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PROSPECTS FOR SUSTAINED IMPROVEMENT IN U.S. EXTERNAL BALANCE:

STRUCTURAL CHANGE *versus* POLICY CHANGE

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ABSTRACT

This paper assesses prospects for sustained improvement in the U.S. external balance drawing on both model-based macro analysis and examination of disaggregated data. Most model projections of the future path of U.S. external balance show the recent improvement petering out by the end 1989 or so. Key structural factors leading to the expected future worsening of U.S. external balance are two asymmetries -- the "income asymmetry" and the "pass-through asymmetry". That is, asymmetries in the pricing behavior of U.S. exporters and foreign suppliers and asymmetries in the elasticities of U.S. demand for imports and foreign demand for U.S. exports with respect to economic activity.

However, could projections based on historical relationships be misleading? Have these models ignored important changes in the international environment? Changes in trading partners and composition of trade, in income responsiveness, exchange rate movements and price competitiveness, the net debt position, trade protection, long-term supply response, and model uncertainty are considered.

Plausible (or sometimes implausible) changes in the historical relationships do not materially change the medium-term outlook for a future deterioration in U.S. external balance. However, model uncertainty suggests that confidence intervals around the point estimates of key parameters are sufficiently large that periods of improvement in U.S. external balance are within the realm of statistical probability; nevertheless, the outlook for sustained improvement remains problematical.

This suggests that outcomes for growth and the exchange rate different from those assumed in the projections, and which would probably stem from a different configuration of fiscal and monetary policies here and abroad, are likely necessary to put U.S. external balance on a sustainable path.

Prospects For Sustained Improvement in U.S. External Balance:
Structural Change versus Policy Change

Catherine L. Mann¹

Each month the financial markets dip and bob according to whether the figure for the monthly trade deficit was greater or less than expected. Data examined over a longer time horizon clearly indicate that the U.S. current account balance strengthened and the merchandise trade deficit contracted substantially in both real and nominal terms between 1987 and 1989. What factors were most important for the improvement in the external accounts and will the positive trend continue? Most macroeconomic projections of U.S. external balance show the improvement petering out. Have these models ignored important changes in the international environment -- some set in train by the economic events of the last half of the decade -- such that projections based on historical relationships could be misleading? Or, will changes in the mix of U.S. and foreign fiscal and monetary policies be necessary to sustain the improvement in the U.S. external accounts?

This paper assesses prospects for sustained improvement in U.S. external balance drawing on both model-based macro analysis and examination of disaggregated data. A condensed review of the 1980s is

1. An earlier version of this paper appeared as the introductory chapter for the 1989 Proceedings of the International Trade and Finance Association Sessions of the ASSA Meetings.

The author is a staff economist in the Division of International Finance. This paper represents the view of the author and should not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or other members of its staff.

I draw heavily on research conducted by my colleagues in the Division. They are not responsible for my errors or omissions. Particular thanks to William Helkie and Ellen Meade for comments on the earlier draft. Virginia Carper provided valuable research assistance.

presented in section II. An analysis of the historical relationships concludes that sustained improvement in U.S. external balance is unlikely given expectations for growth in the United States and abroad and projections for the dollar exchange rate held at its 1987 low. The following sections of the paper discuss key structural factors underlying the historical relationships and assess whether sufficient structural change or omitted variables could improve the outlook for external balance. Factors such as income responsiveness, and exchange rate movements, price competitiveness, and the J-curve are considered in sections III.1 and III.2. The net debt position and its longer-term effect on the external accounts is considered in section III.3. Trade protection, long-term supply response, and other missing factors are considered in Section III.4. Model uncertainty is considered in section III.5.

Even with plausible (or sometimes implausible) changes in the historical relationships and/or alternative assumptions for trade protection, capital investment, or non-G-10 growth, the outlook for sustained improvement in the U.S. external balance is not good. This conclusion stems in large part from two apparently fundamental asymmetries in the external behavior of the United States as compared to other countries'. First, the "income asymmetry": the United States tends to have a relatively higher income elasticity of demand for imports as compared to the corresponding income elasticity of demand of foreigners for U.S. exports. Thus similar growth rates here and abroad tend to worsen U.S. external balance. Second, the "passthrough" or "pricing asymmetry": U.S. exporters apparently do not absorb exchange rate changes into their export prices, while foreign suppliers do. Thus

competitiveness of U.S. exports in overseas markets is harmed more by dollar appreciation than is the competitiveness of foreign products in U.S. markets harmed by dollar depreciation.

However, model uncertainty suggests that confidence intervals around the point estimates of these key parameters are sufficiently large as to allow reductions or even reversals of the asymmetries. Thus improvement in U.S. external balance is well within the realm of statistical probability. Nevertheless, absent permanent changes in the distribution of the parameters of the asymmetries, the outlook for sustained improvement remains problematical.

This suggests that outcomes for growth and the exchange rate different from those assumed in the model projections, and which would likely stem from a different configuration of fiscal and monetary policies here and abroad, are probably necessary to put U.S. external balance on a sustainable path.

II. A Review of the 1980s: Implications for the Path of External Balance

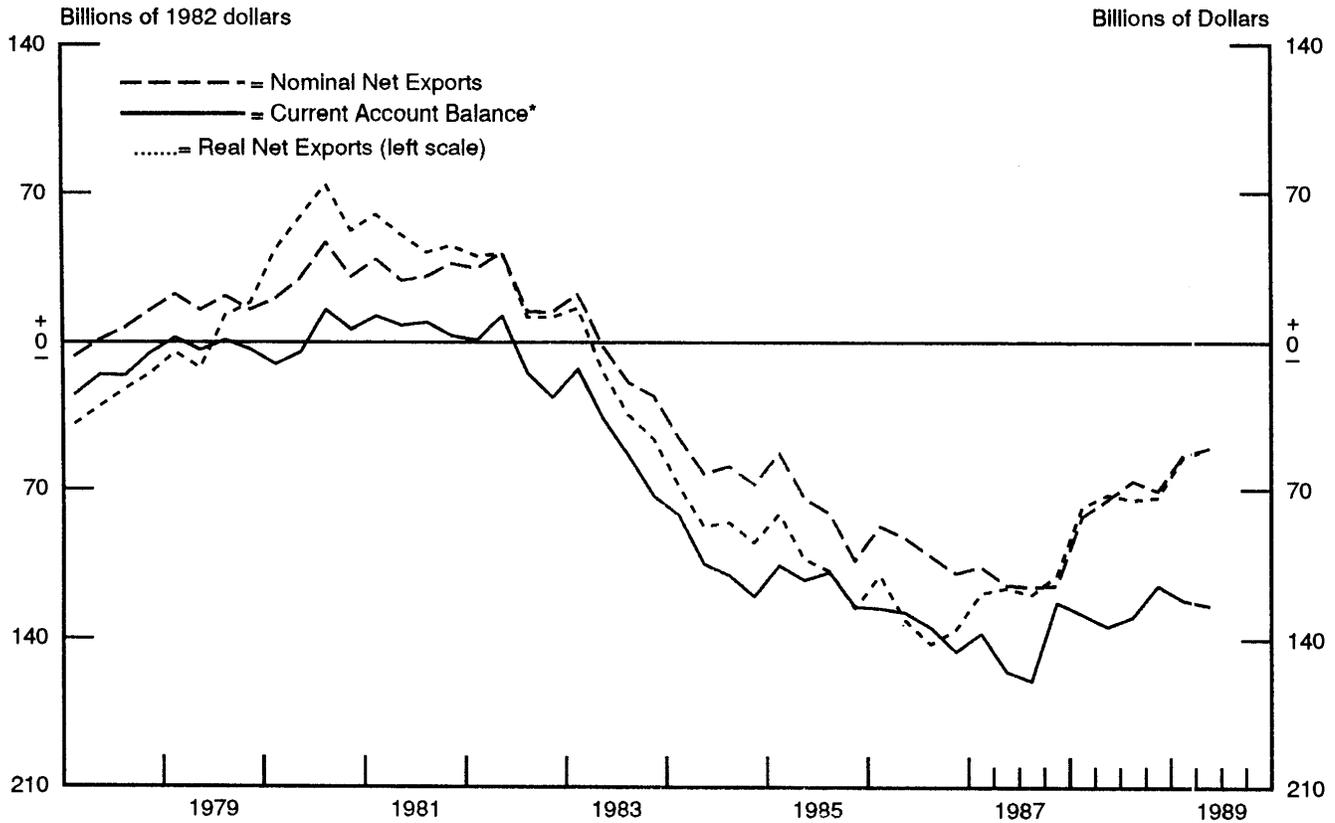
To assess whether the improvement in the U.S. external accounts is likely to continue, we need to know where we are and understand how we got there. A complete review of the economic events of the 1980s and their consequences goes well beyond the scope of this paper. Therefore, this section highlights particular data that feature importantly in the arguments of the following sections.

1. Measures of external imbalance

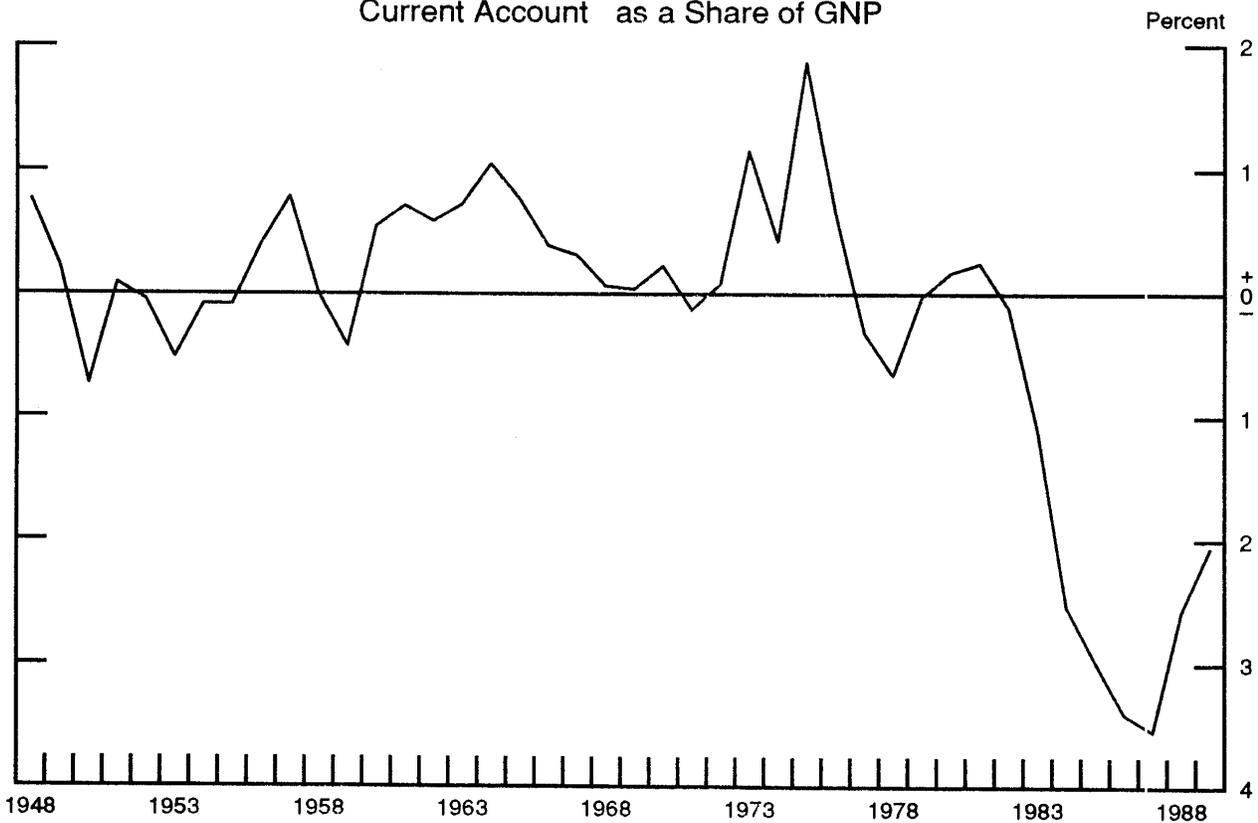
First, where are we? The panels of Chart 1 present several measures of external balance for the United States; most show clear improving trends. In the top panel, real net exports turned around in 1985 and has improved ever since. Nominal net exports bottomed out in

3a
Chart 1

U.S. Nominal and Real External Balances
(S.A.A.R.)



