

# Trade Deficits: Causes and Consequences

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**F**or the most part, trade deficits  
or surpluses are merely a reflection  
of a country's international  
borrowing or lending profile  
over time. . . . Neither one, by itself,  
is a better indicator of long-run  
economic growth than the other.

On September 19, 1996, the *Washington Post*, *Wall Street Journal*, and *New York Times* reported trade figures released by the U.S. Department of Commerce showing that the monthly U.S. trade deficit increased by \$3.5 billion in July 1996. Almost unanimously, analysts quoted in the articles stated that the recent trade figures showed weakness in the U.S. economy. The news was not earth shattering, nor was the interpretation of the increasing trade deficit controversial. The conventional wisdom is that the trade balance reflects a country's competitive strength—the lower the trade deficit, the greater a country's competitive strength and the higher its economic growth.

But the conventional wisdom on trade balances stands in stark contrast to that of the economics profession in general. Standard economic thought typically regards trade deficits as the inevitable consequence of a country's preferences regarding saving and the productivity of its new capital investments. Trade deficits are not necessarily seen as a cause for concern, nor are they seen as good predictors of a country's future economic growth. For example, large trade deficits may signal higher rates of economic growth as countries import capital to expand productive capacity. However, they also may reflect a low level of savings and make countries more vulnerable to external economic shocks, such as dramatic reversals of capital inflows. Is the conventional wisdom wrong, or has the economics profession just failed to keep its theories well-grounded in fact?

Certainly, anyone can create a theory about trade deficits and speculate about how they may, or may not, be related to a nation's economic performance. The paramount question is not whether one can create a theory, but whether it is logically consistent and stands up to empirical observation.

The purpose of this article is to answer the question of whether trade deficits, bilateral as well as overall, are related to a country's economic performance. We begin by discussing the origin of popular views on trade deficits and compare these views with current economic thought on trade balances. Next, we discuss the relationship between international capital flows and trade balances and relate them to economic growth. We then empirically examine the relationship between trade deficits and long-run economic growth.

## **The evolution of ideas about trade balances**

**The mercantilists.** Much of the current popular thinking on trade balances can trace its

intellectual roots to a group of writers in the seventeenth and eighteenth centuries called the *mercantilists*. The mercantilists advanced the view that a country's gain from international commerce depends on having a "favorable" trade balance (favorable balance meaning that exports are greater than imports). The mercantilists were businessmen, and they looked at a country's trade balance as analogous to a firm's profit and loss statement. The greater are receipts over outlays (exports over imports), the more profitable (competitive) is the business (country). Thus, they argued that a country could benefit from protectionist policies that encouraged exports and discouraged imports. Because most international transactions during the seventeenth and eighteenth centuries were paid for with gold and silver, mercantilists were advocating a trade surplus so that the country would accumulate the precious metals and, according to their arguments, become rich.<sup>1</sup>

In 1752, David Hume exposed a logical inconsistency in the mercantilism doctrine through his explanation of the "specie-flow mechanism."<sup>2</sup> The specie-flow mechanism refers to the natural movement of money and goods under a gold standard or, indeed, any fixed exchange rate system in which the domestic money supply is inextricably linked to a reserve asset. The reserve asset need not be gold.<sup>3</sup>

Hume argued that an accumulation of gold from persistent trade surpluses increases the overall supply of circulating money within the country, and this would cause inflation. The increase in overall inflation also would be seen in an increase in input prices and wages. Hence, the country with the trade surplus soon would find its competitive price advantage disappearing as prices rose but the exchange rate remained constant. Automatically, through the specie-flow mechanism, the country with a trade surplus would find that its surplus shrank as its prices rose relative to other countries' prices. Any attempt to restore the trade surplus by raising tariffs or imposing other protectionist policies would simply result in another round of cost inflation, leading ultimately to a balance between exports and imports once again.

Several of the mercantilists—such as Gerard de Malynes (1601) and Sir Thomas Mun (1664)—understood the problems of maintaining a perpetual trade surplus as domestic prices rose but discounted this problem as a very long-run phenomenon and emphasized the benefits of accumulating gold as a means of exchange in a hostile and uncertain world.<sup>4</sup>

A few decades after Hume's original writ-

ings, economists such as Adam Smith and David Ricardo added further arguments against the mercantilistic advocacy of trade surpluses. They argued that what really matters to a country is its terms of trade—that is, the price it pays for its imports relative to the price it receives for its exports. Smith and Ricardo stood the advocacy of trade surpluses on its head when they showed that a country is better off the more imports it receives for a given number of exports and not vice versa. They argued that the mercantilistic analogy between a country's exports and a firm's sales was faulty.

Adam Smith in 1776 argued that money to an economy is different from money to an individual or firm. A business firm's objective is to maximize the difference between its imports of money and its exports of money. Money "imports" are the sale of goods and money "exports" are the purchases of labor and other inputs to production. However, for the economy as a whole, wealth consists of goods and services, not gold. Money, or gold, is useful as a medium of exchange, but it cannot be worn or eaten by a country. More money, in the medium and long run, just results in a higher level of prices. In the short run, however, Adam Smith also recognized that under the gold standard, a country's supply of gold would enable it to purchase the goods of other countries.

