from hot-dip galvanized to electrogalvanized steel during the 1988 model year.[23]

Another innovation is plasma steelmaking, which produces molten steel directly from iron ore, taking advantage of the heat intensity and chemical activity of which plasma is capable. Traditionally, the production of high purity steel requires the combination of blast furnace smelting, hot metal pretreatment, basic oxygen furnace refining and secondary refining. In contrast, plasma steelmaking produces clean steel with low phosphorus and sulfer content in a single process, in which iron ore is reduced in a plasma-state reducing gas. Metal is injected into a plasma stream of high temperature and then is melted and sprayed onto another material, imparting to it corrosion and heat resistance. The method is presently used in the production of components for jet engines, satellites and computers.

In textiles, large investments have been made in open-end spinning, automatic chute feeders, and automatic doffers. Open-end spinning increases spinning speed by at least 350 percent, eliminates the roving and winding processes (reducing the number of steps involved in manufacturing some types of yarn from 15 to 3), and offers improved yarn quality and uniformity. The spread of the shuttleless loom also has accelerated in recent years. Not only do they operate at three times the speed of traditional looms, but shuttleless looms can produce seven to eight times the fabric because they weave wider widths. The are safer and quieter, better satisfying OSHA regulations (which may have provided additional impetus for modernization by the U.S. industry). On the other hand, they are less versatile than ring spindles, which permit the direction of twisting to be freely changed and can utilize woollen and worsted as well as dry flax materials. In 1984 one third of weaving machines in operation in the U.S. were shuttleless.[24]

Textile finishing has benefitted from increasing printing speeds as a result of improvements in automatic rotary screen printing. New machines are able to print a wider variety of color combinations. Automatic control and computer systems have been applied to dyeing, patterning and other finishing operations, reducing labor costs and improving quality.

In apparel, where the vast majority of value added continues to derive from painstakingly labor-intensive processes, technological progress has proceeded more slowly. 90 percent of value added in clothing is formed by sewing, which remains essentially a batch process with much manual time devoted to material handling. Although sewing machine speeds have been increased by 50 percent over the last two decades, machine operation

accounts for under a quarter of an operative's time.[25] Advances with more scope for reducing labor costs include work-space management systems and technology such as laser cutting and computer-assisted pocket setting and stitching systems. Computer-aided garment design is increasingly prevalent. Manufacturers are also enthusiastic about the potential offered by computer-based marketing systems. Terminals already link retail outlets directly with textile mills and apparel manufacturers, cutting time between order and delivery and reducing inventory carrying costs.

The automakers continue to pursue both process and product innovations. Process innovations include efforts to reduce the number of stamping operations required per part. The cost of shaping and assembling a car frame is fully $400 lower in Japan than in the United States due both to the greater thickness of body panels on U.S. cars and to their more complicated design. Body panels on Japanese cars are typically 3 to 4 inches thick and must be stamped 4 or 5 times to be formed. U.S. outer panels are typically 5 to 8 inches thick and require 8 or more presses. Increasingly, U.S. automakers are paying attention to the process-driven design in their attempt to reduce stamping and assembly costs.[26]

Three representative product innovations are the antilock brake, GM's Quad 4 engine and the continuously variable transmission. As part of the antilock braking system, a microprocessor under the dash is linked to sensors in each wheel. When the brakes lock, the computer automatically pumps the brakes, up to 14 times per second, so that the wheels retain traction and stop the car in a straight line. For two years this system has been standard on most BMW and Mercedes models and on Ford's luxury

line. As an option, antilock brakes add from $900 to $1500 to the retail price of the vehicle.[27]

The continuously variable transmission (CVT) is actually a new variant of a technology utilized in Europe as early as 1955. It dispenses with the gearing steps used in automatic transmissions, substituting a metal belt connecting two pulleys, one attached to the engine, the other to the drive shaft. The pulleys achieve the same effects as gears by changing their size. This device promises to reduce fuel consumption by as much as 15 percent by permitting the engine to operate within its most efficient range and offers more rapid acceleration than conventional transmissions. Unlike the CVTs sold in Europe by DAF, those utilized by Ford, Fiat and Subaru employ metal rather than rubber belts. Currently, the technology is feasible only for use on subcompacts; the problem for automakers is how to build CVT transmissions hefty enough for use on larger cars.[28]

The Quad 4 engine developed by GM uses computer technology to increase the power output of the four cylinder engine.[29] Dispensing with the distributor and spark plug wires, its dedicated computer triggers a small electrical coil atop each plug, calculating the timing using data transmitted from a sensor on the crankshaft. The individual coils permit precise firing, high voltages and hence greater-than-conventional power out. GM has built a Quad 4 plant near Lansing, Michigan, designed to produce 1,000 of the engines daily by the beginning of 1988. At the time of writing the engine will be available in 1988 as an option on three of GM's larger cars.

1.7 Joint Ventures and Migrant Firms

The prevalence of joint ventures with foreign corporations and of production on American soil by foreign basic-industry firms has increased significantly in recent years. Through joint ventures, U.S. firms acquire knowledge of foreign technologies and labor-management techniques; through joint ventures and solely-owned subsidiaries, their foreign counterparts gain a U.S. presence as a hedge against currency fluctuations and protectionist threats.

The trend has been most visible in the automotive industry. Mazda recently joined Honda, Nissan and Toyota in producing cars in the United States. Toyota's highly successful joint venture with GM in Fremont, California was analyzed in Section 1.3 above. Another Toyota plant is scheduled to commence production in 1988, while two more Japanese plants and a Chrysler-Mitsubishi joint venture are in the development stage in the U.S., with four Japanese and South Korean plants planned or under construction in Canada. Ford and Nissan are exploring the possibility of joint production at Ford's Avon Lake, Ohio plant. By 1990, according to industry estimates, these plants will have a combined capacity of more than 2 million units.[30]

In textiles, the predominant form of joint ventures is foreign production by U.S. manufacturers. Joint ventures (as well as manufacturer-owned plants abroad) are seen as an alternative to the traditional practice of subcontracting production to foreign firms as a way of capitalizing on lower foreign labor costs. The advantages of joint ventures and wholly-owned subsidiaries accrue in the form of enhanced quality control. The practice is utilized for unskilled and semi-skilled labor-intensive

operations as carried out by U.S. corporate subsidiaries operating in Mexico, for example. So far, this practice is largely limited to nontraditional firms such as Calvin Klein, Ralph Lauren and other brand names. The share of their product mix accounted for by imports is expected to reach 35 percent by the mid-1990s.

Over the last four years, a number of Japanese steel producers have acquired stakes in U.S. integrated steel sector. Recently, they have been joined by the Koreans. A U.S. steel mill in Pittsburg, California is now partially owned by the Korean-backed USS-Posco Industries. The rebuilt plant will utilize technology from Pohang Iron and Steel Company, Ltd., the Korean corporation that has jointly owned the plant with USX since April 1986. In addition, foreign owners have held a controlling interest in at least ten U.S.-based mini-mills. Many of these investments promise to pay handsomely now that U.S. production costs have fallen relative to those in Japan. Yet as of 1987 only half a dozen mini-mills remained under the control of foreign interests. In a number of cases foreign owners had difficulty in exporting offshore management styles to the U.S. In others it is argued that they simply paid too little attention to their relatively modest American holdings.[31]

2. EVALUATING THE EFFECTS OF U.S. FISCAL POLICY

The previous section identified a number of factors that have influenced the performance of the basic industries in this decade. In this section, we attempt to assess the significance of one of these factors: U.S. fiscal policy. To do this, we employ a computable general equilibrium (CGE) model that captures the responses of U.S. industries to changes in

government policy and other economic conditions. We begin with a brief description of the structure of the model; technical details may be found in Goulder and Eichengreen (1988). We then report simulation experiments designed to isolate the effects of changes in government spending and taxes since 1980.

The model distinguishes ten U.S. sectors: agriculture and mining, crude petroleum and refining, construction, the textile and apparel complex, metals, machinery, motor vehicles, miscellaneous manufacturing, services and housing. This disaggregation permits us to address a number of issues central to the current debate over U.S. competitiveness: the effects of restrictions on agricultural trade; of import penetration in textiles, steel and automobiles; and of increased trade in services. Goods produced by each of these industries are treated as imperfect substitutes for goods produced by their foreign competitors; hence changes in the relative prices of domestic and foreign goods lead to shifts in demand.

Firms combine the cost-minimizing levels of labor and intermediate inputs with the existing capital stock to produce output. Industry capital stocks change from year to year as a result of firms' investment decisions. Intermediate inputs can be obtained both at home and abroad, and firms seeking to minimize costs alter the mix of domestic and imported intermediates utilized when relative prices change. Intersectoral transactions are tracked through the use of a U.S. input-output table.

Managers pursue investment strategies aimed at maximizing the value of the firm (equivalently, the present value of after-tax dividends less the present value of new equity issues). In making investment decisions, managers are concerned not just with current profitability but with

expected future profits as well; hence they must formulate forecasts of the future. To insure that they adopt intelligent (and model-consistent) forecasts, we impose the rational-expectations assumption. Because rapid investment is costly (reflecting not just costs of purchasing equipment but of disrupting production while new equipment is installed), it proceeds gradually until the new desired capital intensity is achieved. The explicit treatment of forward-looking investment decisions distinguishes this model from other CGE models.

Households also behave in a sophisticated forward-looking fashion. Their objective is to choose paths of consumption and of financial holdings that maximize utility. Utility is a function of consumption now and in the future, and is maximized subject to an intertemporal budget constraint. Financial wealth is the means of carrying over purchasing power from year to year. If, for example, households anticipate that their income will rise in the future, they increase their consumption now, since they wish to smooth the profile of consumption over time; to do so they run down their savings or borrow now and repay in the future out of their then higher incomes, respecting the intertemporal budget constraint. A distinguishing feature of our model is that liabilities of firms and assets of households are treated in a consistent fashion. If firms issue debt or equity to finance investment, that same debt or equity must be willingly held by households. The accounting identity linking the corporate and household sectors is an explicit feature of our model.

Overall consumption by households is divided into 17 individual categories of consumption goods produced by our ten industries. Households first decide on the shares of those 17 categories in their total

consumption (as a function of relative prices); they then divide their spending within categories between domestic and imported goods (again, as a function of relative prices). Households face a similar allocation problem on the financial side: they must choose the shares of their portfolios allocated to assets issued by domestic and foreign firms. They are assumed to shift the composition of their portfolios toward assets offering relatively high rates of return but to resist placing too much of their wealth in any one asset because of the risk this implies. Interest rates and stock prices adjust so that the existing stock of assets is willingly held.

The government sector in the model has three functions: collecting taxes, distributing transfers, and purchasing goods and services. Transfers and purchases are specified as fixed shares of overall spending, with purchases allocated to specific producer goods according to fixed expenditure shares. The model specifies each of the major taxes in the United States and provides special detail on provisions of the tax code likely to influence investment, such as profits taxes, investment tax credits and capital gains taxes. Like households, the government faces an intertemporal budget constraint. If the government runs a deficit in a given year, it must pay interest on the additional debt as long as it remains outstanding. In the long run the government is obliged to bring in sufficient tax revenues (relative to spending) to restore the debt-GNP to "traditional" levels.

Along with this detailed treatment of the domestic economy, there is a simpler treatment of the foreign economy. Foreign industry produces the same types of goods as does domestic industry. Changes in foreign

production costs are reflected in the prices of foreign goods. The foreign government performs the same functions and has the same tax instruments as the domestic government. Foreign consumers demand the same goods as U.S. consumers, their utility-maximizing behavior serving as the source of foreign demands for U.S. exports. Like domestic households, foreign households divide their portolios into shares comprised of claims on U.S. firms and claims on firms in their countries of residence. Investors are assumed to display "home-country preference"; that is, foreigners prefer to hold most of their wealth in the form of non-dollar assets, while U.S. residents hold most of their wealth in dollar assets.

