FRBSF Weekly Letter

March 11, 1988

The Persistent Trade Deficit

In the last year, U.S. real net exports improved by over $20 billion. Nevertheless, given the sharp depreciation of the dollar since 1985, many analysts remained disappointed. In fact, concern has arisen about the extent to which depreciation in the value of the dollar will generate the strong trade improvement that many have anticipated. Some argue that, in the past, income effects rather than exchange rate changes were the major cause of improvements. Without a U.S. recession to slow import demand and/or significantly stronger foreign income growth to spur exports, they assert, current expectations of a significant turnaround are unwarranted.

This *Letter* compares the current contributions of income and exchange rate changes to trade balance projections with those during earlier episodes of U.S. trade balance adjustment.

Determinants of net exports

The major determinants of a country's trade balance, according to economic theory, are the exchange rate and domestic and foreign income growth. When the value of a country's currency falls, all other things considered, the country's exports become cheaper and easier to sell. At the same time, imports into the country become expensive and harder to sell.

Of course, it takes time for changes in currency values to affect trade flows because it takes time for prices to reflect exchange rate changes and for buyers to adjust the quantities to which preexisting contracts had committed them in the short-run. Suppliers may also require a substantial amount of time to change their production levels.

Domestic and foreign income changes are the other major determinants of trade flows. Higher income growth and economic activity abroad increase demand for a country's exports, while greater domestic income growth leads to higher imports.

Chart 1 plots the evolution from the fourth quarter of 1972 through the fourth quarter of 1988 of the real net export balance, both with and without oil imports. The figures shown for the period from 1987Q4 to 1988Q4 are projections derived in a manner described below.

The shaded areas mark two past episodes of strong trade balance improvement: (i) 1972Q4 to 1975Q2 and (ii) 1978Q1 to 1980Q3, as well as the period of improvement that began in 1986Q4 and is projected to continue at least through 1988Q4. Each of these periods is approximately two-and-a-half years in length. The magnitude of cumulative actual improvement in the earlier periods and of projected improvement through the end of this year are roughly equal at $80 to $90 billion dollars.

Chart 2 plots the real trade-weighted value of the dollar over the same period. It shows that the dollar depreciated during each of the two earlier episodes of trade balance improvement, and depreciated most sharply in the most recent period. Thus, significant U.S. trade balance improvements have in the past corresponded to a depreciating dollar.

Chart 3 plots two-quarter moving average GNP growth rates for both the U.S. and the rest of the world (the latter proxied by a weighted average of rates in several industrial countries). It shows that world growth generally exceeded that in the U.S. over the two prior periods of trade balance improvement — 1972Q4 to 1975Q2 and 1978Q1 to 1980Q3. In contrast, in the last year, U.S. growth has exceeded that abroad. This suggests that in the current period, income effects may be working against improvement in the U.S. trade balance.

Contribution of income and price effects

A more precise determination of how much of the adjustment in the trade balance is attributable to price changes versus income changes on average can be obtained from statistical estimates of the historical relationship between trade balance flows and their major determinants — the exchange rate and U.S. and world GNP.

In particular, historical relationships were estimated for real exports and real nonpetroleum imports of goods and services using data from the fourth quarter of 1972 to the third quarter of 1987. Petroleum imports were removed because of the changeability of OPEC pricing practices and the relative unresponsiveness of oil imports to changes in U.S. dollar exchange rates (because oil generally is invoiced in dollars). Exchange rate changes were allowed to affect trade flows with a lag. The resulting estimated historical relationships were then used to generate projections of trade balance adjustment over the period 1987Q4 to 1988Q4 using projections of a cumulative 10 percent fall in the value of the dollar, 2.2 percent average growth in the United States, and 2 percent average growth abroad. The general conclusions discussed below are unaffected by plausible alterations in these projections.