Current Account* as a Share of GNP



Source: U.S. Department of Commerce, Survey of Current Business

* Excluding capital gains and losses

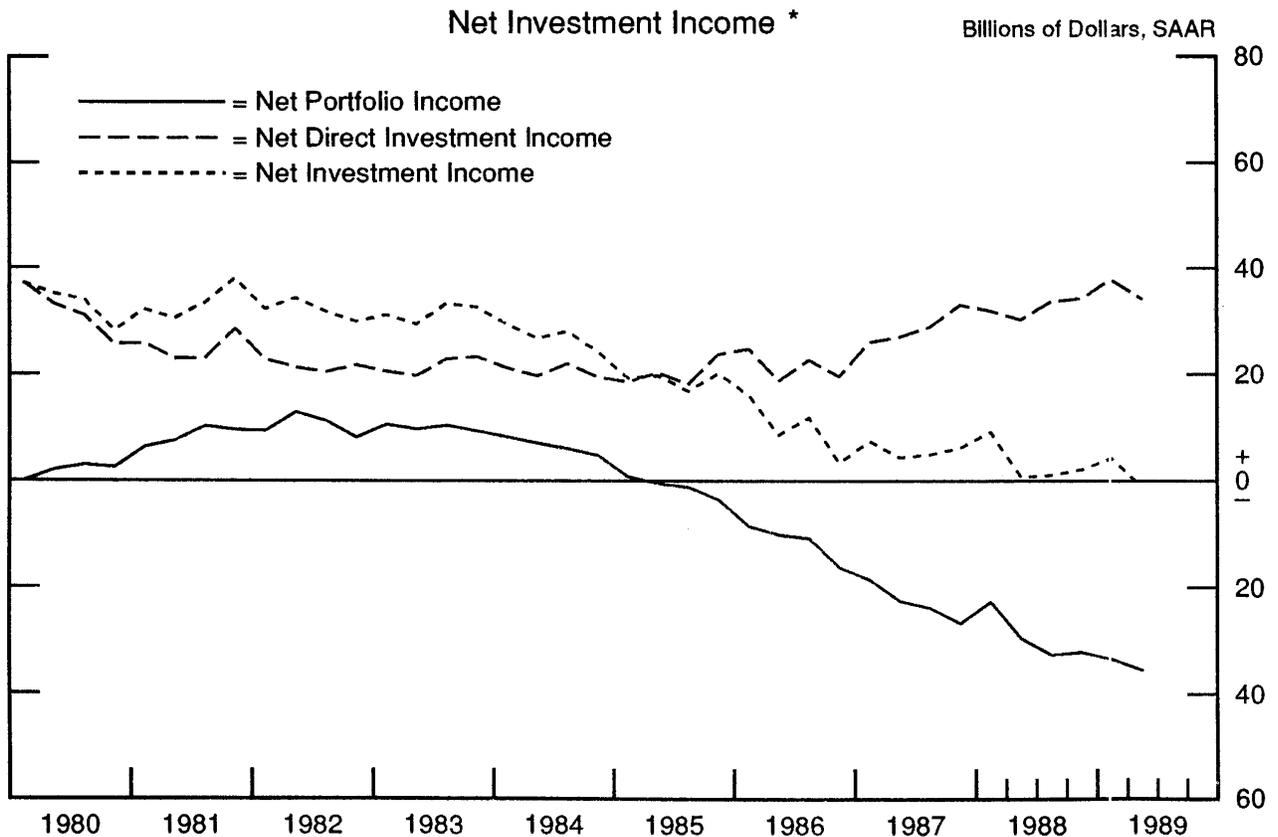
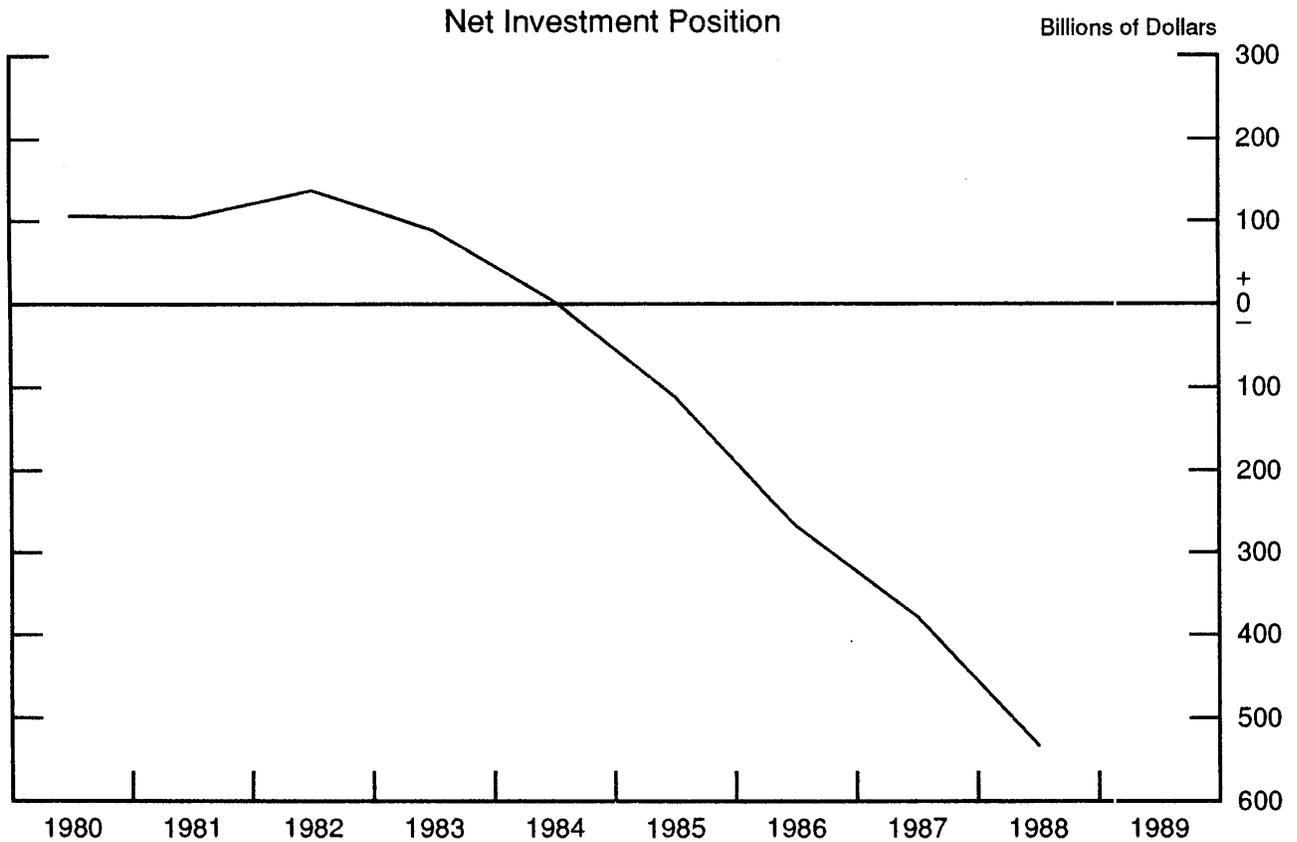
late 1987 and has continued to improve. The current account (excluding capital gains and losses on foreign investments) has improved since mid-1987, although it appears that the pace of improvement slowed down in 1989. The bottom panel shows that the current account as a share of GNP -- a measure of the future burden of adjustment -- improved significantly in 1988; this share began to level off in 1989.

The panels of Chart 2 show one reason why the improvement in the current account lagged in 1989 as compared to the other measures of external balance. The top panel shows that the net debt position of the United States has continued to worsen. Decomposing the position into its two components, direct and portfolio investment, indicates that the main reason for the deterioration of the net investment position is due to the negative and worsening net portfolio investment position. The net foreign direct investment position expanded through 1987; it has since deteriorated, although remaining positive.

The consequences of these changes in the net investment positions for net investment income are shown in the bottom panel. The negative net portfolio investment position leads to an interest payment outflow which is no longer offset by the positive income inflow on the positive net direct investment position. Thus, the current account behavior diverged from the behavior of nominal net exports in 1989 because, on net, foreign investors received more investment payments from the United States than U.S. overseas investments yielded positive income inflows. To a great degree, this reflects the simple mathematics of a net debt position. Yet the interest service account did not turn negative until 1989 primarily because the yield on U.S. direct investment abroad has been calculated to be systematically higher than is the yield

4a
Chart 2

U.S. Net Foreign Investment



Source: U.S. Department of Commerce, Survey of Current Business

* Excluding capital gains and losses

on foreigners' direct investments in the United States (and also because of mismeasurement of the positions). (See Stekler and Helkie (1989) for more details).

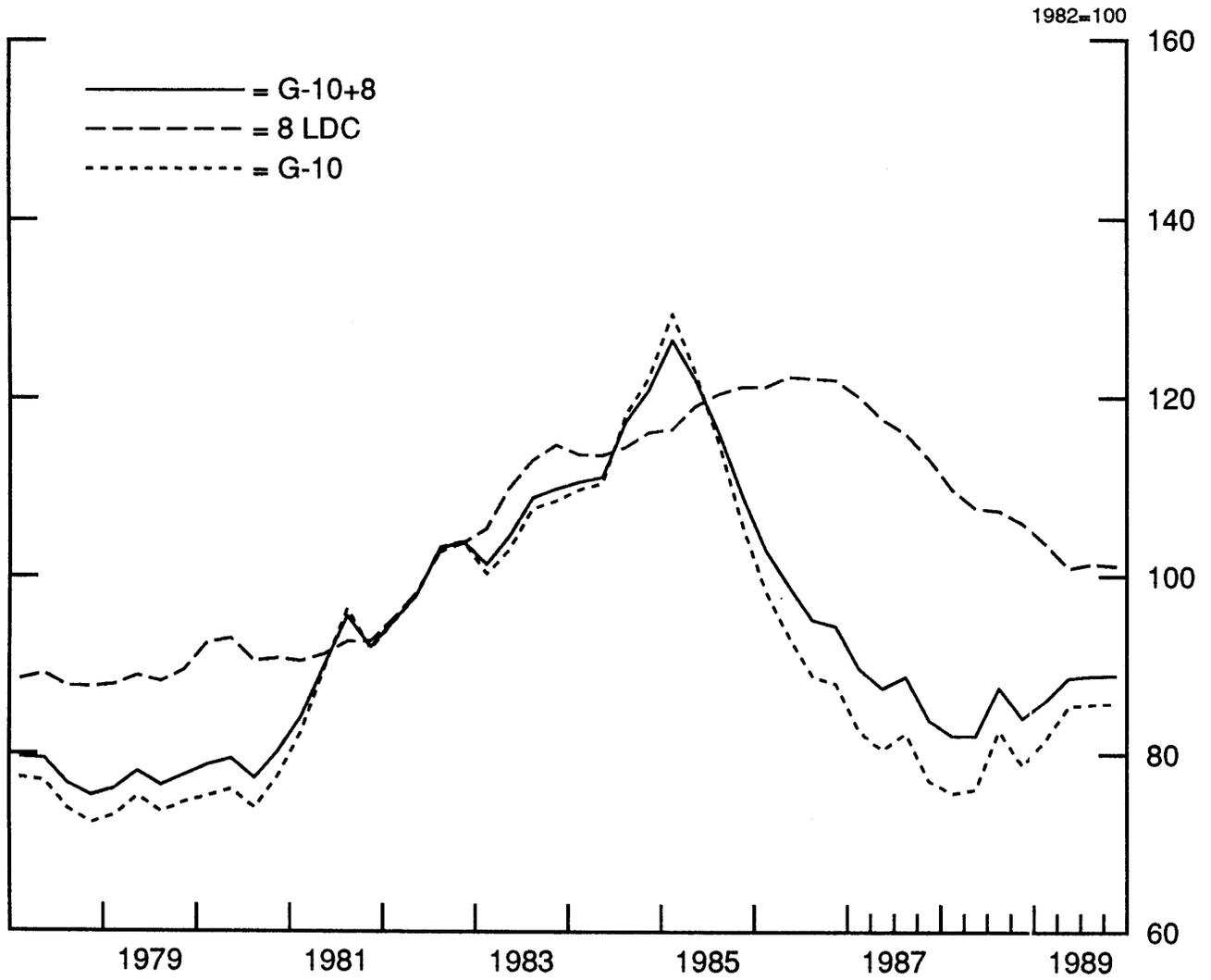
2. Movements in the real exchange value of the dollar

Two of the most important ingredients affecting the behavior of net exports are the real dollar exchange rate and real economic activity (here and abroad). These two factors are, of course, related and their movements result from the interplay of economic policies combined with market expectations and structural characteristics of the economies. The real exchange value of the dollar is shown in Chart 3; three phases are clear. First was 1980 to 1985:1 when the dollar appreciated almost without interruption. Second was from that peak to the trough at the end of 1987. Finally, beginning in 1988, rumors of changed policy stance bounced the dollar around a bit, although a pronounced upward trend since the end of 1987 is now evident in data examined through 1989. Note that the dollar index at the end of 1987 was approximately its 1980 value, the last time the U.S. current account was approximately zero.