A distinguishing feature of our model is its treatment of the balance of payments. Previous CGE models which recognize the existence of international transactions focus exclusively on the balance of trade. In contrast, our model provides an integrated treatment of the current and capital accounts of the balance of payments. The current account equals the trade balance (the difference between exports and imports) plus the flow of interest payments on the (endogenously determined) value of U.S. foreign investments net of payments to foreign owners of U.S. assets. The capital account of the balance of payments is derived from the flow demands of domestic residents for additional foreign assets for their portfolios, net of sales of domestic assets demanded by foreign residents for addition to their portfolios. The current and capital accounts must sum to zero by the balance of payments identity; the exchange rate, interest rates, and prices adjust to insure that this identity is respected. As the experience of recent years has revealed, the effects of government policies can be very different depending on the degree of international capital mobility;

our model permits those effects to be estimated under different assumptions about the responsiveness of capital flows.

With its attention to adjustment dynamics, the model is capable of contrasting the short- and long-run effects of changes in economic conditions. Short- and long-run responses differ because firms adjust their capital stocks gradually over time in response to changes in the incentive to invest, while households accumulate or dispose of assets gradually in response to changes in the incentive to save. Many recent debates about the relationship of exchange rates to international competitiveness focus on issues of dynamics; a prominent example is whether the trade balance follows a J curve in response to exchange rate depreciation, worsening initially but strengthening subsequently. With its explicit treatment of the dynamics of adjustment in both corporate and household sectors, our model is capable of addressing such questions.

2.2 Simulation Results

Beginning in 1981, the U.S. government introduced several significant changes in fiscal policy. Table 5 displays Federal spending, receipts, and budget deficits over the period 1980-1986. In 1980, total Federal expenditure (government purchases, transfers, and interest payments) was approximately 22.5 percent of GNP. Since that time, Federal expenditure has increased as a percentage of GNP, reaching 24.7 percent in 1982 and subsequently remaining above 23.8 percent.[32] On the tax side, the Economic Recovery Tax Act of 1981 (ERTA) and the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) introduced important changes in effective tax rates. Important provisions of these measures included the

implementation of accelerated depreciation provisions (by reducing the tax lives of depreciable assets) and the reduction in marginal tax rates on individual incomes. From Table 5 it is clear that these changes were followed by a decline in tax revenues as a percentage of GNP, although the specific contribution of tax revisions to the observed changes in revenues remains a matter of some debate. During the period 1980-1986, the fraction of GNP represented by Federal receipts fell from 20.3 to 19.6 percent. Together, the increases in spending and the reductions in revenues (relative to GNP) produced the substantial increases in Federal budget deficits that have gained such notoriety in recent years.

How did these changes affect the basic industries? To answer this question, we simulate the U.S. economy under two general sets of conditions. In the first, or base case, simulation, we consider a scenario with no post-1980 changes in fiscal policy, and all tax rates and spending shares at 1980 levels. In the second, or revised case, simulation, we implement the historical changes in U.S. fiscal policy by setting Federal spending shares equal to the values given in Table 5 and altering statutory tax rates (effective rates of tax depreciation and marginal tax rates on individual income) to conform to the 1981-82 ERTA and TEFRA revisions.[33] By comparing the base and revised cases, we are able to isolate the influence exorted by the changes in fiscal policy of the early 1980s.

Since the behavior of producers and households is forward-looking, to perform simulations we need to specify future as well as current fiscal policies. In the base case simulation, 1980 tax rates and spending shares are assumed to continue to prevail indefinitely. In revised case simulations, we assume on the tax side that there are no further changes in

tax rates after 1986 (thus, these experiments do not incorporate the Tax Reform Act of 1986 or potential future tax policy changes); we assume on the spending side that Federal spending's share of GNP is gradually reduced to its 1980 value (22.51 percent). The revised case simulations actually distinguish three scenarios that differ in the number of years assumed to be required to reduce the government spending share of GNP to 1980 levels. The "fast," "moderate," and "slow" spending- reduction scenarios assume that the government spending share is restored to its 1980 value by 1990, 1992, and 1996, respectively.

Results appear in Tables 6-9. Table 6 summarizes the effects of the fiscal initiatives on the macroeconomy. Whatever the assumption about future spending reductions, the fiscal expansion implies relatively small increases in the value of the dollar (as measured by the changes in the nominal exchange rate) -- much smaller than the increase that occurred over the period 1980-1985. The implication -- that much of the explanation for the rise and fall of the dollar since 1980 lies beyond the realm of U.S. tax and spending policies narrowly defined -- is similarly the conclusion of most other studies of recent exchange rate fluctuations. As noted in Section 1.4 above, there is no shortage of supplementary explanations: the shift toward tight monetary policy that accompanied fiscal expansion in the United States, tight fiscal policies in other OECD countries, safe haven demands for dollar-denominated assets, and the possibility of a speculative bubble. What is striking about our results is how little of the dollar's post-1980 rise and fall is replicated in simulations which incorporate only the changes in domestic fiscal policy. It is important to interpret these results cautiously, since many of the specific features of our model work

to minimize the aggregate effects of fiscal policy. We assume throughout that markets clear in both the short and long run and that investors accurately anticipate the higher taxes or lower spending levels that ultimately will be required to balance the budget. Appending wage and price rigidities that interfere with continuous market clearing or positing that consumers and producers act myopically would tend to magnify the effects of fiscal policies.

Since our fiscal policy simulations replicate only a small share of the observed rise and fall of the dollar, it is not surprising that they account for only a portion of historical movements in other macroeconomic variables. Importantly, however, all of the simulated variables move in directions consistent with their actual behavior.

Table 6 summarizes the effects of the fiscal expansion on consumption, investment, exports and imports. Over most of the '80s, budget deficits absorb a significant portion of domestic saving and crowd out aggregate investment; in the 1990s, as spending and deficits are reduced to "normal" levels, investment recovers, however. In the long run, investment actually rises above base case levels (the levels that would have occurred if there had been no change in fiscal policy), reflecting the supply-side orientation of the 1981-1982 changes in tax policy. (Both the accelerated depreciation provisions and the reductions in marginal tax rates promote higher saving and investment.) But in the short run, these stimuli are more than offset by the crowding-out effects of higher Federal spending.

In keeping with the modest effects on the exchange rate, the effects on import and export values (and quantities) are relatively small. In the short run, the rise in the dollar depresses exports and stimulates imports.

Although many observers claim that U.S. budget deficits are at the heart of the trade deficit problem, these results suggest that the deficits themselves played at most a supporting role.

Table 7 highlights the impact of the fiscal policy changes on specific industries. These impacts differ substantially. While profits, employment, and output fall in the short run in a number of industries, in the construction, metals, and machinery industries, each of these variables rises (relative to the base case). These increases stem from the fact that a very large share of incremental government spending is devoted to purchases of goods from these three industries, as indicated by Table 8.

Table 7 also reveals significant differences across industries in effects on investment. Although aggregate private investment falls (as indicated in Table 6) in the short run, in a majority of industries investment rises (relative to the base case). The negative effects on investment are largest in the housing services industry. This is the case for three reasons. First, the performance of this industry is highly sensitive to interest rate changes, since the debt-equity ratio in this industry is especially high and a large fraction of investment in new housing capital is financed by debt. As a result, the increase in interest rates occasioned by higher budget deficits particularly hurts the housing industry. Second, the 1981 and 1982 cuts in individual income tax rates hurt housing in relation to other industries. The imputed rental income to owner-occupied housing is not subject to individual income tax; thus, the tax cuts mainly increase the attractiveness of owning non-housing assets by lowering the tax on the capital income that they generate. Finally, the changes in depreciation rules over the period 1981-85 apply mainly to

incorporated industries; since only a small fraction (less than three percent) of housing is corporation-owned, these changes principally benefit non-housing industries.

The reduced overall rate of investment helps explain the cutback in investment by the construction industry, since this industry supplies a large proportion of new capital. Investment rises substantially in the metals and machinery industries, in part reflecting the fact that large shares of the increase in government spending are devoted to these industries.

These results indicate that, in the short run, changes in U.S. fiscal policy during the first half of this decade generally had adverse effects on the basic industries. While the steel industry seems to have benefited, the textile and apparel complex and the auto industry were not helped.

The long-term implications of these fiscal revisions differ dramatically from their short-term effects. Consider, for example, the results in Table 9 for the year 2000 under the moderate spending reduction scenario. While output falls in the short run in most industries, in the long term it rises (relative to the base case) in all industries except metals, machinery, and housing services. The metals and machinery industries, which experienced boosts in output in the short run, have lower output in the long run. These differences reflect the components of fiscal policy that dominate industry performance in the short and long run. In the short run, in industries other than housing the changes in industry performance are dominated by the allocation of government spending. In the long run, government spending returns to its "normal" relationship to GNP, and only the tax side of fiscal policy differs from the base case. The

changes in depreciation rules, in particular, are significant in the long run. The petroleum and refining industry, which enjoys the most favorable changes in depreciation rules, exhibits the largest long-term increase in output. In the metals and machinery industries, the changes in depreciation rules are modest, and long-run output falls.

In the long run, investment (as opposed to output) rises in all industries except housing. The long-run increases in investment reflect the incentives associated with lower marginal tax rates and accelerated depreciation and parallel the aggregate investment results discussed previously. The long-run decline in housing investment is explained by the same tax features as those mentioned in the context of the short-term decline in housing investment: the exclusion of imputed housing rentals from the individual income tax, and the irrelevance to housing of the 1982-85 changes in depreciation rules.

In assessing these results -- especially the long-term impacts -- it is important to keep in mind that our experiments do not capture the effects of the Tax Reform Act of 1986. To assess the overall long-term consequences of all fiscal policy changes since 1980, one would need to perform simulations that incorporate not only the 1981-86 changes but also the effects of the new tax law. While this is beyond the scope of the present paper, a simulation study by Goulder and Summers (1987) indicates that the 1986 legislation is likely to have detrimental long-term consequences for investment, profit levels, and output in most industries. This suggests that the long-term effects shown in Tables 6 and 9 may be more favorable than what would emerge once the 1986 tax legislation is taken into account.

As indicated above, the effects of the post-1980 changes in fiscal policy can be decomposed into those stemming from tax and spending changes. To separate out these effects, we perform an additional simulation which incorporates only the changes in government spending. Table 9 compares the aggregate effects of this counterfactual experiment with the effects from a simulation in which both tax and spending changes are included. The differences are relatively small in the short term but quite large in the longer term, reinforcing the idea that the changes in tax policy introduced in 1981 and 1982 have their most pronounced effects in the long run. Similar conclusions emerge for particular industries. The last (fourth) set of rows in Table 7 contains results from this counterfactual, spending-changes-only simulation. The spending changes in this simulation are the same as those in second (moderate spending reduction) historical simulation. That the results from these simulations are fairly similar in the short term but very different in the long term further substantiates the notion that the tax changes have their most significant effects in the long run.

To test the robustness of these results, we perform additional experiments under alternative assumptions about international capital mobility and behavioral parameters. These experiments indicate that the pattern of results is essentially the same in the absence of international capital mobility and under alternative assumptions about the sensitivity of investment to interest rate changes. Results from these experiments are displayed in the appendix.

Three general conclusions emerge from these simulations. First, the post-1980 changes in U.S. fiscal policy produce small impacts on aggregate

economic variables and on specific U.S. industries relative to what has been observed during this decade. Fiscal policy alone cannot explain the magnitude of the swings in the value of the dollar since 1981; nor is it sufficient to account for the significant changes in the performance of the basic industries. Second, in the short term, the most significant effects from fiscal policy stem from changes on the spending side -- in particular, the allocation across industries of the increases in government purchases. Most of the basic industries -- textiles, apparel, leather, motor vehicles -- were adversely affected in the short term, because the reduction in demand from reduced private consumption and investment (crowded out by government spending) was not compensated for by increased government purchases. Only the steel industry enjoyed a net benefit in the short run, since it was the recipient of a disproportionate share of increased government purchases. Finally, the long-term effects of the policy initiatives are very different from their short-term effects, both in the aggregate and at the industry level. Once government spending is restored to its traditional relationship to GNP, this dimension of fiscal policy ceases to have a significant influence on economic performance. The tax side dominates. Our simulation results indicate that tax changes legislated early in this decade will generally favor profits, investment, and output of the U.S. basic industries over the long term.