To some extent, therefore, the argument between the most able mercantilists and the classical economists was partly a question of emphasis—the mercantilists were concentrating on the fact that in the short run, the accumulation of money is wealth, while the classical economists were concentrating on the fact that in the long run, it is only the quantity of goods and services available that is wealth. However, the classical economists primarily were responding to the naive writings of most mercantilists, who confused the flow of money with the flow of goods in the short and long run.

**National income accounting.** Perhaps the great emphasis placed on national income accounting today is an important reason the naive form of mercantilism lives on in the hearts of many individuals. According to basic national income accounting, gross domestic product (*GDP*) is consumption (*C*) plus investment (*I*) plus government spending (*G*) plus exports (*X*) minus imports (*M*)—that is,

$$GDP = C + I + G + X - M.$$

This makes it appear that exports increase gross domestic product while imports reduce gross

domestic product. This is erroneous because the definition of gross domestic product is just a tautology, and no conclusion about causality is possible. For example, it is equally true that the volume of goods and services available to an economy ( $C + I + G$ ) consists of domestic output ( $GDP$ ) plus imports minus exports—that is,

$$C + I + G = GDP + M - X.$$

Looked at in this way, a trade deficit appears to be “favorable” because we ultimately are interested in domestic spending. But this, too, is definitional. The question of whether deficits improve or hurt the economy cannot be resolved by such tautological manipulations. Theory and empirical evidence are required to evaluate whether deficits are favorable or unfavorable.

**Employment and trade balances.** The national income accounting view often leads many to associate trade deficits with reductions in employment. For example, some have argued that for every million dollars the United States has in its trade deficit, it costs about thirty-three American jobs, assuming that the average worker earns \$30,000 a year (that is,  $\$1,000,000/\$30,000 = 33.33$ ). So this implies that the July 1996 trade deficit of \$11.7 billion cost around 390,000 jobs.<sup>5</sup> This calculation, however, is based on the fallacious assumption that capital inflows do not find their way into productive activity. Because a trade deficit is associated with capital inflows (to finance the deficit), the jobs lost by the deficit would be restored by the inflows of capital in expanding sectors of the economy. Gould, Ruffin, and Woodbridge (1993) correlated unemployment rates of the twenty-three OECD (Organization for Economic Cooperation and Development) countries with their import penetration ratios (the ratio of imports to GDP) and their export performance ratios (the ratio of exports to GDP) over thirty-eight years. They found that, for about half the countries, the correlation between import penetration ratios and unemployment rates (future or present) is negative (that is, higher imports are related to lower unemployment).

More importantly, however, they found that there is no instance of a significant positive or negative correlation of import penetration ratios with unemployment rates that is not the same for export performance ratios. In other words, exports and imports always had the same type of correlation with unemployment rates. Exports and imports are more related to each other than they are to other macroeconomic

factors like unemployment rates because, ultimately, exports must pay for imports.

## International capital movements and the balance of payments

From a public policy viewpoint, the fundamental question is: Do trade deficits reflect a malfunctioning of the economic system? If they do, perhaps limiting their size can improve a country’s future standard of living. What is known, however, is that trade deficits or surpluses ultimately depend on a country’s preferences regarding present and future consumption and the profitability of new capital investments. In understanding movements in the balance of trade, it helps to see their connection to movements in the balance of international capital flows. In a world of international capital mobility, trade deficits and international capital movements are the result of the same set of economic circumstances.

As first discussed by J. E. Cairnes (1874), international capital flows go through certain natural stages. The capital account balance (or the trade balance) should be seen as balancing a country’s propensity to save with a country’s investment opportunities and its resulting income payments, rather than as negative or positive indicators. The benefit of international capital flows and trade imbalances is that, in ordinary circumstances, they can lead to an efficient allocation of resources around the world. Net capital importers get their scarce capital more cheaply, and net capital exporters receive a higher return on their investments. In turn, capital imports finance trade deficits and trade surpluses finance capital exports.

In fact, under the right circumstances, a country can run a perpetual trade deficit or surplus. What matters for the balance of trade is how long a country has been a borrower or lender in international capital markets. How can countries maintain a perpetual trade deficit or surplus? Over time, the longer a country imports capital, the larger the interest rate payments on that capital. Eventually, a long-term debtor country will be borrowing less than its interest payments on existing debt to other countries and, in the steady-state, necessarily will have a trade surplus to pay these interest payments. A long-term creditor country will be lending less to other countries than its income receipts from other countries and will have a perpetual trade deficit. (For a fuller description of this mechanism, see the box entitled *International Capital Flows and the Balance of Trade* and the appendix.)