Also shown on Chart 3 are the two components of the real exchange rate -- the exchange rate for the G-10 industrial countries and that for eight developing countries, some of which are important trading partners. The United States trades predominantly with industrial countries so that it is not surprising that the G-10 rate figures most prominently in the behavior of the weighted average real dollar. But the somewhat different movement of the dollar against the currencies of the developing countries is notable, and has consequences for the composition of trading partners (discussed below). The real dollar appreciated more moderately against the currencies of the developing countries, and

5a
Chart 3

Foreign Exchange Value of the Dollar
Real (CPI-Adjusted) Exchange Rate Index



Source: Federal Reserve Bulletin

Note: Indexes are weighted by multilateral trade weights (1972-1976).

through 1986 (instead of only through 1985:1) before starting a trend real depreciation that continued to the end of 1989.

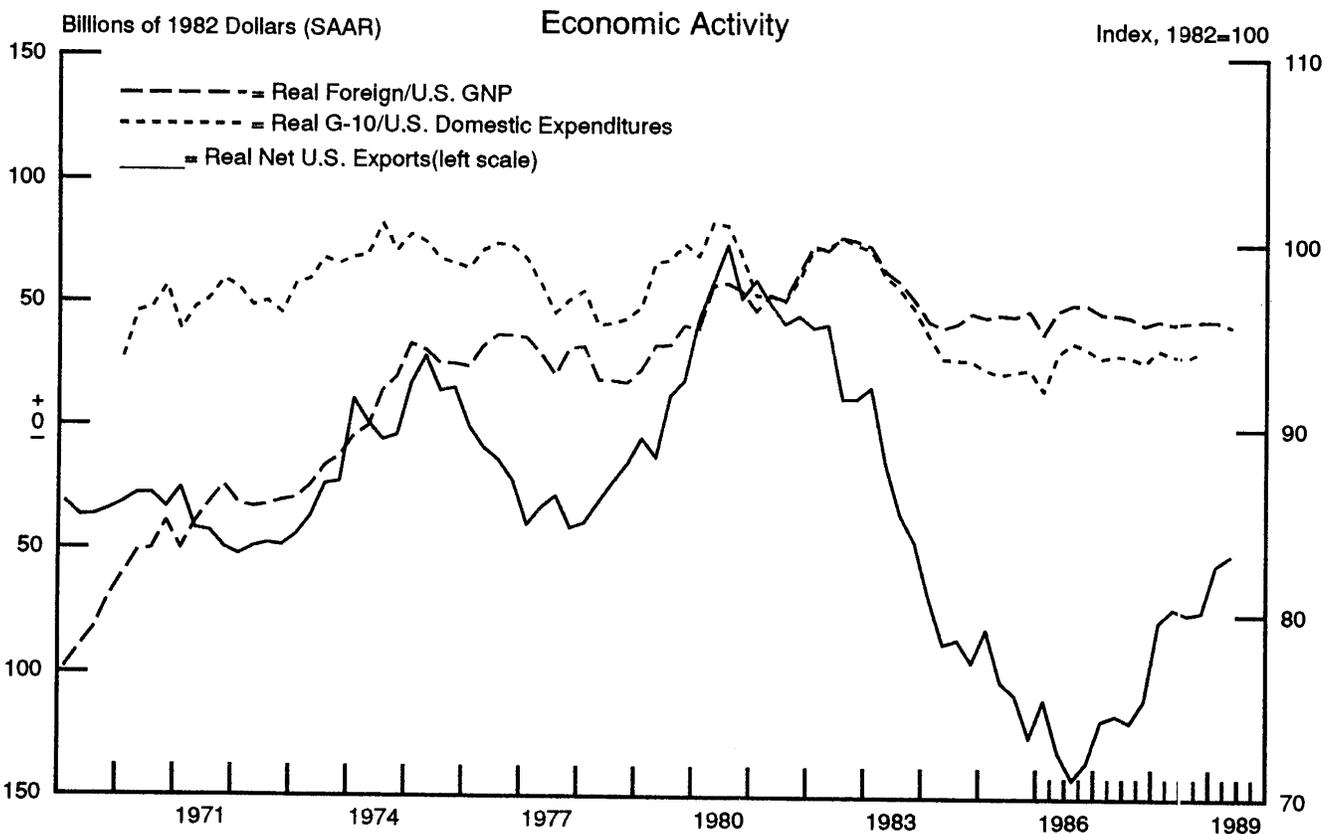
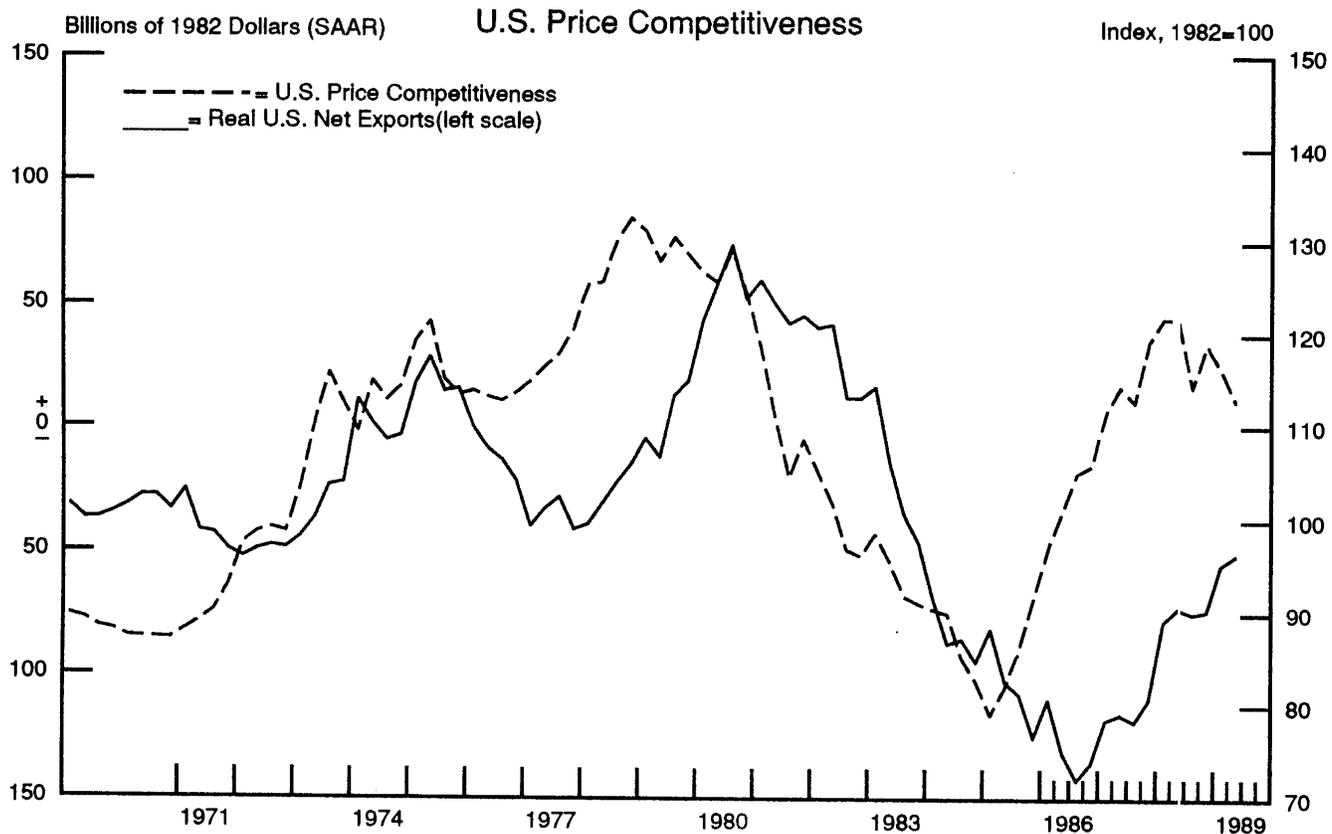
The delay between the early 1985 depreciation of the real dollar and the late 1986 improvement in real net exports prompted some discussion of whether real net exports had become delinked from the exchange rate. The top panel of Chart 4 shows real net exports and the inverse of the real exchange rate (labeled U.S. price competitiveness) clearly indicating some long-term relationship between the two. At the same time, the timing and magnitude of this relationship is not particularly tight. In large part, this is because the real dollar is a summary statistic. Policies underlying its change affect the tightness of its relationship with real net exports. Moreover, real net exports is itself an aggregated statistic. Differential behavior of disaggregated categories of exports and imports and changing composition of trading partners could loosen the relationship between price competitiveness and real net exports; these propositions will be considered in more detail below.

3. Measures of real economic activity

Another major determinant of U.S. external balance is real economic activity here and abroad. The bottom panel of Chart 4 shows the relationship between real net exports and two measures of relative real economic activity. The two measures differ by coverage of trading partners (total foreign versus non-U.S. G-10) and coverage of economic activity (GNP versus domestic expenditure). Chart 4 shows that while there is a long-term relationship between U.S. real net exports and relative real economic activity, the choice of measure can alter the perceived tightness of that link.

6a
Chart 4

Determinants of U.S. Real Net Exports of Goods



The broader measure of relative real economic activity is the ratio of real foreign GNP (OECD, OPEC, and non-OPEC developing countries) to real U.S. GNP. When foreign GNP grows faster than U.S. GNP, U.S. real net exports tend to improve. On the other hand, U.S. real net exports tend to deteriorate not only when U.S. growth is relatively faster, but also when real GNP growth rates are *similar* here and abroad. This contrast is particularly evident comparing the 1970s with the 1980s; although in the most recent period, the value of the dollar exacerbated the effect of growth differentials.

The alternative measure of relative real economic activity in Chart 4 focuses on the industrial countries alone and highlights domestic expenditure. It is the ratio of real domestic demand (C+I+G) in the (non-U.S.) G-10 countries to real U.S. domestic demand. It appears that quite small differentials between domestic demand growth in the United States and the other G-10 countries can have important effects on U.S. real net exports. From mid-1982 through mid-1986, relative real domestic demand fell -- as did U.S. real net exports -- suggesting the importance of the U.S. fiscal deficit and reduced private savings. The narrowing of growth differentials during 1988 and 1989, due in part to robust growth in domestic demand in Germany and Japan, accounts for some of the up-turn in real net exports observed to date. Examining either of these measures and its relationship to real net exports highlights the difference in estimates of income responsiveness of U.S. import and export volumes, a matter to which we will return.

4. Role of non-G-10 trading partners

The difference between the two measures of relative real economic activity points to the importance of non-G-10 trading partners.

The relative real domestic demand measure including only the G-10 varies somewhat over the historical period, but much less than does the relative real GNP measure which includes a broader set of industrial and developing economies. Looking at the G-10 domestic demand variable alone, we probably would not have expected such a significant deterioration in U.S. real net exports. The slackening of growth in much of the developing world after the onset of the debt crisis, as evidenced by the flattening out of the relative real GNP measure after 1982, could partly account for the worsening of U.S. external balance. Moreover, some developing countries pursued export enhancement programs during the 1980s which also tended to worsen U.S. real net exports as the dollar appreciation worked to the particular benefit of those programs targeted to the U.S. market. Overall, non-G-10 trading partners probably became increasingly important in the 1980s in determining the path of U.S. real net exports; historical models may not fully account for this structural change.