2.3 Conclusions

In this paper we have provided a broad overview of factors affecting the international competitiveness of U.S. basic industries, followed by a simulation analysis designed to pinpoint the role of U.S. fiscal policy in those industries' changing competitive fortunes. Part I of the paper identified a variety of factors affecting industrial competitiveness, including but not limited to fiscal policy changes. These include changes in the intensity of competition abroad, changes in spending patterns at home, changes in the cost and organization of labor, investment in plant and equipment, and the facility with which basic industry firms develop and implement product and process innovations. Part II of the paper confirmed that domestic tax and government spending policies provide a part, but only a part, of the explanation for recent swings in the competitive position of the U.S. auto, steel, textile and apparel sectors.

It is noteworthy that only a modest rise and fall of the dollar is generated when we use our model to simulate the effects of U.S. tax and spending policies. A number of factors contribute to this result. First, fiscal policies worked through a number of channels, such as market imperfections and myopic decision rules, not featured in our model. Second, fiscal policies surely interacted with other developments contributing to the fluctuation of the dollar, including domestic monetary policies, foreign tax and spending policies, and speculative bubbles in asset markets. Finally, the long-term impact of the 1981-82 tax law revisions is influenced by other subsequent tax reforms -- most notably, the Tax Reform Act of 1986. A full treatment of the effects of fiscal policies in the 1980s will require closer attention to these factors.

FOOTNOTES

1. For sources of statistics not otherwise cited in this paper, see Eichengreen (1988). Part I of this paper represents an update of that earlier article.

2. The cost of production estimates for steel are by Peter F. Marcus. See "U.S. Steel Mills Could Stage a Major Comeback," Boston Globe, December 22, 1987, p.48. Similarly, an early 1988 report issued by the U.S. International Trade Commission concluded that the U.S. steel sheet and strip industry is currently one of the most cost competitive among the major industrial countries.

3. National Institute of Economic and Social Research, press release, June 1987.

4. Labor productivity in Figure 3 is product per worker, the ratio of output as measured in Figure 1 relative to employment as measured in Figure 2.

5. Iron Age, July 4, 1986, p.13.

6. In addition, in 1986 Ford began exporting the Mercury Tracer from its Hermosillo, Mexico plant.

7. "U.S. Steel Mills Could Stage a Major Comeback," Boston Globe, December 22, 1987, p. 48. 33 Metal Producing (March 1988) p.15

8. In announcing 1987 results, USX announced that $28 million would be paid out in profit sharing on April, 15, 1988. 33 Metal Producing (February 1988), p. 15.

9. For details, see Krafcik (1986).

10. Iron Age, March 1987, p.45; 33 Metal Producing (June 1988),.p. 16.

11. San Francisco Chronicle, 31 August 1987; Forbes, September 7, 1987, p.82.

12. Katz et al. (1987), pp. 2-3.

13. For our purposes, the first measure is more appropriate; while the second conveys information on the amount of "unproductive" labor needed to monitor the production process, it tells us only indirectly about total labor productivity.

14. There is evidence as well that wage concessions are most readily obtained in plants where labor relations are least adversarial and worker participation in decision making is greatest. See Kaufman and Martinez-Vasquez.

15. Precise estimates differ. 5.2 per cent is that of the WEFA Group, a Philadelphia-based consulting firm, cited in New York Times, January 13, 1988.

16. More recently, adjustment against the Taiwan dollar and Korean won has begun, as the two appreciated against the U.S. dollar by 14 and 6 percent, respectively, between January and August 1987.

17. See Krugman (1987) for theoretical analyses of this phenomenon.

18. Ghadar et al. (1987), p. 5.

19. "U.S. and China Agree to Curb Textile Imports," New York Times, December 20, 1987, p. 12.

20. See Barnett and Crandall (1986) for further discussion.

21. Settogan (1987).

22. 33 Metal Producing, February 1987, p. 25. Another estimate put the saving at $75 a ton saving over conventional hot band processiong (Iron Age, March 1987, p. 30).

23. Iron Age, July 4, 1986, p. 44.

24. Ghadar, et al. (1987), pp. 74-75.

25. Cable and Baker (1983), pp. 32-33.

26. Iron Age, April 1987, p. 29.

27. Forbes, February 9, 1987, p. 116.

28. Forbes, June 15, 1987, pp. 236-237.

29. The Quad 4 is only one of several engine advances currently under consideration by U.S. automakers. Also noteoworthy is the stratified-charge 2-stroke engine licenced by Ford from Australia. Automotive News (July 4, 1988), p. 1.

30. Womack (1987), p. 108.

31. 33 Metals Processing, February 1987, pp. 33-36.

32. The ratio of Federal expenditure to full employment GNP provides a better indicator of the scope of Federal spending. This ratio shows a similar trend since 1981.

33. The effective rates of tax depreciation were obtained using information from Fullerton and Lyon (1988). Tax rates on individual labor and capital income were obtained from the National Bureau of Economic Research TAXSIM data base.

References

Barnett, Donald and Robert Crandell (1986), Up from the Ashes, Washington, DC: The Brookings Institution.

Cable, Vincent and Betsy Baker (1983), World Textile Trade and Production Trends, London: The Economist.

Cox, W. Michael (1986), "A New Alternative Trade-Weighted Dollar Exchange Rate Index," Economic Review of the Federal Reserve Bank of Dallas (September), pp.20-28.

Eichengreen, Barry (1988), "International Competition in the Products of U.S. Basic Industries," in Martin Feldstein (ed.), The Changing Role of the United States in the World Economy, Chicago: University of Chicago Press, pp. 279-353.

Feldstein, Martin and Philippe Bachetta (1987), "How Far Has the Dollar Really Fallen?", National Bureau of Economic Research, Working Paper No. 2122.

Frankel, Jeffrey and Kenneth Froot (1987), "The Dollar as a Speculative Bubble: A Tale of Fundamentalists and Chartists," Marcus Wallenberg Papers in International Economics 1, No. 1.

Fullerton, D., and A. Lyon (1988), "Tax Neutrality and Intangible Capital," in L. Summers, ed., Tax Policy and the Economy 2, National Bureau of Economic Research.

General Agreement on Tariffs and Trade (1984), Textiles and Clothing in the World Economy: Appendices I-IV, Geneva: GATT.

Ghadar, Fariborz, William Davidson and Charles Feigenoff (1987), U.S. Industrial Competitiveness: The Case of the Textile and Apparel Industries, Cambridge: Lexington Books.

Goulder, Lawrence and Barry Eichengreen (1988), "Savings Promotion, Investment Promotion and International Competitiveness," in Rob Feenstra (ed.), Exchange Rate and Trade Policies for International Competitiveness, Chicago: University of Chicago Press (forthcoming).

Hogan, William T. (1987), Mini-Mills and Integrated Mills: A Comparison of Steelmaking in the United States, Lexington: Lexington Books.

Hooper, Peter and Catherine Mann (1987), "The U.S. External Deficit: Its Causes and Persistence," paper presented to the Conference on the U.S. Trade Deficit: Causes, Consequences and Cures, Federal Reserve Bank of St. Louis, St. Louis, Mo.

International Textile Manufacturers Federation (1985), 1985 International Production Cost Comparison: Spinning and Weaving, Zurich: ITMF.

Katz, Harry C., Tomas A. Kochan and Jeffrey Keefe (1987), "Industrial Relations and Productivity in the U.S. Automotive Industry," Brookings Papers on Economic Activity, pp. 685-715.

Kaufman, Bruce E. and Jorge Martinez-Vazquez (1988), "Voting for Wage Concessions: The Case of the 1982 GM-UAW Negotiations," Industrial and Labor Relations Review 41, pp. 183-194.

Krafcik, John F. (1986), "Learning from NUMMI," unpublished manuscript, International Motor Vehicle Program, MIT, September 1986.

Krugman, Paul (1987), "Pricing to Market When the Exchange Rate Changes," in Sven Arndt and J. David Richardson, eds., Real-Financial Linkages in Open Economies, Cambridge: MIT Press.

Krugman, Paul and Richard E. Baldwin (1987), "The Persistence of the U.S. Trade Deficit," Brookings Papers on Economic Activity, pp.1-55.

Mann, Catherin L. (1986). "Prices, Profit Margins and Exchange Rates," Federal Reserve Bulletin 72 (June), pp. 366-379.

Mueller, Hans (1985), "The Changing U.S. Position in the International Steel Market: Output, Trade and Performance," in Milton Hochmuth and William Davidson, eds., Revitalizing American Industry, Cambridge: Ballinger, pp. 213-262.

Womack, James P. (1987), "Prospects for the U.S. Japanese Relationship in the Motor Vehicle Sector," in Cathryn L. Thorp et al., The United States and Mexico: Face to Face with New Technology, Washington, DC: Overseas Development Council.

Table 1

U.S. Imports of Passenger Cars by Country of Origin, 1965-85

Year	Belgium	Canada	France	West Germany	Italy	Japan	Sweden	United Kingdom	Others	Total Imports[a]
1986	0.2	24.8	0.2	9.6	0.2	55.8	3.2	0.6	5.3	4,691,297
1985	0.2	26.0	0.9	10.8	0.2	57.5	3.2	0.6	0.5	4,394,908
1984	0.2	22.0	5.5	8.2	0.2	55.1	2.4	0.6	5.9	4,879,560
1983	0.1	22.8	5.8	9.0	0.1	57.6	3.0	1.5	0.1	3,667,023
1982	0.1	22.9	2.9	11.0	0.3	59.4	2.5	0.4	0.1	3,066,992
1981	0.1	18.8	1.4	12.6	0.7	63.7	2.3	0.4	0.1	2,998,561
1980	0.1	18.3	1.5	14.5	1.4	61.3	1.9	1.0	0.1	3,248,266
1979	0.1	22.5	0.9	16.4	2.4	53.8	2.2	1.6	0.1	3,005,523
1975	1.8	35.4	0.8	17.8	4.9	33.5	2.5	3.2	0.1	2,074,653
1970	2.5	34.4	1.8	33.5	2.1	18.9	2.9	3.8	0.1	2,013,420
1965	0.1	5.2	4.5	67.3	1.7	4.6	4.6	11.9	0.1	559,430

Note: Percentages may not add to 100 due to rounding.

[a]Number of vehicles.

Source: Calculated from Motor Vehicle Manufacturers Association, MVMA Facts and Figures, 1985

Table 2

Relative Unit Labor Cost Indices in Dollar Terms (U.S.=100)

	1980	1984	1986	1987*
US	100.0	100.0	100.0	100.0
Japan	89.1	83.3	121.6	142.4
W. Germany	141.3	88.7	161.7	193.3
France	137.0	86.0	110.0	118.2
Italy	134.8	100.8	136.7	153.9
UK	217.3	135.1	166.6	185.1

* 1987 calculated as 1986 unit labor costs updated with 1987 currency values as of June 10, 1987.

Source: National Institute of Economic and Social Research, press release, June 1987.

Table 3

International Comparison of Input Costs, Steel, 1982
(in dollars)

	Labor	Coking Coal & Iron Ore	Energy	Total	Diff. from US
US	234	103	72	409	0
EEC	113	100	62	275	-134
Japan	85	90	64	239	-170
Brazil	80	95	65	240	-169
S. Korea	37	90	66	193	-216

Source: Mueller (1985).