With these estimates of the relationship between exports and nonoil imports, on the one hand, and income and price variables, on the other, it is possible to decompose the cumulative change in the nonoil net export balance over each of the periods above into components attributable to (i) income changes, (ii) relative price changes, and (iii) prediction errors. Income changes represent the combined effects of U.S. real GNP growth on our imports and of world GNP growth on our exports. Relative price effects represent the combined effects of changes in the real price of the dollar on both exports and imports. The prediction errors arise from changes in the actual balance unexplained by income and price effects on the basis of the historical relationships estimated over the period 1972Q4 to 1987Q3.

The results of this exercise for the three periods of real net export balance improvement were as follows. Over the two earlier periods, 1972Q4 to 1975Q2 and 1978Q1 to 1980Q3, income and price effects worked in the *same* direction and each accounted for roughly forty percent of the improvement. (Prediction errors account for the rest.) Thus, during those episodes, a depreciating dollar and relatively slower growth in the United States than abroad contributed equally to reducing our trade deficit.

In contrast, for the period 1986Q4-1988Q4, income and price effects appear to be working in *opposite* directions. Specifically, because foreign income is not growing fast enough relative to U.S. income to expand the growth of exports relative to our imports, income effects currently make a negative forty percent contribution to the overall improvement in the trade balance; i.e., they are working against improvement in the trade balance. However, past, current, and projected exchange rate and price changes are estimated to account for one hundred forty percent of the trade balance improvement. In other words, the effects of exchange rate and price changes are estimated to more than offset the negative income effects. This relative role of price and income factors, which underlies current projections of trade balance adjustment, contrasts with previous experience.

While the role of changes in relative prices underlying current projections of trade balance improvement is significantly greater than has been the case before, the more-than-fifty percent depreciation of the dollar over the past two years has been much greater than previously experienced. Assuming that a given relative price change has near the same impact on trade flows in the future as it has had in the past, a depreciation of this magnitude can be expected to improve the trade balance considerably.

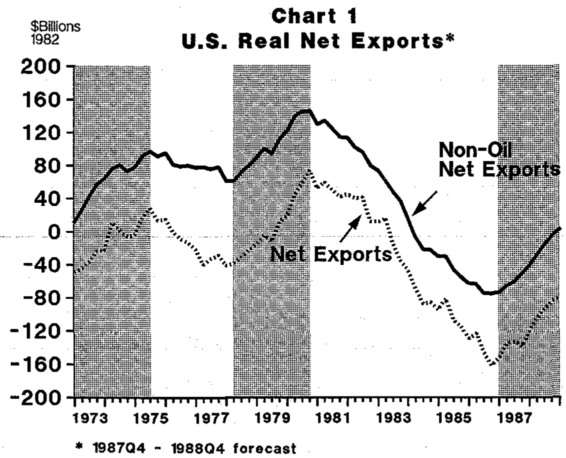
Conclusions

In earlier instances of U.S. trade balance improvement, income and relative price effects worked in the same direction and played roughly equal roles. Current projections of a strong trade balance turnaround attribute a significantly greater role to relative price changes associated with recent dollar depreciations than was the case in the earlier episodes. Moreover, income effects are now working against improvement in the trade balance.

Nevertheless, the real trade balance has improved in recent quarters, and further expected improvement is consistent with the sharp depreciation of the dollar since 1985.

An improving trade picture should contribute to stronger U.S. economic growth. In the past year, the improvement in the trade balance has contributed roughly a half percentage point to GNP growth. Further improvement is an important factor in the forecast of continued expansion of the economy through 1988.

Reuven Glick


$Billions
1982
Chart 1
U.S. Real Net Exports*
200
160
120
80
40
0
-40
-80
-120
-160
-200
Non-Oil
Net Exports
Net Exports
1973
1975
1977
1979
1981
1983
1985
1987
* 1987Q4 - 1988Q4 forecast