Table 1 shows how the export destinations and import sources changed during the 1980s. During the decade, the share of U.S. exports bound for selected developing countries remained relatively constant at about 24 percent. (Note that these selected developing countries are nearly as important a market as is Western Europe). Within this group, the United States continued to lose its Latin American market as the debt crisis remains unresolved while the share of exports bound for the Asian NIEs nearly doubled. Arguably the products bound for the Far East are not perfect substitutes for those formerly bound to Latin America thus requiring the development of new products, marketing networks and so on. U.S. export growth overall undoubtedly suffered. Looking at imports, the

Table 1
 U.S. Merchandise Trade by Region
 (dollar figures in billions, otherwise share of total)

	<u>1980</u>	<u>1986</u>	<u>1987</u>	<u>1989:2 (SAAR)</u>
Total Exports	\$ 224.3	\$ 224.0	\$ 250.3	\$ 363.5
Selected Industrial				
Canada	18.5	25.3	24.8	23.7
Japan	9.3	11.7	11.0	11.9
Western Europe	30.1	27.1	27.4	26.7
Selected Developing Countries				
Asia*	6.3	7.7	9.1	10.6
Latin America	17.3	13.8	14.0	12.9
Non-oil Imports	\$ 170.3	\$ 334.1	\$ 366.8	\$ 420.6
Selected Industrial Countries				
Canada	22.7	19.7	18.7	20.6
Japan	18.3	24.2	23.8	21.9
Western Europe	25.1	25.4	25.0	22.9
Selected Developing Countries				
Asia*	10.4	13.6	15.6	14.3
Latin America	11.1	9.3	9.4	10.4

* Includes Hong Kong, Korea, Singapore, and Taiwan.

Source: Bureau of Economic Analysis, Survey of Current Business; U.S. Balance of Payments Accounts.

United States imported relatively more from Japan and the Asian NIEs and less from Western Europe and Canada in 1989 as compared to 1980. However, comparing mid-1989 to 1987, the share of U.S. non-oil imports coming from Japan, Western Europe, and the Asian NIEs fell, being replaced by imports from Canada. This pattern is consistent with the behavior of the dollar against these source-country currencies. In summary, trading partners changed over the 1980s due to exchange rate movements, debt crisis events, and other trade-oriented domestic policies. Macroeconometric models with constant trade share weights might underestimate the effect of these factors on U.S. external balance.

5. Increased importance of trade in capital goods

The composition of economic activity affects the composition of trade. Domestic investment activity and trade in capital goods became increasingly important during the 1980s. Table 2 shows the consumption, investment, and fiscal shares of GNP for Japan, Germany, and the United States. Of particular note is the expansion of U.S. consumption coming out of the 1982 recession, followed some years later by further consumption and a rise in investment. More recently, Japanese investment surged as it retooled its economy to accommodate higher domestic demand and a lower yen. Germany likewise showed booming investment. Table 3 shows the levels and growth rates of import and export volumes for the United States and Table 4 shows the composition of U.S. trade for several periods during the 1980s.

Clearly, developments in the capital goods sector is a key to determining the future path of the U.S. merchandise trade balance. Starting in 1980 with a share of 18 percent of non-oil import volume and

Table 2
Domestic Expenditure, Shares of Real GNP
(shares of total)

	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989:1</u>
Japan								
Consumption	58.1	58.1	56.9	55.6	55.9	55.8	55.5	54.9
Government	18.8	18.3	17.6	16.5	17.2	16.7	16.4	16.0
Investment	21.6	21.0	21.5	22.8	23.6	25.1	27.4	29.2
Total DE	98.5	97.4	96.0	94.9	96.7	97.6	99.3	100.1
Germany								
Consumption	56.1	56.1	55.2	54.7	55.3	56.3	55.9	54.4
Government	20.4	20.1	20.0	20.0	20.0	20.0	19.7	18.9
Investment	20.6	20.9	20.4	20.0	20.1	20.3	20.8	22.3
Total DE	97.1	97.1	95.6	94.7	95.4	96.6	96.4	95.6
United States								
Consumption	64.8	65.4	64.4	65.1	65.8	65.2	64.6	64.2
Government	20.3	19.8	19.3	20.2	20.5	20.2	19.5	19.6
Investment	14.9	15.6	16.7	17.4	17.1	16.9	17.1	16.9
Total DE	100.0	100.8	100.4	102.7	103.4	102.3	101.2	100.7

Source: OECD, Main Economic Indicators.

Table 3

U.S. Merchandise Trade Volumes by Selected Commodity Group

	<u>Levels (Billions of 1982\$)</u>				<u>Average Annual Rates of Change (SAAR)</u>				
	1980	1986	1988	1982:2 (SAAR)	1980- 1986	1986- 1987	1987- 1988	1988- 1989:2	
Export Volume									
Industrial Supplies and Materials <u>1/</u>	68.1	63.8	79.7	93.0	-1.1	8.8	14.8	16.7	
Capital Goods <u>2/</u>	87.1	92.4	144.3	158.2	1.0	21.9	28.2	9.6	
Consumer Goods <u>3/</u>	17.7	14.1	21.7	27.2	-3.7	22.1	26.9	25.3	
Non-oil Import Volume									
Industrial Supplies and Materials <u>1/</u>	47.2	73.6	73.7	70.3	7.7	0	0	-4.6	
Capital Goods <u>2/</u>	31.2	82.8	121.2	134.7	17.7	23.3	18.7	11.1	
Consumer Goods <u>3/</u>	34.9	74.5	78.2	79.7	13.5	3.6	1.3	1.9	

- 1/ Excludes oil.
2/ Excludes autos.
3/ Excludes food and autos.

Source: Bureau of Economic Analysis, Survey of Current Business, National Income and Product Accounts.

Table 4
Commodity Composition of Real Trade
by Selected Commodity Groups
(share of volume)

	<u>1980</u>	<u>1986</u>	<u>1988</u>	<u>1989:2</u>
Exports				
Industrial Supplies and Materials <u>1/</u>	28.3	26.2	23.1	26.7
Capital Goods <u>2/</u>	36.1	38.9	41.9	41.2
Consumer Goods <u>3/</u>	7.3	5.8	6.3	7.1
Non-oil Imports				
Industrial Supplies and Materials <u>1/</u>	27.3	21.1	19.3	17.9
Capital Goods <u>2/</u>	18.0	27.0	31.8	34.4
Consumer Goods <u>3/</u>	20.2	21.5	20.5	20.3

1/ Excludes oil.

2/ Excludes autos.

3/ Excludes food and autos.

Source: Bureau of Economic Analysis, Survey of Current Business.

36 percent of export volume, capital goods accounted for 34 percent of non-oil import volume and 41 percent of export volume by 1989.

Trade flows in consumer and capital goods responded differently to movements in the dollar during the 1980s. Between 1980 and 1986, the average annual rate of change of import volume of capital goods was 17.7 percent; for consumption goods, that increase was 13.5 percent. The sharp depreciation of the dollar after 1985 made a significant dent in consumer goods imports, but changed capital goods imports almost not at all. The growth rate of consumer good imports slowed to a 2 percent annual rate between 1986 and 1989:2. Import volume of capital goods continued to climb at virtually the same average annual rate as during the first half of the 1980s.

U.S. export growth between 1980 and 1986 stagnated. Only capital goods volume rose -- but at only 1 percent per year on average for the 6 years! Consumer goods exports fell. In the last three years, capital goods exports responded to robust growth abroad (especially investment demand, as noted) and to the depreciation of the dollar by expanding at an average annual rate of over 20 percent. The strongest growth, at 28.2 percent annual rate, occurred in 1988 when the dollar was at its lowest. As the dollar turned up in 1989, growth of capital goods exports fell to only 9.6 percent annual rate.

Shafer (1989) suggested that improvement in U.S. external balance depended on recapturing lost market share in manufacturing. Export growth rates would need to exceed import growth rates for some time to make up for the imbalance during most of the 1980s. While this is happening in consumer goods, it is not in the capital goods sector, which represents a greater share of total trade. As we will examine

later, differential behavior in the passthrough of exchange rate changes into prices both across products and between U.S. and foreign producers is partly responsible for the different responses of consumer goods and capital goods flows to the events of the 1980s. Models that focus on aggregate traded goods might not capture these changes, and may therefore incorrectly estimate the effectiveness of changes in the value of the dollar on U.S. external balance.

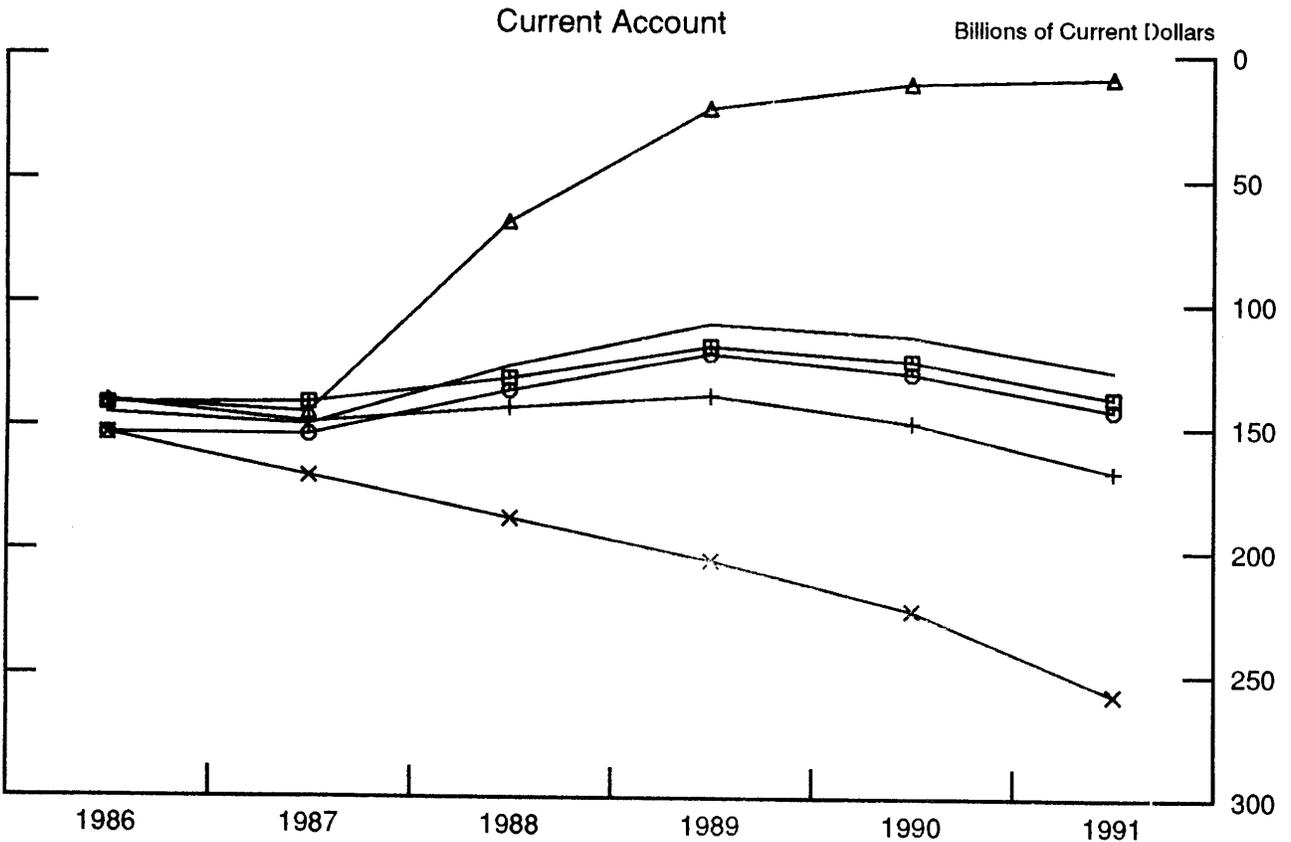
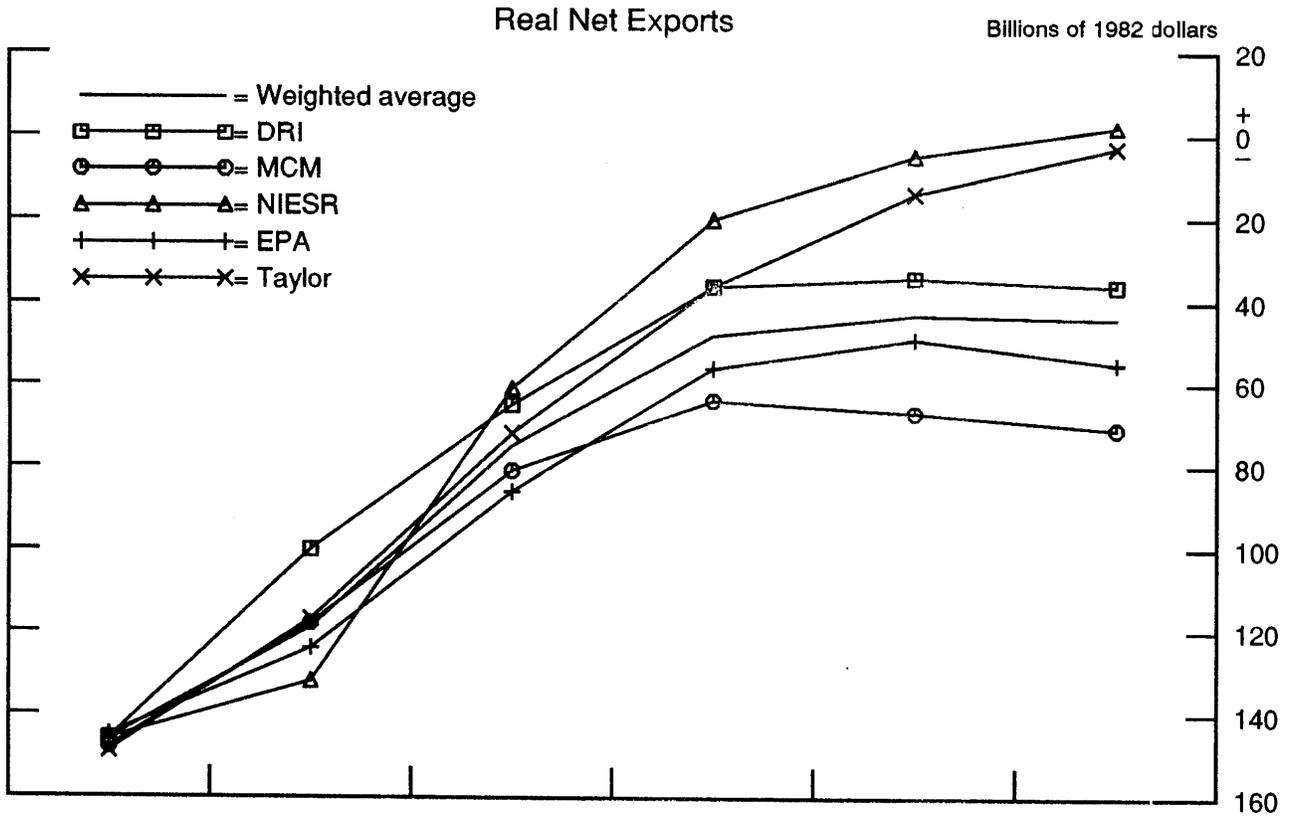
6. Prospects for U.S. external balance