Table 4

U.S. Domestic Consumption: Steel Mill Products
(Million Tons)

	1972	1977	1982	1987
GNP (Bil 1982$)	2,560	2,959	3,166	3,788
M Tons/Bil 1982$	41.6	36.6	24.2	24.9
Total Steel Mill Product Consumption	106.5	108.4	76.6	94.5
Integrated Mill Shipments	82.7	80.9	50.1	57.4
Mini-Mill Shipments	5.6	8.2	9.1	16.4
Domestic Shipments	88.3	89.1	59.2	73.8
Imports	18.2	19.3	17.4	20.7
Total	106.5	108.4	76.6	94.5
MARKET SHARES (%)				
Integrated MIlls	77.6	74.6	65.4	60.7
Mini-Mills	5.3	7.6	11.9	17.4
Domestic Shipments	82.9	82.2	77.3	78.1
Imports	17.1	17.8	22.7	21.9
Total	100.0	100.0	100.0	100.0

Source: "Steel Markets and Mini-Mills", Study 3301, by Milos Markovic, Leading Edge Reports, Cleveland. Cited in 33 Metal Producing (March 1988), p. 21.

Table 5

Federal Expenditures, Receipts, and Deficits, 1980-86*

Year	GNP	Expenditures		Receipts		Deficit	
1980	2732.0	615.1	(22.51)	553.8	(20.27)	61.3	(2.24)
1981	3052.6	703.3	(23.04)	639.5	(20.95)	63.8	(2.09)
1982	3166.0	781.2	(24.67)	635.3	(20.07)	145.9	(4.61)
1983	3405.7	835.9	(24.54)	659.9	(19.38)	176.0	(5.17)
1984	3765.0	896.5	(23.81)	726.5	(19.30)	170.0	(4.52)
1985	1998.1	984.9	(24.63)	786.8	(19.68)	198.0	(4.95)
1986	4208.5	1030.2	(24.48)	826.2	(19.63)	204.0	(4.85)

* All values are in billions of current dollars. Figures in parentheses express the values as percentages of GNP. Source of all data is Economic Report of the President, January 1987.

Table 6

Implications of Fiscal Policy Changes for Aggregate Economic Variables
(percentage changes from base case)

	Exchange Rate			Consumption			Investment			Exports			Imports		
Scenario:*	F	M	S	F	M	S	F	M	S	F	M	S	F	M	S
YEAR															
1981	0.58	0.59	0.65	-2.65	-2.69	-2.62	-3.54	-3.51	-3.63	-0.09	-0.09	-0.16	0.37	0.37	0.35
1982	2.51	2.48	2.54	-3.50	-3.52	-3.46	-2.17	-2.16	-2.23	-1.97	-1.94	-2.01	0.68	0.67	0.70
1983	1.91	1.88	1.92	-3.05	-3.08	-3.03	-2.24	-2.23	-2.33	-1.49	-1.45	-1.50	0.37	0.36	0.38
1984	1.11	1.08	1.10	-2.44	-2.48	-2.44	-2.04	-2.04	-2.16	-0.83	-0.79	-0.82	0.03	0.01	0.01
1985	0.33	0.32	0.30	-1.77	-1.82	-1.81	-1.63	-1.66	-1.81	-0.19	-0.16	-0.16	-0.27	-0.29	-0.30
1986	-0.67	-0.65	-0.68	-0.92	-1.00	-1.02	-2.13	-2.21	-2.43	0.70	0.70	0.71	-0.76	-0.77	-0.80
1987	-1.21	-1.11	-1.12	-0.32	-0.44	-0.52	-1.49	-1.65	-1.96	1.10	1.03	1.03	-0.90	-0.90	-0.93
1988	-1.70	-1.44	-1.36	0.28	0.07	-0.09	-0.71	-1.05	-1.50	1.50	1.26	1.18	-1.00	-0.95	-0.97
1989	-2.34	-1.70	-1.39	0.95	0.56	0.25	0.29	-0.37	-1.11	2.08	1.48	1.17	-1.12	-0.97	-0.93
1990	-2.47	-1.83	-1.37	1.39	0.99	0.55	1.04	0.28	-0.70	2.23	1.60	1.12	-1.07	-0.93	-0.86
1995	0.10	-0.11	0.74	1.57	1.63	1.63	2.14	2.03	1.39	0.21	0.33	0.70	0.14	0.02	-0.32
2000	1.40	1.32	0.87	1.57	1.62	1.67	2.93	2.86	2.44	-0.55	-0.54	-0.34	0.80	0.75	0.51
2010	2.26	2.24	2.26	1.45	1.48	1.52	3.82	3.78	3.62	-0.66	-0.67	-0.82	1.30	1.28	1.27

*Scenarios F, M, and S denote fast, moderate, and slow spending reduction cases, respectively. See text for details.

Table 7

Effects across Industries of U.S. Fiscal Policy Changes
(percentage changes from base case)

Industry:	1 Agriculture and Mining			2 Crude Petroleum and Refining			3 Construction			4 Textiles, Apparel and Leather			5 Metals		
Period:	1982	1990	2000	1982	1990	2000	1982	1990	2000	1982	1990	2000	1982	1990	2000
HISTORICAL SPENDING AND TAX CHANGES															
(1) Fast Spending Reduction															
Investment	1.16	3.27	3.92	0.88	5.57	6.84	-2.46	-0.07	3.40	0.46	5.81	7.96	1.46	3.00	6.60
Profits	-0.29	2.09	-0.90	-2.33	7.84	5.96	2.42	-1.78	3.02	-5.66	7.94	7.08	6.51	1.47	4.69
Employment	-0.64	0.68	-2.50	-2.30	2.43	-1.13	1.93	-1.36	1.05	-4.51	2.84	0.84	6.97	-3.58	-1.90
Output	-0.36	0.57	1.18	-1.15	1.20	2.06	1.83	-1.43	1.06	-3.97	2.56	1.39	5.63	-2.96	-1.03
(2) Moderate Spending Reduction															
Investment	1.26	2.52	3.87	0.94	4.48	6.80	-2.38	-1.12	3.26	0.49	4.83	7.92	1.64	1.99	6.42
Profits	-0.26	1.43	-0.84	-2.31	6.50	5.97	2.43	-1.73	2.82	-5.65	5.56	7.11	6.55	1.28	4.40
Employment	-0.62	0.31	-2.40	-2.28	1.83	-1.03	1.93	-1.24	0.93	-4.51	2.12	0.94	7.00	-2.52	-2.09
Output	-0.36	0.48	1.15	-1.14	0.94	2.00	1.83	-1.32	0.92	-3.97	1.93	1.46	5.66	-2.07	-1.22
(3) Slow Spending Reduction															
Investment	1.18	1.81	3.89	0.69	2.83	6.46	-2.58	-2.43	2.53	0.40	3.56	7.60	1.47	0.72	5.67
Profits	-0.29	1.19	-0.70	-2.35	6.14	6.16	2.37	-1.72	2.07	-5.65	4.98	7.21	6.47	2.46	3.67
Employment	-0.64	0.03	-2.13	-2.31	1.42	-0.53	1.88	-1.26	0.46	-4.50	1.46	1.26	6.93	-1.40	-2.47
Output	-0.37	0.38	1.05	-1.18	0.62	1.74	1.78	-1.34	0.42	-3.96	1.34	1.66	5.60	-1.16	-1.69
HISTORICAL SPENDING CHANGES, NO TAX CHANGES															
(4) Moderate Spending Reduction															
Investment	-3.31	-1.25	-0.28	-6.40	-1.81	-0.38	-4.97	-4.34	-1.44	-5.57	-1.93	-0.48	-4.19	-4.21	-1.78
Profits	-1.65	1.85	0.43	-2.84	-0.23	0.04	1.04	-3.97	-1.90	-5.32	-1.87	0.27	5.59	-4.89	-2.27
Employment	-1.67	2.59	0.74	-2.65	2.33	0.73	0.57	-2.35	-1.21	-3.94	1.54	0.75	6.29	-1.60	-1.57
Output	-0.37	-0.65	-0.42	-1.01	-0.87	-0.74	0.58	-2.48	-1.29	-3.41	0.93	0.44	5.20	-1.87	-1.80

Table 7 (continued)

Effects across Industries of U.S. Fiscal Policy Changes
(percentage changes from base case)

Industry:	6 Machinery			7 Motor Vehicles			8 Misc. Manufacturing			9 Services			10 Housing		
Period:	1982	1990	2000	1982	1990	2000	1982	1990	2000	1982	1990	2000	1982	1990	2000
HISTORICAL SPENDING AND TAX CHANGES															
(1) Fast Spending Reduction															
Investment	1.09	1.25	4.73	-1.53	3.66	6.02	1.28	5.13	7.87	0.43	4.98	7.96	-5.21	-2.83	-1.74
Profits	9.22	-0.42	3.36	-2.88	4.79	5.47	-0.23	3.96	6.53	-1.78	5.32	7.04	-9.81	2.02	2.92
Employment	8.64	-4.50	-2.17	-3.39	2.26	0.80	-0.29	0.23	0.08	-1.19	0.59	0.28	-7.26	2.83	1.84
Output	6.91	-3.82	-1.44	-2.69	1.59	1.44	-0.34	0.31	1.01	-1.02	0.48	1.03	1.76	-2.99	-2.63
(2) Moderate Spending Reduction															
Investment	1.32	0.28	4.55	-1.51	2.63	5.96	1.34	4.10	7.79	0.48	3.94	7.88	-5.25	-3.30	-1.79
Profits	9.27	-0.07	3.05	-2.88	3.67	5.44	-0.22	3.21	6.45	-1.77	3.67	6.96	-9.85	-0.22	3.05
Employment	8.67	-3.11	-2.38	-3.39	1.63	0.88	-0.29	0.17	0.08	-1.19	0.44	0.31	-7.30	2.05	2.03
Output	6.93	-2.65	-1.66	-2.69	1.09	1.46	-0.34	0.26	0.97	-1.03	0.37	1.02	1.77	-2.94	-2.78
(3) Slow Spending Reduction															
Investment	1.17	-0.83	3.78	-1.66	1.27	5.56	1.12	2.75	7.24	0.40	2.64	7.41	-5.29	-3.96	-2.17
Profits	9.20	1.63	2.32	-2.89	3.13	5.29	-0.24	3.20	6.20	-1.76	3.61	6.65	-9.81	-1.01	3.26
Employment	8.62	-1.64	-2.81	-3.40	1.00	1.10	-0.30	0.13	0.13	-1.17	0.28	0.39	-7.26	1.18	2.45
Output	6.89	-1.44	-2.18	-2.69	0.57	1.47	-0.35	0.20	0.85	-1.02	0.23	0.94	1.79	-2.85	-3.19
HISTORICAL SPENDING CHANGES, NO TAX CHANGES															
(4) Moderate Spending Reduction															
Investment	-3.22	-4.38	-1.81	-5.80	-2.51	-0.59	-5.26	-2.89	-0.81	-5.63	-2.81	-0.84	-3.32	-1.96	-0.81
Profits	8.53	-4.86	-2.30	-3.22	-1.74	-0.33	-0.43	-2.45	-0.59	-1.82	-3.66	-0.54	-6.52	-1.13	1.27
Employment	8.22	-1.85	-1.71	-3.59	1.06	0.59	-0.31	0.08	0.03	-0.93	0.33	0.33	-5.27	1.86	1.81
Output	6.72	-2.07	-1.95	-2.71	-0.04	0.04	-0.20	-0.59	-0.39	-0.68	-0.34	-0.18	1.15	-2.00	-1.61