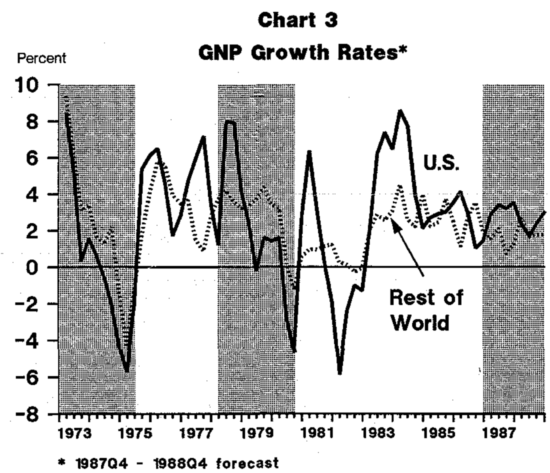


Chart 3
GNP Growth Rates*
Percent
10
8
6
4
2
0
-2
-4
-6
-8
U.S.
Rest of
World
1973
1975
1977
1979
1981
1983
1985
1987
* 1987Q4 - 1988Q4 forecast

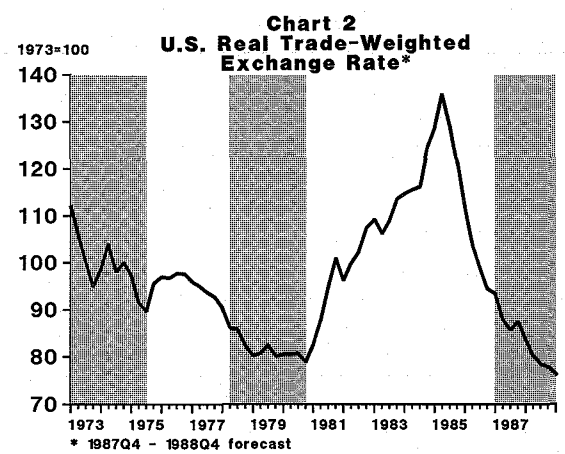


Chart 2
U.S. Real Trade-Weighted
Exchange Rate*
1973=100
140
130
120
110
100
90
80
70
1973
1975
1977
1979
1981
1983
1985
1987
* 1987Q4 - 1988Q4 forecast

Research Department
Federal Reserve
Bank of
San Francisco

Alaska Arizona California Hawaii Idaho
Nevada Oregon Utah Washington

BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 2/17/88	Change from 2/10/88	Change from 2/18/87 Dollar	Percent[7]
Loans, Leases and Investments[1] [2]	203,839	251	– 1,044	– 0.5
Loans and Leases[1] [6]	180,707	186	– 4,218	– 2.2
Commercial and Industrial	51,439	575	– 1,998	– 3.7
Real estate	70,819	46	4,058	6.0
Loans to Individuals	36,069	– 150	– 4,452	– 10.9
Leases	5,776	– 12	398	7.4
U.S. Treasury and Agency Securities[2]	16,078	62	2,983	22.7
Other Securities[2]	7,054	4	192	2.7
Total Deposits	204,253	2,008	64	0.0
Demand Deposits	51,102	2,054	– 687	– 1.3
Demand Deposits Adjusted[3]	31,341	– 2,342	– 16,073	– 33.8
Other Transaction Balances[4]	20,137	4	1,132	5.9
Total Non-Transaction Balances[6]	133,013	– 51	– 383	– 0.2
Money Market Deposit Accounts—Total	43,527	367	– 3,521	– 7.5
Time Deposits in Amounts of $100,000 or more	33,065	– 388	1,546	– 4.9
Other Liabilities for Borrowed Money[5]	24,185	2,364	– 3,975	– 14.1

Two Week Averages of Daily Figures	Period ended 2/8/88	Period ended 1/25/88
Reserve Position, All Reporting Banks		
Excess Reserves (+)/Deficiency (–)	98	130
Borrowings	9	11
Net free reserves (+)/Net borrowed(–)	90	119

1 Includes loss reserves, unearned income, excludes interbank loans
2 Excludes trading account securities
3 Excludes U.S. government and depository institution deposits and cash items
4 ATS, NOW, Super NOW and savings accounts with telephone transfers
5 Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources
6 Includes items not shown separately
7 Annualized percent change