One way to summarize the historical experience of the 1980s and its implications for sustained improvement in U.S. external balance is to consider macroeconomic simulations using models based on historical relationships and assuming a path for the real exchange rate and growth rates for the United States and foreign countries. To avoid dependence on a single model's structure, I turn to the research project on empirical macroeconomic modelling for interdependent economies sponsored by the Brookings Institution in 1985-7. The output of this extensive comparison of macroeconomic models is reported in Bryant et al. (1988). Chart 5 plots data presented in the Appendix to Bryant (1988) which reports updated simulations of these models. These simulations assume U.S. and foreign economic activity of 2.5 percent rising to 3.0 percent; the real exchange rate is held unchanged from its 1987:4 value, its low for the 1980s.

The upper panel shows that for all these projections, real net exports rebound through 1989, but then level off. The weighted average model response suggests a real net export deficit of about \$50 billion at that time (which compares favorably with actual data). Two models project continued improvement (albeit at a slowing rate) through 1991

11a
Chart 5

Model Projections



arriving at near balance in real merchandise trade by then. The U.S. current account deficit also improves through 1989, although as a consequence of the rising debt service burden, it worsens thereafter. By the end of the projection period in 1991, the weighted average current account deficit is nearly back to its 1986 low.

The following sections discuss and assess the likelihood that the historical macroeconomic relationships as parameterized in the macro models have been sufficiently changed by the 1980s or whether factors missing from the equation specifications cause important biases in those parameters. This analysis explicitly does not present different assumptions for fiscal and monetary policies that would yield different paths for the dollar and growth here and abroad. Clearly there is some combination of these fundamental policies that would yield sustained improvement in U.S. external balance. The point is, given these underlying assumptions, can we imagine enough structural change in the historical relationships between growth, the exchange rate, and U.S. external balance such that the model projections for external balance are seriously misleading?

III. Sources of Sustained Improvement to External Balance

1. Response to Economic Activity

Regression analyses of U.S. trade flows have noted for some time (starting probably with Houthakker and Magee in 1969) that the elasticity of U.S. imports with respect to U.S. economic activity exceeds the corresponding foreign elasticity for U.S. exports. This reflects the "income asymmetry" observed in Chart 4. This asymmetry compounds the simple mathematics of the existing net deficit position. Short of substantial differences in the pace of growth at home and abroad (holding

the real dollar fixed), the deficit will continue to expand simply because the base from which imports grow is so much bigger than the base for export growth and interest service will continue to widen the current account still further. Moreover, even with moderate changes in the real value of the dollar, given similar growth rates here and abroad, the income asymmetry asserts itself and directs the path of the external balance.

Is the income asymmetry immutable? A review of recent research on the U.S. external balance that addresses this issue directly or indirectly includes: An examination of partial equilibrium models of U.S. trade, focussing particularly on the effect of disaggregating trading partners (Marquez, 1988a; Cline, 1989); A consideration of long-run (secular) income elasticities and short-run (cyclical) elasticities (Edison et al., 1987; Marquez, 1988a; and Gagnon, 1989); Alternative proxies for economic activity, such as GNP, GDP, domestic expenditure (Hooper-Mann, 1989b); Uncertainty in coefficient estimates (Marquez, 1988b); The stability of the estimated coefficients over various time periods (work in progress by Hooper); The estimated coefficients over disaggregated commodity groups (Mann-Meade, 1987, Meade 1990).

The conclusion of this survey is that virtually no permutation of the model structure, proxy for economic activity, or degree of disaggregation eliminates the asymmetry between the U.S. and foreign activity elasticities. But the magnitude of the asymmetry varies substantially among research results. At least one important explanation appears to be the degree of country and product disaggregation. Marquez (1988a) suggests that the U.S. suffers from this asymmetry only in the long-run; estimates of cyclical elasticities are similar for exports and

imports. Results in Edison et al suggest that the long-run asymmetry is probably quite small, but in Cline the United States has one of the largest long-run asymmetries; these models differ by country disaggregation schemes. Gagnon, using a general equilibrium, forward-looking model, estimates that the U.S. has higher cyclical export responsiveness than do Germany, Japan, and "Rest-of-World". This suggests that demand booms overseas should significantly expand U.S. exports, more than a similar boom at home would increase U.S. imports. Manri-Meade find that the elasticities both at home and abroad are higher for the capital goods and consumer goods categories than they are for aggregate imports and exports, that the asymmetry holds for these two disaggregated commodity groups, and that it is particularly evident for U.S. imports of consumer goods.

Marquez (1988b) emphasizes that these coefficient estimates are not known with certainty and that parameter non-constancy can be a very important consideration in longer-term projections of external balance. It is not clear whether income responsiveness changes systematically over time or endogenously with changes in exchange rate regimes or more fundamental policies; Helkie-Hooper (1989) suggests that parameter non-constancy in the volume equations is the source of substantial variation in the projections for the current account, which may implicate the income elasticity.

One agnostic approach to answering the question of how important is the income asymmetry, and one that partly takes account of the uncertain nature of the coefficient estimates themselves, is Thomas (1989). He examines the effect on the U.S. trade deficit in the very long-run of a one-standard deviation reduction in the estimated U.S.

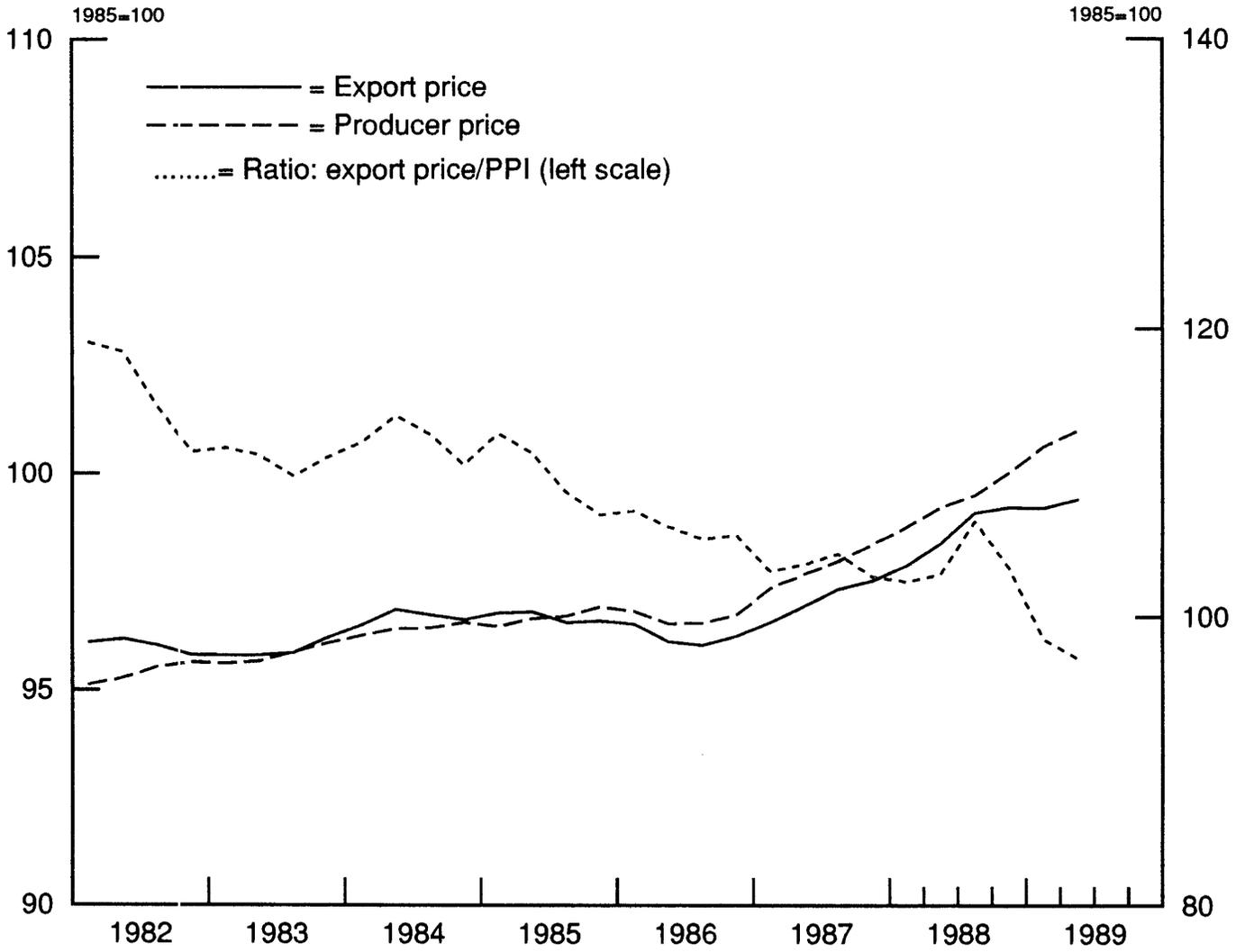
income elasticity for imports which eliminates the asymmetry in elasticities. Assumptions for foreign and U.S. growth and the exchange rate are similar to those for the Brookings project. This scenario shows that the U.S. trade balance continues to worsen in the medium-term (on account of the initial conditions of large deficit) before beginning to narrow beyond 2005.

2. Exchange Rates and Price Competitiveness

Chart 4 indicated the long-run relationship between real exchange rates and real net exports, but it also noted that the relationship was not a particularly tight one. One factor affecting the tightness of the relationship between exchange rates and trade volumes is the extent to which exchange rate changes are passed through to changes in the prices of traded goods. Mann (1986), Mann-Meade (1987), and Hooper-Mann (1989a, 1989b) document an asymmetry in the passthrough behavior of U.S. exporters and foreign suppliers to the U.S. market that may have implications for the role that the exchange rate can play in reducing the external deficit. Moreover, asymmetric passthrough behavior is particularly evident in the capital goods sector. This differential passthrough behavior may compound any bias associated with using aggregated data and constant trade share weights.