Table 8

Shares of Government Purchases Devoted to Different Industries

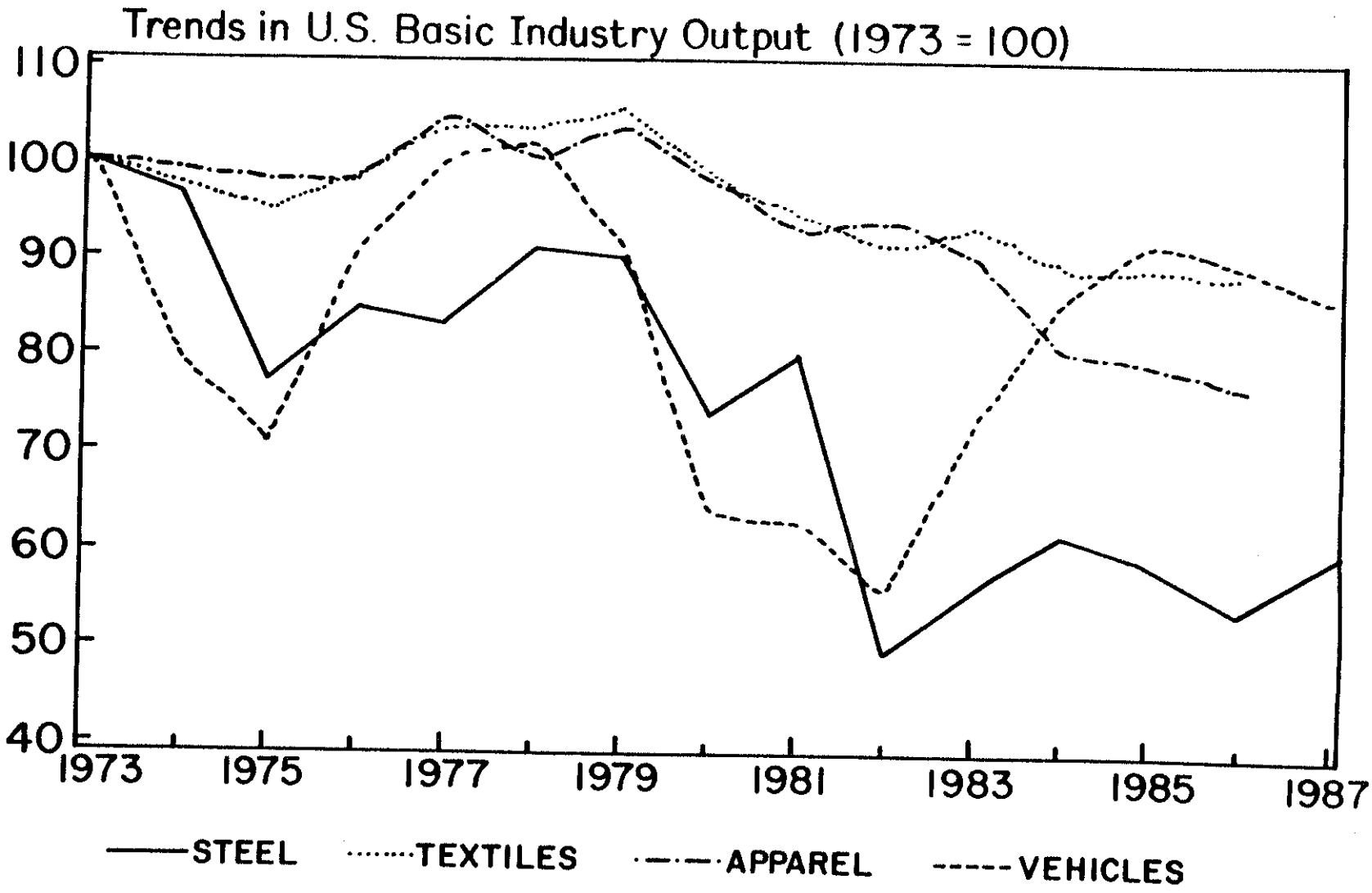
Industry	Expenditure Share
1. Agriculture and Mining	.0023
2. Crude Petroleum and Refining	.0186
3. Construction	.1436
4. Textiles, Apparel, and Leather	.0029
5. Metals	.2684
6. Machinery	.2491
7. Motor Vehicles	.0075
8. Misc. Manufacturing	.1163
9. Services	.1811
10. Housing	.0102

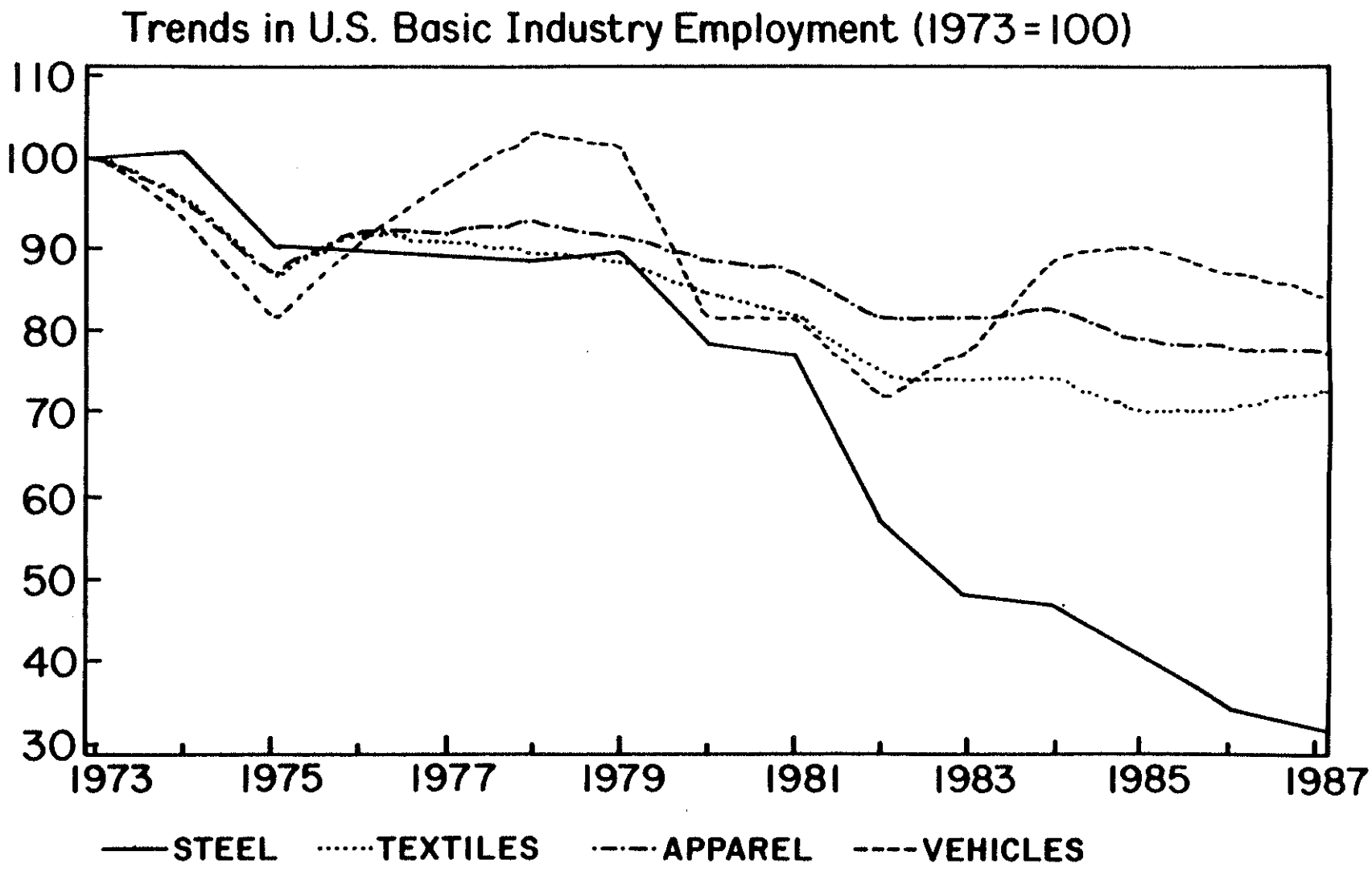
Table 9

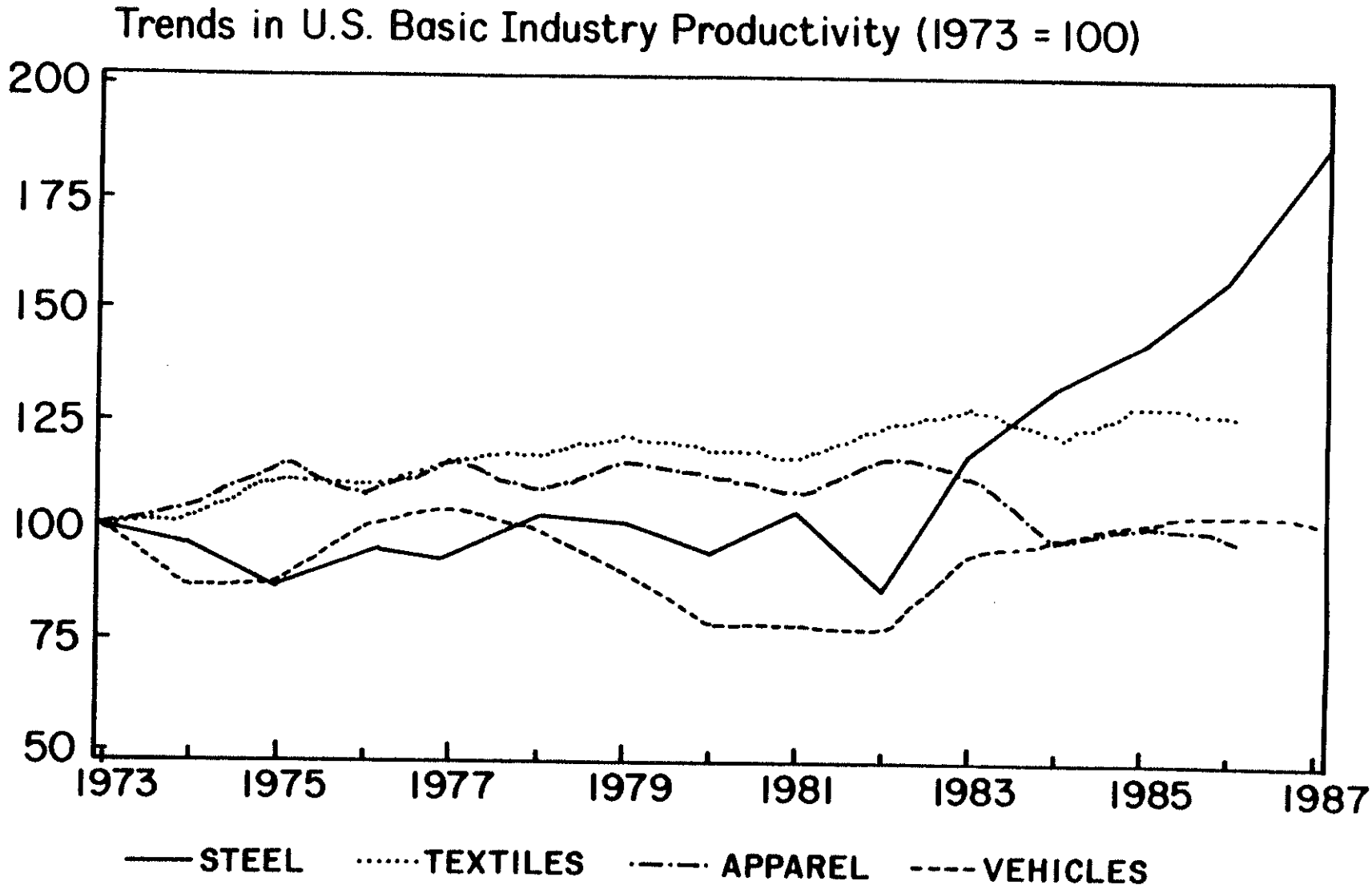
Aggregate Effects of Historical and Counterfactual Fiscal Policy Changes
(percentage changes from base case)