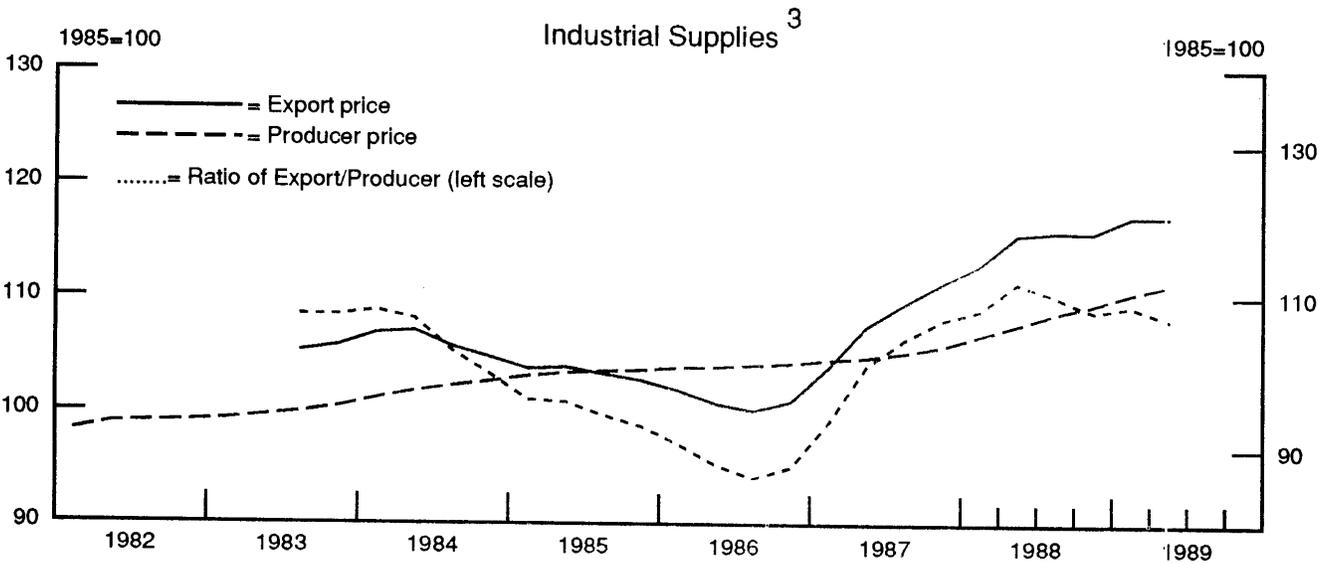
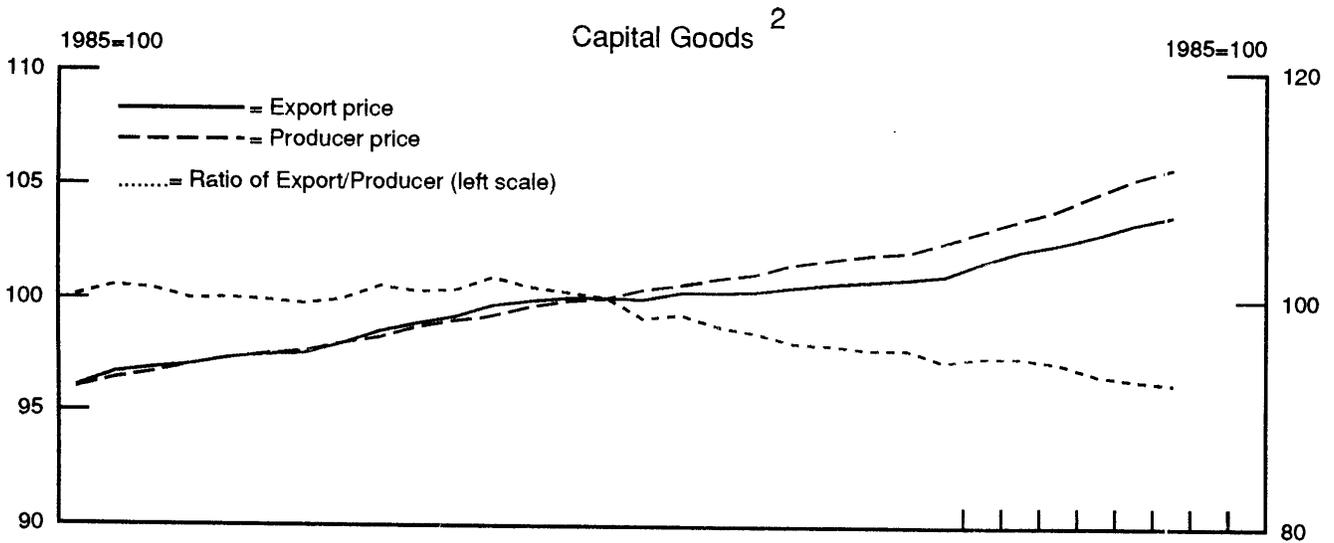
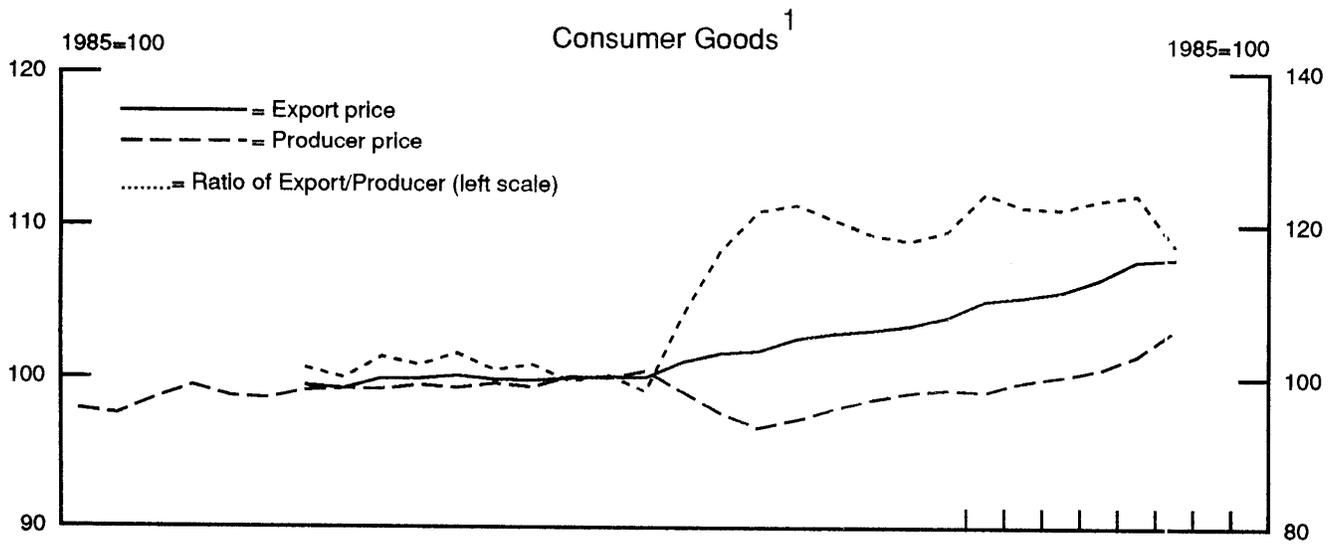
Chart 6 shows the non-agricultural export deflator, the corresponding U.S. producer price index, and their ratio, which is a measure of profit margins on export sales. There is no evidence that U.S. exporters changed their export pricing strategies in response to the long appreciation of the dollar. Thus prices of U.S. exports in foreign currency terms rose and U.S. exports became uncompetitive. As the dollar depreciated, this same unresponsive behavior substantially increased

U.S. Export Prices, U.S. Producer Prices, and Profit Margins
Non-Agricultural Exports



15b
Chart 6 (cont.)

U.S. Export Prices, U.S. Producer Prices, and Profit Margins



- 1. Consumer goods excluding food
- 2. Capital good excluding autos
- 3. Industrial supplies excluding petroleum

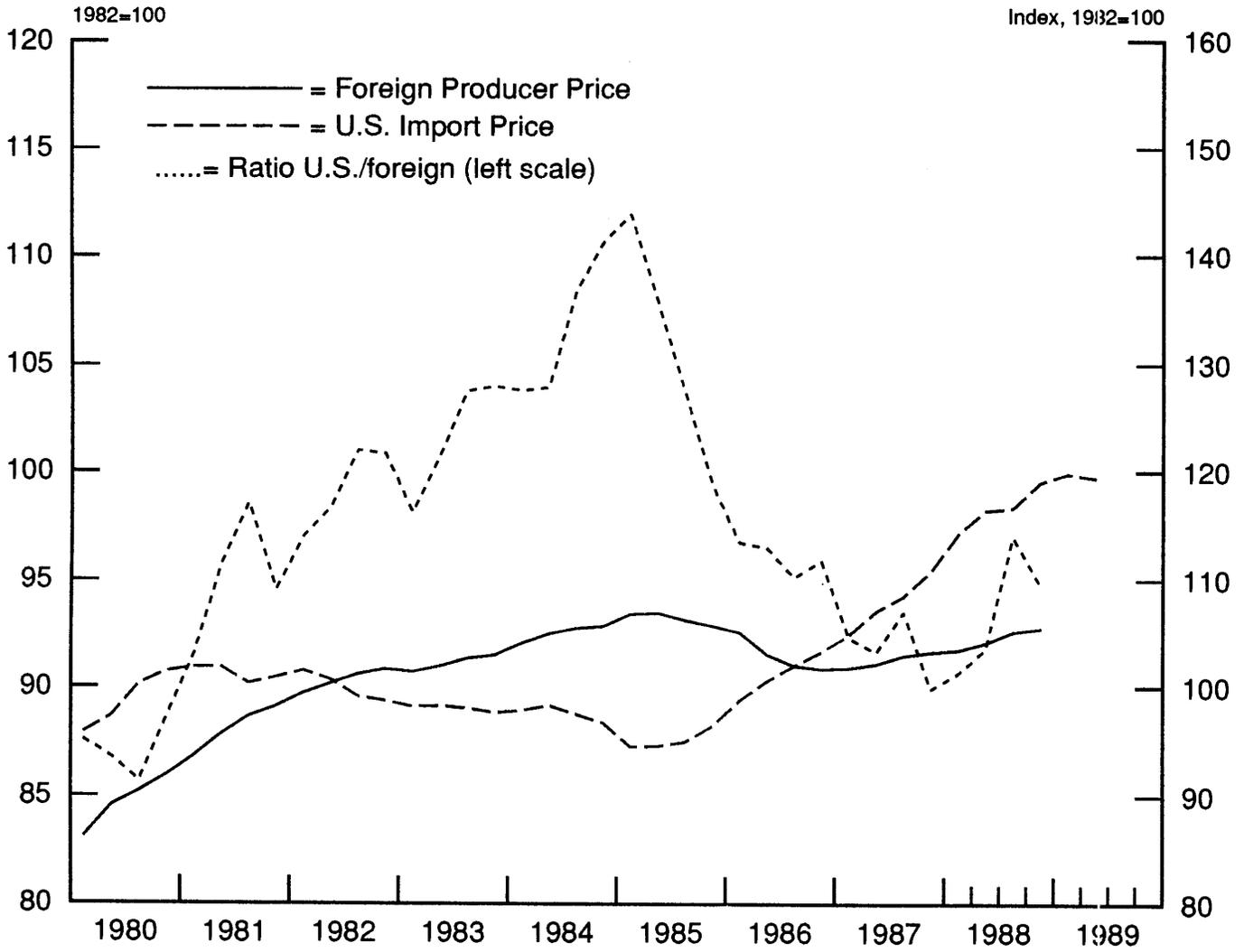
price competitiveness of U.S. exports on international markets and, as noted in Table 3, export volume rose substantially.

Chart 6 also shows the export price deflator and the U.S. producer price for three end-use categories of exports. U.S. exporters of industrial supplies evidence some responsive pricing behavior, but exporters of consumer and capital goods do not. The implication is that changes in the value of the dollar cause relatively larger swings in the foreign currency prices of U.S. consumer and capital goods in overseas markets as compared to price swings for industrial supplies exports.

Foreign suppliers to the U.S. market appear to follow a much more aggressive strategy for maintaining competitive prices in the U.S. market. Chart 7 shows the aggregate non-oil import deflator and import deflators for three end-use categories of imports. Each Chart also shows the category-specific trade-weighted foreign producer price index in dollar terms. The ratio of these two indexes is a measure of the foreign suppliers' profit margin. As the dollar appreciated, foreign suppliers maintained prices in dollar terms, reaping increased profits. When the dollar depreciated, foreign suppliers cut prices in their own currencies absorbing some of the exchange rate effect and stabilizing the dollar price of their products. This responsive pricing behavior is particularly evident in consumer goods and capital goods. The ability to passthrough more of the exchange rate change into higher prices in the case of capital goods may be a reflection of a lower degree of product substitutability in capital goods. While these data admittedly are crude, the movement in margins from peak to trough for foreign suppliers is orders of magnitude larger than the movements for U.S. exporters.

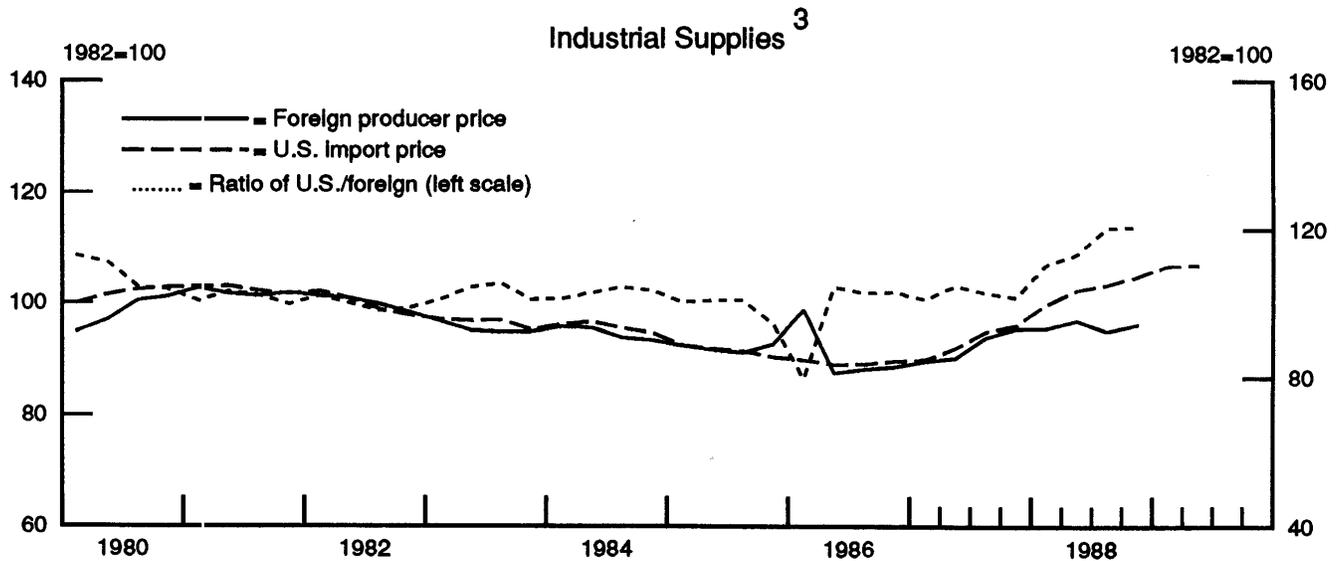
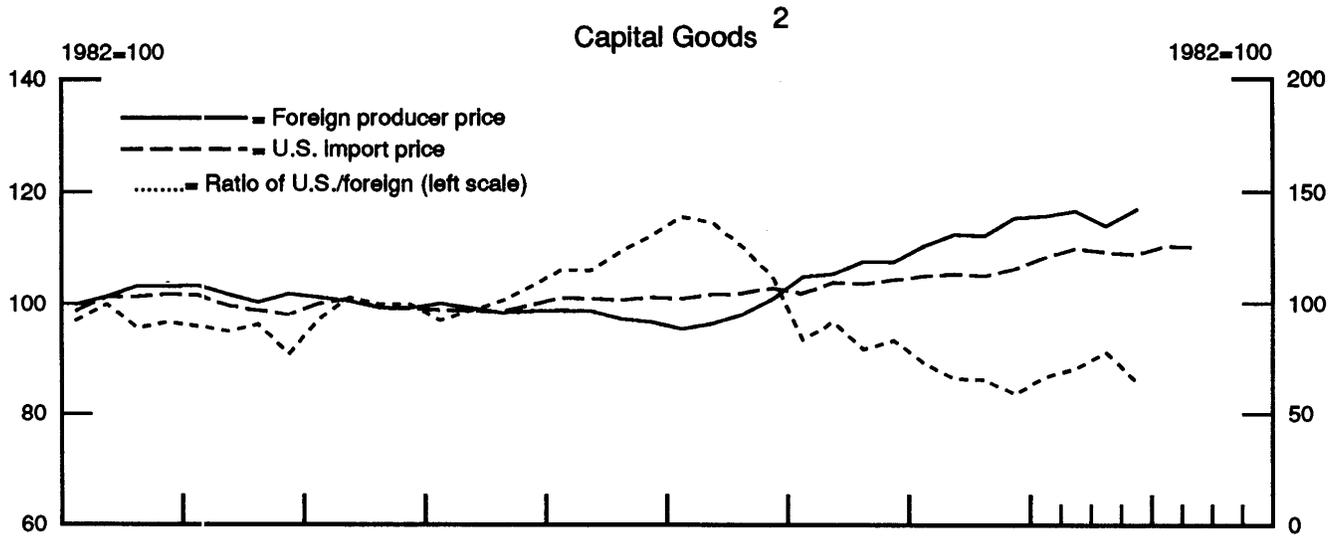
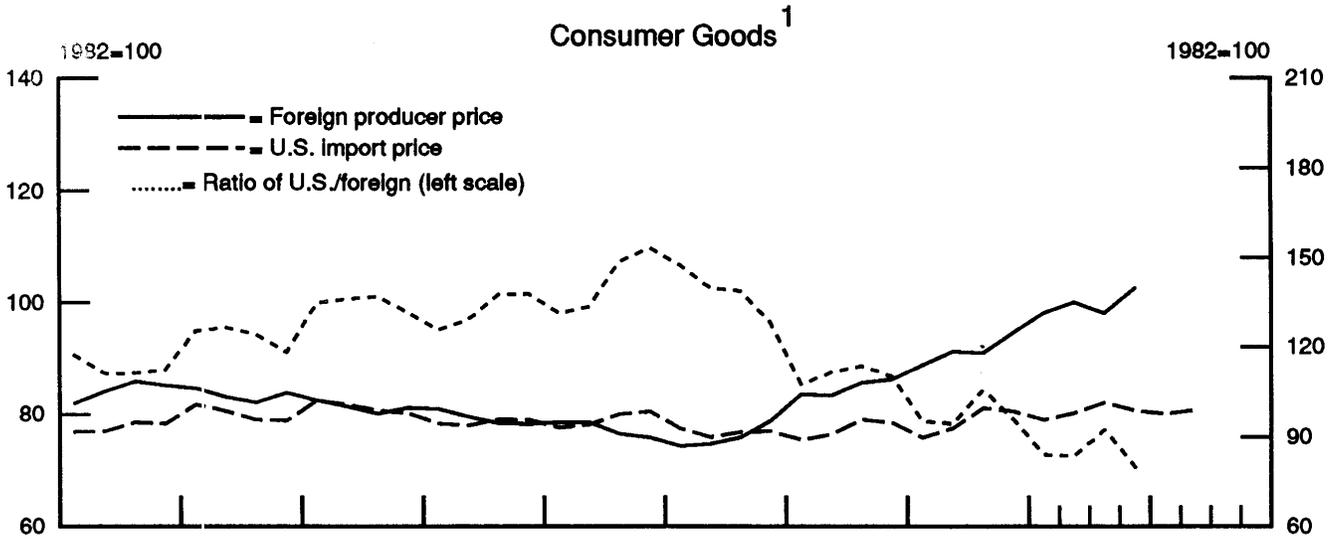
16a
Chart 7

U.S. Import Prices, Foreign Producer Prices, and Profit Margins
Non-oil Imports



16b
Chart 7 (cont.)

U.S. Import Prices, Foreign Producer Prices, and Profit Margins



- 1. Consumer goods excluding food
- 2. Capital goods excluding autos
- 3. Industrial supplies excluding petroleum

There is little evidence that this asymmetric price responsiveness between U.S. exporters and foreign suppliers has changed over time. Baldwin (1988) and Krugman-Baldwin (1989) advance the hysteresis hypothesis that the dollar appreciation yielded permanent changes in the relationship between exchange rates and import prices. But Hooper-Mann (1989a) find limited evidence of parameter non-constancy in an examination of several different specifications of this relationship using more detailed cost and import price data. Marquez (1988b) notes that uncertainty in the import volume-import price linkage (which in his specification incorporates the exchange rate-import price relationship) is responsible for a substantial portion of the uncertainty around projected estimates of U.S. external balance. But in explicit tests, he finds low probability that hysteresis in the passthrough relationship accounts for the persistence of the trade deficit.

Asymmetry in passthrough behavior between U.S. exporters and foreign suppliers means that relative price shifts (and subsequent volume effects) induced by a given dollar depreciation will be attenuated, at least in the short-run until excess profits built up by foreigners during a period of an appreciated dollar are eliminated and they decide how much of the depreciation to passthrough to maintain normal profitability. An inspection of import price data suggests that some of the decline in the value of the dollar between 1985 and 1987 was ultimately passed through and import volumes, particularly of industrial supplies, fell or grew more slowly. (See Table 3).

There may be a longer-term effect of this pricing asymmetry which has implications for the ability of the U.S. exporters to regain market share overseas. Consider the following stylized example. Suppose

that U.S. exporters lose market share when the dollar appreciates and they do not fully regain those markets when the dollar depreciates. One reason is that foreign buyers might prefer a product whose price does not keep changing; alternatively foreign buyers may enter into a long-term contract with a domestic supplier when the U.S. export price in foreign currency terms is high and then not recontract when the U.S. price comes down. Foreign suppliers to the U.S. market follow their different pricing strategy. They gain market share in the U.S. as the dollar appreciates and do not relinquish it as the dollar depreciates because they move margins instead of changing prices. In this stylized example, each dollar cycle yields some market share loss overseas for U.S. exporters while foreign firms gain market share in the United States. Shafer's prerequisite for an improved external outlook based on regaining market share overseas seems unlikely to occur.

The appreciation of the dollar during 1988 and 1989 has had short-term positive effects on the nominal measures of U.S. external balance through the J-curve effect. Meade (1988) reviews how, in the short-run when import volume is "fixed", a dollar appreciation translates foreign-currency denominated import prices into cheaper dollar prices. Thus the value of imports is lower. J-curve benefits are transitory and depend in part on foreign currency invoicing of trade. Data in Alterman (1990) indicate that 80 percent of U.S. imports are invoiced in dollars, thus reducing the scope for J-curve benefits. Invoicing in dollars does facilitate the pricing-to-market behavior of foreign suppliers, noted above.

3. International Debt Obligations

The United States received substantial media attention when it became a net debtor nation in 1985; we were becoming a "Baker Plan" nation. In 1989 U.S. international indebtedness once again made the news when the interest service burden exceeded the interest earned on investments abroad and the net debt position began to yield net capital outflows. Chart 1 indicated the beginning of the process whereby improvements to the merchandise trade balance, which have a positive effect on growth, are outweighed by net interest payments yielding a worsening current account and increased borrowing needed from abroad. Given plausible projections for growth and an assumed path for the dollar, does growing net indebtedness influence our interpretation of the macro models' prospects for external balance?

Research by Stekler and Helkie (1989) and Howard (1989) focuses on how burdensome the interest service on international debt could become in the long-run. Stekler and Helkie (1989) use relatively standard assumptions for U.S. and foreign GNP growth (although foreign growth is assumed a bit higher than U.S. growth), and a constant real dollar at the 1988:4 level (other assumptions are carefully specified in the paper). They conclude that as compared to GNP, the interest service burden is likely to be quite minor, accounting for only 1.1 percent of nominal GNP in the year 2000. One of the important reasons for this relatively small number is that the rates of return on U.S. and foreign assets are not the same, with the rate of return favoring U.S. investors. Thus the interest service burden amounts to only about \$110 billion dollars.