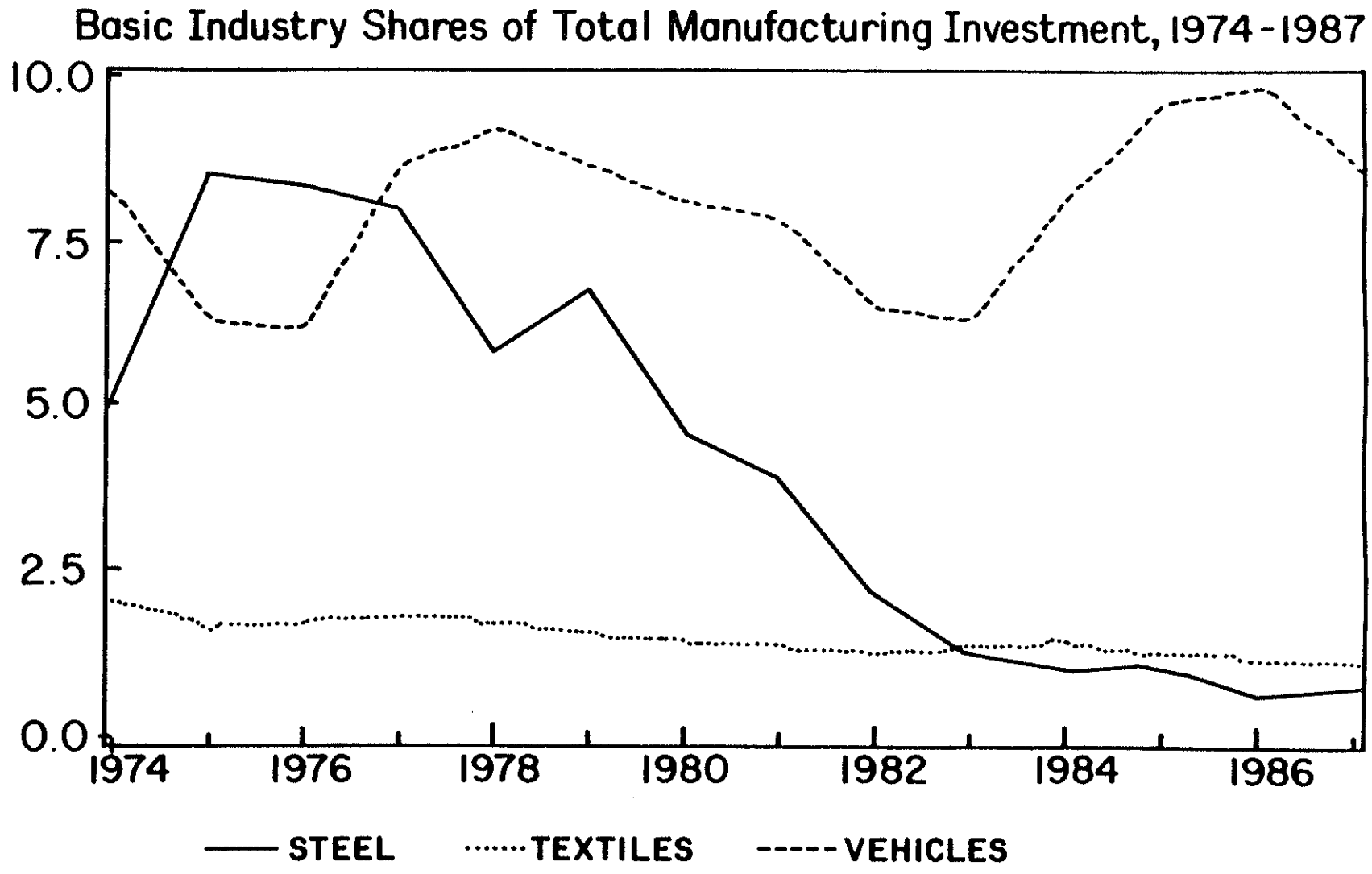
	Exchange Rate		Consumption		Investment		Exports		Imports	
Scenario:	M	M'	M	M'	M	M'	M	M'	M	M'
YEAR										
1981	0.59	1.56	-2.69	-1.90	-3.51	-3.00	-0.09	-1.16	0.37	0.21
1982	2.48	2.90	-3.52	-2.53	-2.16	-4.34	-1.94	-2.46	0.67	0.63
1983	1.88	2.35	-3.08	-2.41	-2.23	-4.59	-1.45	-2.16	0.36	0.34
1984	1.08	1.56	-2.48	-2.14	-2.04	-4.61	-0.79	-1.65	0.01	-0.02
1985	0.32	0.81	-1.82	-1.82	-1.66	-4.51	-0.16	-1.16	-0.29	-0.35
1986	-0.65	-0.13	-1.00	-1.38	-2.21	-4.15	0.70	-0.48	-0.77	-0.71
1987	-1.11	-0.81	-0.44	-0.99	-1.65	-3.79	1.03	0.01	-0.90	-0.95
1988	-1.44	-1.39	0.07	-0.61	-1.05	-3.37	1.26	0.43	-0.95	-1.13
1989	-1.70	-1.93	0.56	-0.22	-0.37	-2.86	1.48	0.85	-0.97	-1.29
1990	-1.83	-2.32	0.99	0.13	0.28	-2.36	1.60	1.17	-0.93	-1.37
1995	-0.11	-1.51	1.63	0.50	2.03	-1.20	0.33	0.49	0.02	-0.85
2000	1.32	-0.57	1.62	0.38	2.86	-0.82	-0.54	-0.19	0.75	-0.38
2010	2.24	0.00	1.48	0.20	3.78	-0.39	-0.67	-0.09	1.28	-0.06

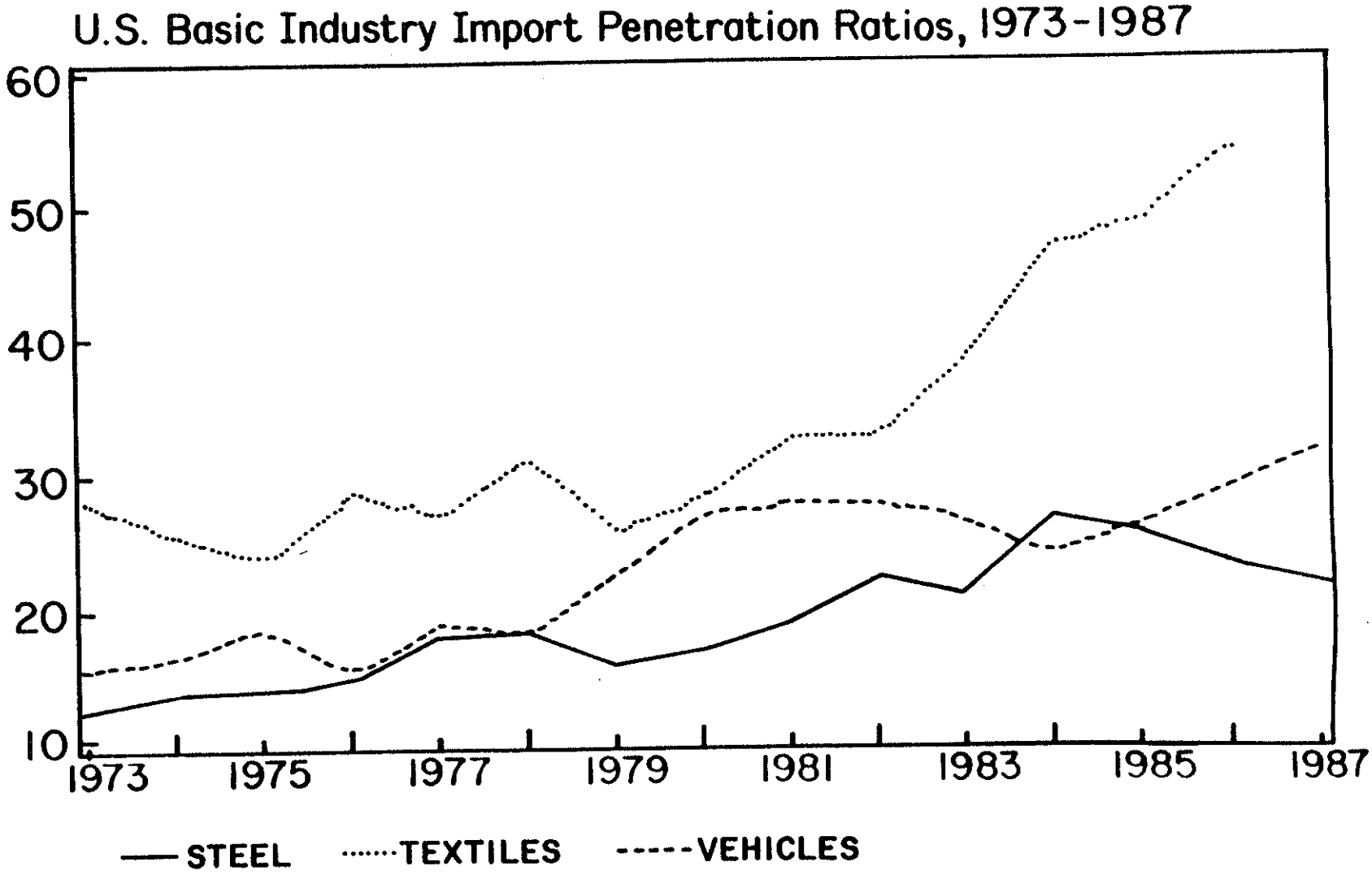
*Scenario M incorporates historical spending and tax changes. Scenario M' incorporates historical spending but no tax changes. See text for details.


Trends in U.S. Basic Industry Output (1973 = 100)
110
100
90
80
70
60
50
40
1973
1975
1977
1979
1981
1983
1985
1987
STEEL
TEXTILES
APPAREL
VEHICLES


Trends in U.S. Basic Industry Employment (1973 = 100)
110
100
90
80
70
60
50
40
30
1973
1975
1977
1979
1981
1983
1985
1987
STEEL
TEXTILES
APPAREL
VEHICLES


Trends in U.S. Basic Industry Productivity (1973 = 100)
200
175
150
125
100
75
50
1973
1975
1977
1979
1981
1983
1985
1987
STEEL
TEXTILES
APPAREL
VEHICLES


Basic Industry Shares of Total Manufacturing Investment, 1974-1987
10.0
7.5
5.0
2.5
0.0
1974
1976
1978
1980
1982
1984
1986
STEEL
TEXTILES
VEHICLES


U.S. Basic Industry Import Penetration Ratios, 1973-1987
60
50
40
30
20
10
1973
1975
1977
1979
1981
1983
1985
1987
STEEL
TEXTILES
VEHICLES