\$110 billion added to the projected merchandise trade deficit of \$250 billion in 2000 yields a current account deficit of about \$360

billion, within the range projected by the Brookings project. Would financing a deficit this large affect the currently favorable rate of return differential? Sensitivity tests done by narrowing the differential yield essentially similar dollar values; the interest burden increased to perhaps \$135 billion. The lack of sensitivity of the interest burden to interest rates is due in large part to the age, size, and different composition of asset holdings of U.S. and foreign investors. These asset stocks change only slowly.

Another way to measure the debt burden is to pursue the notion that current account balance is the objective. The projected \$110 billion service burden in 2000 would require a merchandise trade surplus of about that amount, (somewhat less since the net debt position would be increasing more slowly as the merchandise trade balance approached surplus). This trade surplus would represent somewhat less than 1 percent of GNP that domestic consumers and producers could not spend. Returning to Table 2, which shows the share of GNP allocated to consumption, investment, and government spending, how large is a 1 percent change in spending habits? Suppose this 1 percent came entirely out of consumption; U.S. consumption shares of GNP would fall to levels not seen in recent years. Suppose it came out of investment alone; the United States might have difficulty maintaining the non-inflationary export drive consistent with a trade surplus. Spreading the interest service burden across all three categories of domestic expenditure, each share would change by what seems to be a trivial amount. Yet it was such seemingly small changes in spending patterns, along with other fundamental policies, that led to the external deficit.

4. Missing Factors.

The partial-equilibrium structural models of U.S. external balances cannot hope to incorporate all the economic (much less political and social) factors that might affect trade. A number of authors have focussed on key missing factors such as trade protection (Bhagwati, 1988; Hooper-Mann, 1989b), long-term changes in output capacity (Hooper, 1989), the developing world (Marquez, 1988a; Cline, 1989) and expectations and adjustment dynamics (Gagnon, 1989). Does including these factors significantly alter the two fundamental asymmetries discussed in sections III.1 and III.2?

Studies by Marquez and Cline incorporates the developing countries and therefore can be examined to assess critically their role in the income asymmetry. Marquez includes them as a group but in a model examining bilateral trade flows between the United States and countries and regions. Cline disaggregates into key countries in Latin America and Asia. Marquez finds that the point estimate for the asymmetry in income elasticities for U.S. trade with the developing countries is larger than that for other trading partners, except for Japan. In Cline, the income elasticities for some developing countries (including several of the large debtors) are among their largest bilateral income elasticities. This suggests that U.S. exporters would get their share, if not more, of the benefits of robust growth in the developing world. It also suggests, retrospectively, that the debt crisis may have had a disproportionate effect on U.S. exporters.

Bhagwati (1988) hypothesizes that rising non-tariff barriers during the 1980s altered the passthrough asymmetry. In particular, he argues that NTBs restrict supply and foster pricing-to-market, thus

reducing passthrough of exchange rate changes to import prices. Hooper-Mann (1989b) test this proposition on industry data disaggregated to the 4 digit SIC level and find some support for this proposition. However when they use data aggregated to the macro level of manufactured goods (1989a), they fail to find evidence supporting the hypothesis that trade barriers affect passthrough. Nor is the hypothesis supported by data for U.S.-Japanese bilateral trade in manufactured goods, even though a substantial fraction of U.S. imports of manufactured goods from Japan is covered by NTBs. Thus the proposition that protection affects pricing behavior appears to be supported at the industry level, but with little discernable impact at the aggregate level.

Long-term changes in the productive capacity of the economy are difficult to measure and to incorporate into models of external balance. Hooper suggests that changes in relative productive capacity affect the asymmetry in income elasticities. Including time trends in the specification, a common solution (as in Krugman-Baldwin), cannot capture changes in capacity set in train, say, by exchange rate movements. Including a measure of relative capital stock apparently reduces, but does not eliminate, the income asymmetry.

While relative productive capacity may be an important missing ingredient in models of external balance, it apparently has a more limited role in resolving the projected deterioration of the U.S. external balance. Using otherwise standard assumptions for growth and the dollar, Hooper constructs a path for the relative capital stocks for the United States and foreign economies that achieves a flat path for the U.S. current account deficit at about \$120 billion. But this constructed capital stock variable depends on U.S. investment continuing at high 1988

rates, while foreign investment falls to rates well below its historical average.

5. Model Uncertainty.

Most of the previous analyses of U.S. external balance assume that parameters are known with certainty and that there are no shocks to the world economic system. Relaxing these assumptions reveals that the future path of U.S. external balance is quite uncertain. Uncertainty about the true values for key parameters (particularly those associated with the two asymmetries) is key.

Model uncertainty appears in work by Thomas and Helkie-Hooper noted earlier. In Thomas, eliminating the income asymmetry yields a narrowing of the net export deficit, but only after the year 2000. Helkie-Hooper shock only the residuals and suggest that the source of greatest uncertainty is in the trade volume equation.

Marquez (1988b) applies random shocks to both income and passthrough parameters as well as to residuals in his analysis of the J-curve for the United States. The J-curve does exist, but there is great variance around the mean time it takes for a given dollar depreciation to yield net exports of zero. Uncertainty about the true value of the price elasticity of U.S. import demand is the major source of dispersion of the stochastic J-curve around its mean path.

These results are all model dependent in that the stochastic simulations take place within the confines of a particular model specification. Marquez and Ericsson (1989) systematically compare six models of U.S. external balance using stochastic simulation techniques and shocking both residuals and parameters. The models use alternative estimation methods, include time series and structural specifications,

and different degrees of aggregation over commodity and trading partners. They conclude that the confidence intervals around the simulated trade accounts are wide and increasing over the simulation period. Moreover, the mean error is large; as large as half the current account deficit itself. This work implies that the confidence bands around the simulation paths presented in the update to the Brookings project are wide enough to incorporate both an sustained improving path or a steadily worsening path after 1989.

IV. Summary and Conclusion

Between 1987 and 1989, U.S. external balance improved. Will the factors underlying this trend yield sustained improvement, will their effects peter out, or have some of the factors behind the improvement to date been subsequently reversed? One major factor underlying the improvement was the drop in the value of the dollar between 1985 and 1987. During 1988 and 1989, some of that depreciation was reversed and the gains to U.S. export growth fell off somewhat. Second, and obviously related to the first, there is some evidence that the difference in economic activity between the United States and foreign economies that accounted for some of the buildup in the external deficit was eliminated by faster growth abroad, and some slowing in the United States.

Most projections for the U.S. external deficit show improvement lasting only through 1989 or so. This is due in large part to asymmetries in elasticities of U.S. demand for imports and foreign demand for U.S. exports with respect to economic activity and asymmetries in the passthrough behavior of U.S. exporters and foreign suppliers to the U.S. market. These asymmetries effectively guarantee that any projection which assumes similar rates of growth for the U.S. and foreign economies

and a real value of the dollar approximately at its recent low at the end of 1987 will yield a long-term worsening of U.S. external balance. At the same time, rising net indebtedness yields negative net service payments which further worsen the current account.

What are the prospects for changes in these structural asymmetries, or to what extent are they a figment of misspecified models? Would reasonable assumptions for structural changes in these parameters be sufficient to generate sustained improvement of the U.S. external balance? The evidence is mixed on the direction of possible change to any one of the individual elasticities underlying the two asymmetries. Presuming that all but one of the elasticities underlying these asymmetries are constant and accurately estimated, and varying just that one appears insufficient to alter the basic conclusion. Altering standard model specifications to include missing factors, such as supply factors or trade protection, or allowing for changes in the composition of trading partners or products, does change the estimated elasticities and the magnitude of the asymmetries. However these also do not appear to be sufficient to alter the prognosis.

Stochastic simulation of key elements of the U.S. trade account (parameters and residuals in the price and volume equations) indicates substantial uncertainty in the estimated future path for U.S. external balance. Taking the upper bound on the confidence interval of these stochastic simulations can yield a positive trade account in the late 1990s; but the lower bound yields a far worse deficit than that projected by the macro models. So model uncertainty alone does not necessarily yield a more favorable outlook.

In summary, there is great uncertainty about the size of the two fundamental asymmetries governing the path of the U.S. external deficit and therefore there is great uncertainty about the projected path of the deficit itself. But the weight of evidence suggests that sustained improvement is not likely given the assumptions of similar economic activity in the U.S. and abroad and an unchanged value of the dollar. The implication is that a different policy mix is probably necessary to sustain recent improvements in the external accounts.

Bibliography

- Alterman, William. "Price Trends in U.S. Trade: New Data, New Insights", in Peter Hooper and J. David Richardson, eds. International Economic Transactions: Issues in Measurement and Empirical Research. University of Chicago Press for NBER; forthcoming 1990.
- Bhagwati, Jagdish. "The Pass-through Puzzle: The Missing Prince from Hamlet". Mimeo, Columbia University, 1988.
- Bryant, Ralph C. "The U.S. External Deficit: An Update". Brookings Discussion Papers in International Economics #63, Brookings Institution, January 1988.
- _____, Dale W. Henderson, Gerald Holtham, Peter Hooper, Steven A. Symansky, eds. Empirical Macroeconomics for Interdependent Economies. The Brookings Institution: Washington DC, 1988.
- Cline, William R. United States External Adjustment and the World Economy. Institute for International Economics: Washington, 1989.
- Edison, Hali J., Jaime Marquez, and Ralph W. Tryon. "The Structure and Properties of the Federal Reserve Board Multicountry Model", Economic Modelling, April 1987.
- Gagnon, Joseph E. "A Forward-Looking Multicountry Model: MX3". International Finance Discussion Papers no. 359, Federal Reserve Board, August 1989.
- Helkie, William L. and Peter Hooper. "U.S. External Adjustment: Progress and Prospects". International Finance Discussion Papers no. 345, Federal Reserve Board, March 1989.
- Hooper, Peter. "Exchange Rates and U.S. External Adjustment in the Short Run and the Long Run". International Finance Discussion Papers no. 346, Federal Reserve Board, March 1989.
- _____ and Catherine L. Mann. "Exchange Rate Pass-through in the 1980s: The Case of U.S. Imports of Manufactures". Brookings Papers on Economic Activity, vol 1, 1989a.
- _____ and _____. "The Emergence and Persistence of the U.S. External Imbalance: 1980-1987". Princeton Studies in International Finance no. 65, October 1989b.
- Houthakker, Hendrick and Stephen Magee. "Income and Price Elasticities in World Trade". Review of Economics and Statistics, vol 51, 1969.
- Howard, David H. "The United States as a Heavily Indebted Country". International Finance Discussion Papers no. 353, Federal Reserve Board, May 1989.
- Krugman, Paul R. Exchange Rate Instability. MIT Press, 1989.

Krugman, Paul R. and Richard Baldwin. "The Persistence of the U.S. Trade Deficit". Brookings Papers on Economic Activity, vol 1., 1987.

Mann, Catherine L. "Prices, Profit Margins, and Exchange Rates". Federal Reserve Bulletin, June 1986.

_____ and Ellen E. Meade. "Empirical Analysis of Product Trade: A Disaggregated Approach". Mimeo, Federal Reserve Board, November 1987.

Marquez, Jaime. "Income and Price Elasticities of Foreign Trade Flows: Econometric Estimation and Analysis of the U.S. Trade Deficit". International Finance Discussion Papers no. 324, Federal Reserve Board, June 1988.

_____. "The Dynamics of Uncertainty or the Uncertainty of Dynamics: Stochastic J-Curves". International Finance Discussion Papers no. 335, Federal Reserve Board, November 1988.

_____ and Neil Ericsson. "Evaluating the Predictive Performance of Trade Account Models". International Finance Division Discussion Papers no. XXX, Federal Reserve Board, January 1990.

Meade, Ellen E. "Exchange Rates, Adjustment, and the J-Curve". Federal Reserve Bulletin, October 1988.

_____. "Computers and the Trade Deficit: The Case of the Falling Prices", in in Peter Hooper and J. David Richardson, eds. International Economic Transactions: Issues in Measurement and Empirical Research. University of Chicago Press for NBER; forthcoming 1990.

Shafer, Jeffrey R. "The Impact of the U.S. Current Account Deficit on Other OECD Countries", in Albert E. Burger ed. U.S. Trade Deficit: Causes, Consequences, and Cures. Kluwer Publishers: Norwell Massachusetts, 1989.

Stekler, Lois and William L. Helkie. "Implications for Future U.S. Net Investment Payments of Growing U.S. Net International Indebtedness". International Finance Discussion Papers no. 358, Federal Reserve Board, July 1989.

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