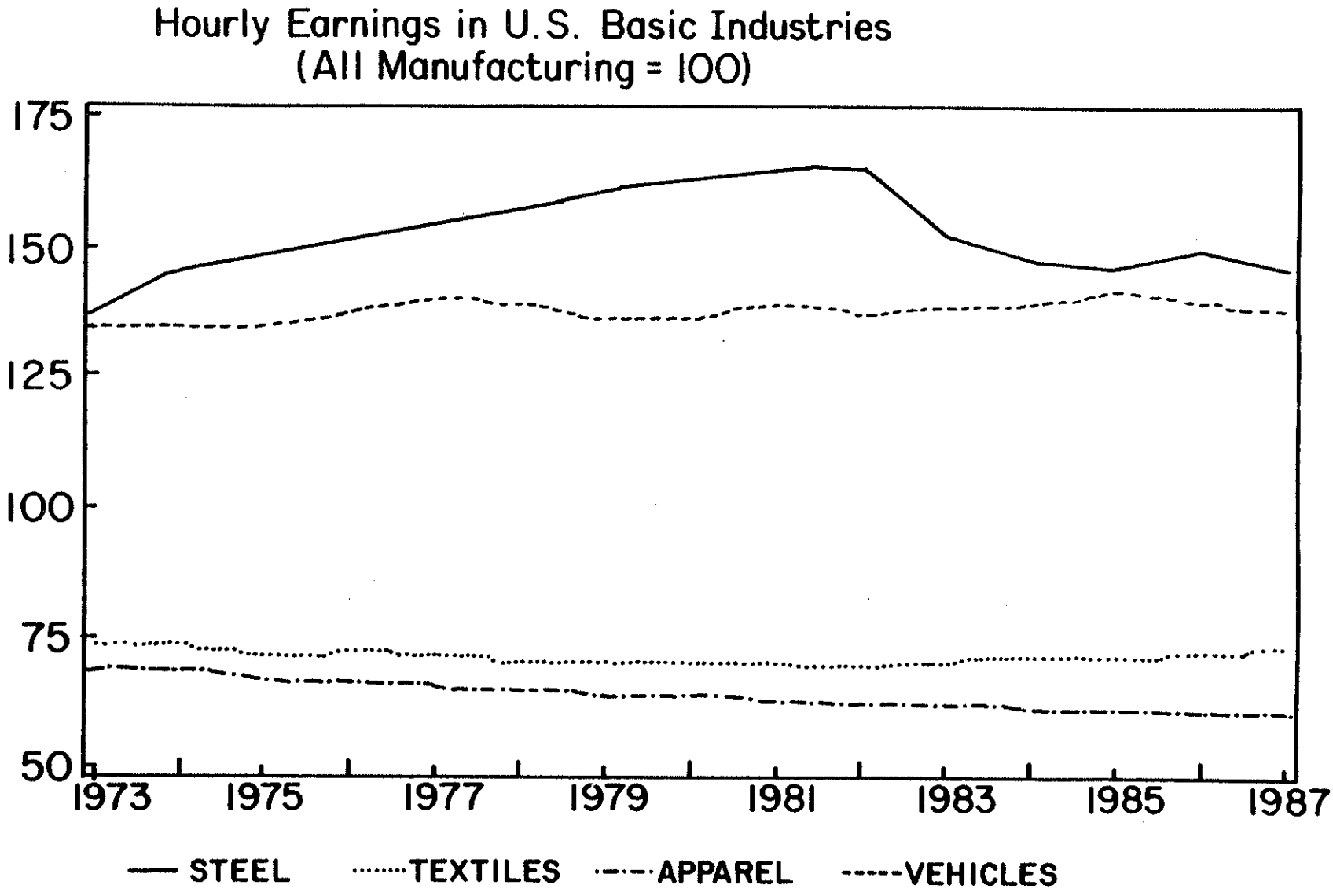

Hourly Earnings in U.S. Basic Industries
(All Manufacturing = 100)
175
150
125
100
75
50
1973
1975
1977
1979
1981
1983
1985
1987
STEEL
TEXTILES
APPAREL
VEHICLES

Figure 7

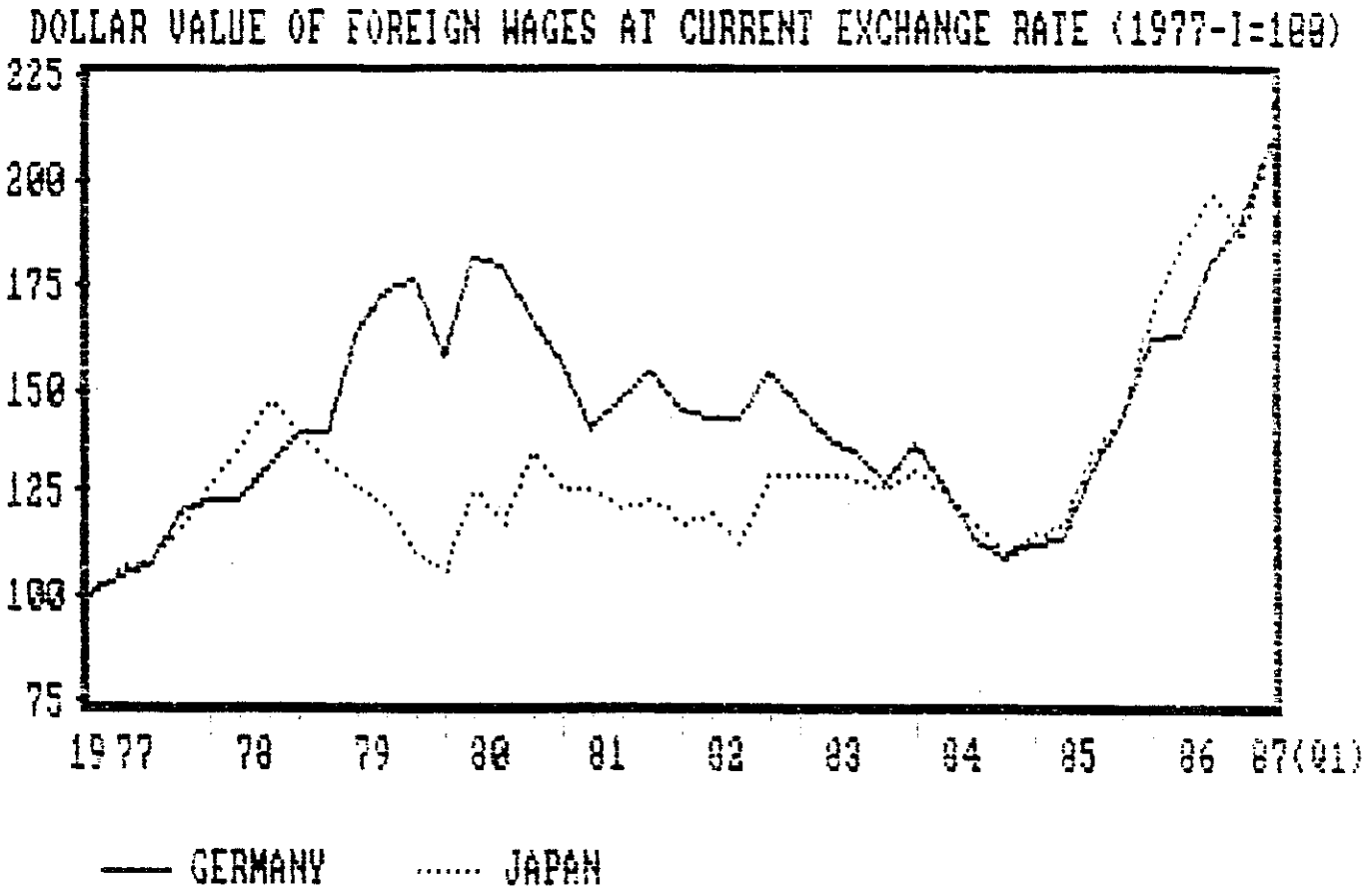
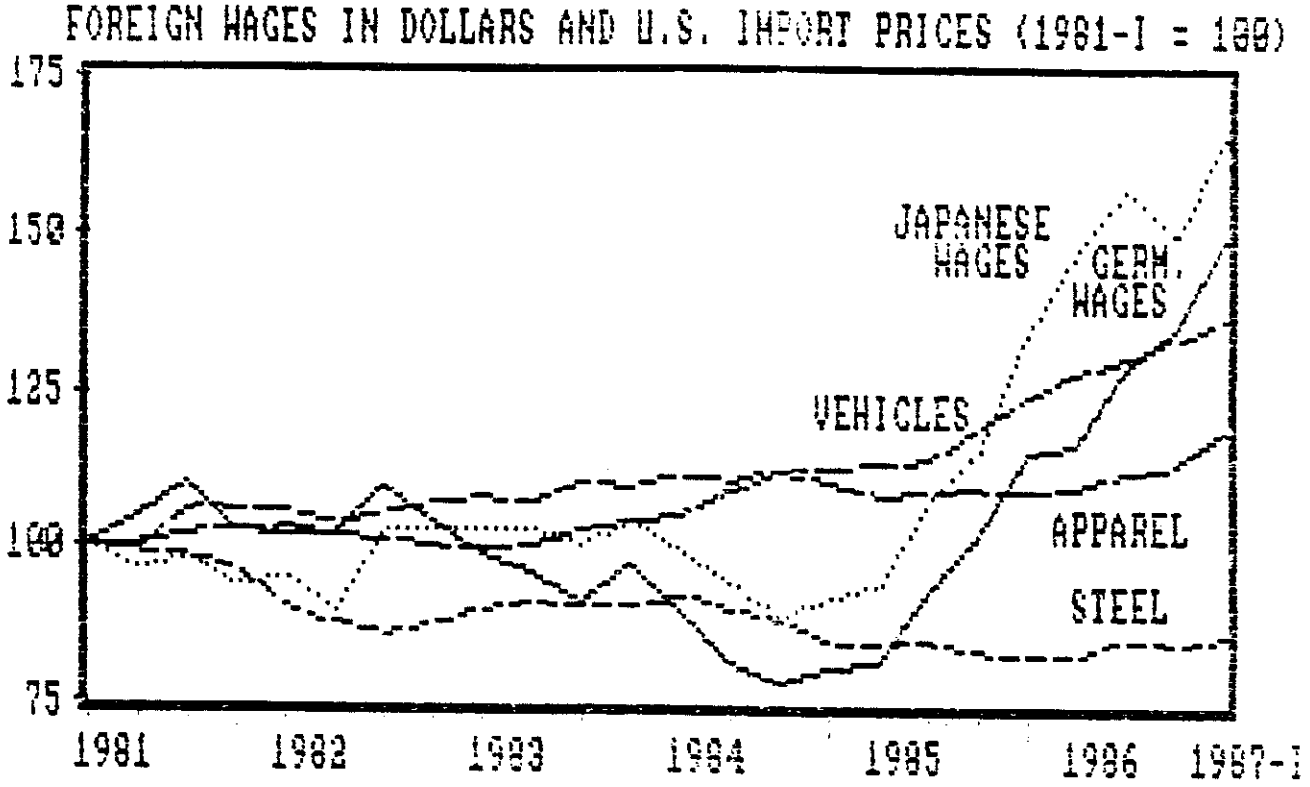

DOLLAR VALUE OF FOREIGN WAGES AT CURRENT EXCHANGE RATE (1977-I=100)
225
200
175
150
125
100
75
1977
78
79
80
81
82
83
84
85
86
87(Q1)
GERMANY
JAPAN

Figure 8


FOREIGN WAGES IN DOLLARS AND U.S. IMPORT PRICES (1981-I = 100)
175
150
125
100
75
JAPANESE WAGES
GERM. WAGES
VEHICLES
APPAREL
STEEL
1981
1982
1983
1984
1985
1986
1987-I

Appendix

Results from Simulations Performed for Sensitivity Analysis

Table A-1

Aggregate Effects of Fiscal Policy Changes
Under Alternative Parameter Specifications*
(percentage changes from base case)

	Exchange Rate				Consumption				Investment			
	M	NK	HI	LI	M	NK	HI	LI	M	NK	HI	LI
Year												
1981	0.59	0.81	0.11	0.91	-2.69	-2.77	-2.44	-2.55	-3.51	-3.60	-5.65	-2.92
1982	2.48	0.73	2.22	2.77	-3.52	-3.74	-3.46	-3.36	-2.16	-2.62	-3.00	-2.01
1983	1.88	0.64	1.62	2.17	-3.08	-3.16	-2.99	-2.97	-2.23	-2.58	-3.02	-2.10
1984	1.08	0.48	0.83	1.35	-2.48	-2.45	-2.38	-2.39	-2.04	-2.17	-2.67	-1.99
1985	0.32	0.31	0.06	0.53	-1.82	-1.71	-1.71	-1.76	-1.66	-1.57	-1.95	-1.74
1986	-0.65	0.24	-0.96	-0.48	-1.00	-0.81	-0.84	-0.97	-2.21	-1.86	-3.09	-2.10
1987	-1.11	0.08	-1.36	-1.03	-0.44	-0.24	-0.34	-0.41	-1.65	-1.16	-2.26	-1.70
1988	-1.44	-0.04	-1.61	-1.43	0.07	0.27	0.11	0.10	-1.05	-0.45	-1.35	-1.25
1989	-1.70	-0.13	-1.81	-1.78	0.56	0.75	0.55	0.60	-0.37	0.32	-0.34	-0.74
1990	-1.83	-0.19	-1.89	-1.97	0.99	1.15	0.94	1.02	0.28	1.04	0.63	-0.25
1995	-0.11	0.18	-0.18	-0.36	1.63	1.45	1.56	1.61	2.03	2.57	2.97	1.13
2000	1.32	0.60	1.24	1.14	1.62	1.24	1.57	1.58	2.86	3.16	3.86	1.87
2010	2.24	1.10	2.31	2.36	1.48	1.00	1.45	1.50	3.78	3.99	4.80	2.92

* Scenarios M, NK, HI, and LI denote central case (moderate spending reduction), no international capital mobility, high investment sensitivity, and low investment sensitivity simulations. The investment sensitivity scenarios differ according to the magnitude of adjustment costs associated with installing new capital. The high (low) investment sensitivity case assumes a 50 percent decrease (increase) in the slope of the adjustment cost function relative to the central case. See Goulder and Eichengreen (1988) for details on the specification of this function.

Table A-1 (continued)
Aggregate Effects of Fiscal Policy Changes
Under Alternative Parameter Specifications
(percentage changes from base case)

	Exports				Imports			
	M	NK	HI	LI	M	NK	HI	LI
Year								
1981	-0.09	-0.30	0.33	-0.39	0.37	-0.30	-0.86	-0.13
1982	-1.94	-0.23	-1.80	-2.20	0.67	-0.23	0.47	0.84
1983	-1.45	-0.27	-1.30	-1.72	0.36	-0.27	0.14	0.54
1984	-0.79	-0.27	-0.66	-1.05	0.01	-0.27	-0.20	0.17
1985	-0.16	-0.25	-0.02	-0.39	-0.29	-0.25	-0.47	-0.15
1986	0.70	-0.29	0.91	0.50	-0.77	0.29	-1.07	-0.63
1987	1.03	-0.25	1.15	0.91	-0.90	-0.25	-1.13	-0.80
1988	1.26	-0.20	1.31	1.22	-0.95	-0.20	-1.12	-0.91
1989	1.48	-0.13	1.47	1.50	-0.97	-0.13	-1.06	-0.98
1990	1.60	-0.05	1.56	1.67	-0.93	-0.05	-0.96	-0.99
1995	0.33	0.24	0.50	0.40	0.02	0.24	0.08	-0.13
2000	-0.54	0.42	-0.26	-0.61	0.75	0.42	0.84	0.59
2010	-0.67	0.67	-0.46	-1.05	1.28	0.67	1.46	1.24

Table A-2
Effects across Industries of Fiscal Policy Changes*
Under Alternative Parameter Specifications
(percentage changes from base case)

Industry:	1 Agriculture and Mining			2 Crude Petroleum and Refining			3 Construction			4 Textiles, Apparel and Leather			5 Metals		
Period:	**1982**	**1990**	**2000**	**1982**	**1990**	**2000**	**1982**	**1990**	**2000**	**1982**	**1990**	**2000**	**1982**	**1990**	**2000**
(1) Central Case															
Investment	1.26	2.52	3.87	0.94	4.48	6.80	-2.38	-1.12	3.26	0.49	4.83	7.92	1.64	1.99	6.42
Profits	-0.26	1.43	-0.84	-2.31	6.50	5.97	2.43	-1.73	2.82	-5.65	5.56	7.11	6.55	1.28	4.40
Employment	-0.62	0.31	-2.40	-2.28	1.83	-1.03	1.93	-1.24	0.93	-4.51	2.12	0.94	7.00	-2.52	-2.09
Output	-0.36	0.48	1.15	-1.14	0.94	2.00	1.83	-1.32	0.92	-3.97	1.93	1.46	5.66	-2.07	-1.22
(2) No International Capital Mobility															
Investment	0.46	3.22	4.45	-0.33	5.45	7.81	-3.21	0.08	3.68	-0.14	5.51	8.50	0.68	3.05	7.43
Profits	-0.08	1.25	-1.07	-1.58	5.72	6.73	1.70	-0.81	3.30	-5.79	5.44	7.54	6.06	1.65	5.57
Employment	-0.23	-0.07	-2.67	-1.03	0.64	-0.64	1.41	-0.55	1.21	-3.80	1.42	0.95	7.28	-2.71	-1.35
Output	-0.18	0.31	1.42	-0.71	0.44	2.50	1.35	-0.66	1.23	-3.34	1.32	1.53	5.90	-2.25	-0.49
(3) High Investment Sensitivity															
Investment	2.23	3.09	4.46	1.41	5.40	7.91	2.64	0.60	4.49	1.23	6.50	9.71	3.10	2.03	8.17
Profits	-0.10	1.09	-0.90	-2.11	6.67	6.35	1.59	-1.76	3.67	-5.67	5.91	7.70	6.08	1.49	5.39
Employment	-0.38	0.00	-2.69	-1.87	1.92	-1.09	1.25	-1.16	1.45	-4.28	2.16	0.91	6.78	-2.45	-1.72
Output	-0.39	0.52	1.33	-1.34	0.89	2.37	1.17	-1.26	1.47	-3.84	2.04	1.58	5.49	-2.04	-0.82
(4) Low Investment Sensitivity															
Investment	0.61	1.98	3.57	0.09	3.05	5.50	-2.62	-1.92	1.91	-0.04	3.54	6.43	0.52	1.05	4.85
Profits	-0.48	1.71	-0.83	-2.53	6.29	5.75	2.68	-2.13	1.89	-5.71	5.25	6.70	6.48	0.78	3.59
Employment	-0.83	0.63	-2.17	-2.54	2.04	-0.64	2.13	-1.56	0.33	-4.57	2.17	1.02	6.90	-2.67	-2.35
Output	-0.37	0.36	0.96	-1.12	0.71	1.48	2.02	-1.64	0.29	-3.97	1.91	1.38	5.56	-2.25	-1.60

*All results are based on "moderate spending reduction" assumptions.

Table A-2 (continued)
Effects across Industries of Fiscal Policy Changes Under Alternative Parameter Specifications
(percentage changes from base case)

Industry:	6 Machinery			7 Motor Vehicles			8 Misc. Manufacturing			9 Services			10 Housing		
Period:	**1982**	**1990**	**2000**	**1982**	**1990**	**2000**	**1982**	**1990**	**2000**	**1982**	**1990**	**2000**	**1982**	**1990**	**2000**
(1) Central Case															
Investment	1.32	0.28	4.55	-1.51	2.63	5.96	1.34	4.10	7.79	0.48	3.94	7.88	-5.25	-3.30	-1.79
Profits	9.27	-0.07	3.05	-2.88	3.67	5.44	-0.22	3.21	6.45	-1.77	3.67	6.96	-9.85	-0.22	3.05
Employment	8.67	-3.11	-2.38	-3.39	1.63	0.88	-0.29	0.17	0.08	-1.19	0.44	0.31	-7.30	2.05	2.03
Output	6.93	-2.65	-1.66	-2.69	1.09	1.46	-0.34	0.26	0.97	-1.03	0.37	1.02	1.77	-2.94	-2.78
(2) No International Capital Mobility															
Investment	0.27	1.27	5.44	-2.24	3.52	6.41	0.49	4.95	8.19	-0.13	4.94	8.23	-5.41	-2.76	-1.70
Profits	8.59	0.42	4.11	-3.12	3.86	5.72	-0.66	3.57	6.82	-2.69	4.35	7.27	10.92	0.56	2.56
Employment	8.73	-3.14	-1.71	-3.14	1.40	0.81	-0.22	0.10	0.14	-1.24	0.45	0.15	-7.50	2.26	1.28
Output	7.00	-2.70	-0.99	-2.48	0.92	1.54	-0.27	0.20	1.11	-1.06	0.39	0.99	1.86	-2.93	-2.44
(3) High Investment Sensitivity															
Investment	3.00	-0.17	5.92	-1.55	3.80	7.28	2.60	5.00	9.19	0.77	4.85	9.61	-7.63	-3.44	-1.35
Profits	8.81	0.10	3.90	-3.06	3.88	6.12	-0.42	3.33	7.09	-1.98	3.78	7.52	10.71	0.78	3.50
Employment	8.50	-3.08	-2.08	-3.35	1.71	0.94	-0.25	0.17	0.11	-1.11	0.41	0.20	-7.66	3.03	2.25
Output	6.82	-2.67	-1.36	-2.77	1.21	1.74	-0.39	0.31	1.16	-1.03	0.34	1.11	1.73	-3.98	-2.81
(4) Low Investment Sensitivity															
Investment	0.10	-0.43	3.22	-1.66	1.60	4.71	0.49	2.91	6.32	-0.14	2.79	6.22	-4.20	-3.22	-2.27
Profits	9.22	-0.47	2.42	-2.88	3.35	4.85	-0.21	2.88	5.90	-1.71	3.24	6.23	-9.17	-0.79	2.57
Employment	8.58	-3.22	-2.57	-3.43	1.59	0.84	-0.31	0.15	0.08	-1.19	0.49	0.40	-6.83	1.60	1.80
Output	6.83	-2.79	-1.97	-2.66	0.98	1.20	-0.33	0.15	0.76	-0.99	0.32	0.87	1.78	-2.32	-2.74

Nov-88

RECENT ISSUES OF THE WORKING PAPER SERIES
OF THE DEPARTMENT OF ECONOMICS
UNIVERSITY OF CALIFORNIA, BERKELEY

Copies may be obtained from the Institute of Business and Economic Research. See the inside cover for further details.

8884 Roger Craine and David Bowman
A STATE SPACE MODEL OF THE ECONOMIC FUNDAMENTALS

Jul-88.

8885 Barry Eichengreen and Richard Portes
SETTLING DEFAULTS IN THE ERA OF BOND FINANCE

Aug-88.

8886 Barry Eichengreen and Richard Portes
FOREIGN LENDING IN THE INTERWAR YEARS: THE BONDHOLDERS' PERSPECTIVE

Aug-88.

8887 Bronwyn H. Hall
ESTIMATION OF THE PROBABILITY OF ACQUISITION
IN AN EQUILIBRIUM SETTING
Aug-88.

8888 Richard J. Gilbert and David M. Newbery
Entry, Acquisition, And the Value of Shark Repellent

Aug-88.

8889 Richard J. Gilbert
THE ROLE OF POTENTIAL COMPETITION IN INDUSTRIAL ORGANIZATION

Sep-88.

8890 Joseph Farrell and Robert Gibbons
CHEAP TALK WITH TWO AUDIENCES: A TAXONOMY

Sep-88.

Nov-88

RECENT ISSUES OF THE WORKING PAPER SERIES
OF THE DEPARTMENT OF ECONOMICS
UNIVERSITY OF CALIFORNIA, BERKELEY

Copies may be obtained from the Institute of Business and Economic Research. See the inside cover for further details.

8891 Alessandra Casella and Jonathan Feinstein
MANAGEMENT OF A COMMON CURRENCY

Sep-88.

8892 Steven M. Goldman and Vai-Lam Mui
ECONOMIC GROWTH AND GENERALIZED DEPRECIATION

Sep-88.

8893 Roger Craine and Douglas Steigerwald
RAIDERS, JUNK BONDS, AND RISK

Oct-88.

8894 Barry Eichengreen
THE RESPONSIBILITIES OF A CREDITOR NATION

Oct-88.

8895 Richard J. Gilbert
MOBILITY BARRIERS AND THE VALUE OF INCUMBENCY

Oct-88.

8896 Pranab Bardhan
SOME REFLECTIONS ON THE USE OF THE CONCEPT OF POWER IN ECONOMICS

Nov-88.

8897 Barry Eichengreen and Lawrence H. Goulder
THE U.S. BASIC INDUSTRIES IN THE 1980S: CAN FISCAL POLICIES EXPLAIN THEIR CHANGING COMPETITIVE POSITION?
Nov-88.