## International Capital Flows and the Balance of Trade

The trade balance is a reflection of how long a country has been a borrower or lender in international capital markets. To see this relationship, it is helpful to examine the basic structure of a country's balance of payments. Let  $X$  = exports,  $M$  = imports,  $T$  = net gifts or unilateral transfers to foreigners,  $\Delta B$  = net new borrowing from abroad,  $B$  = net indebtedness to the rest of the world, and  $r$  = the rate of interest on foreign indebtedness. A country's balance of payments must be

$$X + \Delta B = T + M + rB.$$

The left-hand side of the equation refers to receipts from foreigners; the right-hand side refers to payments to foreigners. These must always balance. If  $\Delta B > 0$ , a country is borrowing; if  $B > 0$ , a country is a net debtor. If  $\Delta B < 0$ , a country is lending, and if  $B < 0$ , a country is a net creditor. A country is considered to be a relatively short-term borrowing nation when its net indebtedness,  $B$ , is small compared with its net new borrowing,  $\Delta B$ . In this case, imports will be greater than exports ( $M > X$ ). A country is considered to be a relatively long-term borrowing nation when the interest it pays on foreign indebtedness,  $rB$ , is larger than its net new borrowing from abroad,  $\Delta B$ . Here, exports are greater than imports ( $X > M$ ). The opposite is true for a short-term or long-term creditor country.

Countries also can be in transition from a long-term creditor or debtor country to a short-term creditor or debtor country. The United States, for example, was a long-term creditor country throughout the 1970s, with trade deficits partly or wholly financed by net income payments from foreigners. However, in the 1980s, the U.S. trade deficit ballooned as both capital imports and income payments financed the deficit. The country was in transition until the net income account turned negative in 1994. Today, the United States must be regarded as a short-term debtor country. Japan, on the other hand, represents a major short-term creditor country.

Table 1 shows a snapshot of the 1994 balance of payments for several major countries. We show the net capital account, the net income account, and the trade and transfers account (the sum of net exports of goods and services and net transfers from the rest of the world). The current account (not shown) is the sum of the first and last columns; we separate the two components to illustrate the forces at work. It is very difficult to find examples of long-term creditor countries. The United Kingdom comes close, with its trade deficit and large net income from foreign investments, but the country may be entering a transition period. Austria is another example. There are more examples of long-term debtor countries, such as Canada and most of the Scandinavian countries.

Today, the United States has a relatively small obligation as far as investment income is concerned. But as we continue to be a debtor nation, the accumulated debts with the rest of the world will grow so large that the debt-service payments become larger than any amount of fresh capital borrowed by the country. If the United States continues to borrow, it will become a long-term debtor country. At this point,

we will be in a perpetual balance-of-trade surplus. This must happen in order to pay the foreigners who own assets in the United States. Thus, the U.S. trade deficit in the future should completely turn around.

A key conclusion from this analysis and an examination of the relationship between capital flows and economic growth (see the appendix) is that, in the long run, there should be no link between economic growth and the trade

Table 1  
**The Balance of Trade and Net Capital and Income Accounts, 1994**  
(Millions of U.S. dollars)

Country	Trade and transfers	Capital account	Income account
Australia	\$ -5,604	\$ 15,860	\$ -11,876
Austria	-630	-1,822	2,804
Belgium-Luxembourg	8,167	-10,452	4,853
Brazil	7,938	7,965	-9,091
Canada	3,754	8,331	-21,242
Chile	1,016	4,541	-1,773
Denmark	7,980	-5,537	-5,320
Finland	5,294	4,286	-4,226
France	19,051	-5,015	-10,962
Germany	-28,584	24,501	4,704
Japan	88,910	-86,190	40,330
Korea	-2,301	10,610	-1,554
Mexico	-17,039	12,754	-11,754
Netherlands	11,826	-6,485	1,546
Norway	5,413	-1,321	-1,769
Spain	1,496	4,449	-7,923
Sweden	6,690	6,390	-5,874
Switzerland	9,949	16,469	8,545
United Kingdom	-18,520	-24,562	16,129
United States	-140,440	120,806	-10,494

SOURCE: International Financial Statistics—capital account, line 78bjd; income account, line 78agd + line 78ahd; balance of trade and net transfers, line 78afd + line 78ajd + line 78akd.

balance. The long-run trade balance is jointly determined with the net creditor or debtor status of the country, while the long-run growth rate is determined by the growth rate of the population and technological progress. The next section is devoted to the empirical relationship between economic growth rates and trade imbalances, after controlling for other factors determining the rate of growth.

### **Are trade balances related to long-run economic growth?**

Although the theoretical exposition above concludes that trade balances should not be related to long-run economic growth, the relevance of that theory has yet to be empirically examined. Moreover, there are other possible elements of trade balances, not discussed above, that may have implications for long-run economic growth. For example, large trade deficits imply large inflows of international capital. But international capital inflows may be subject to dramatic reversals, due to external shocks to a country's export sector and changes in foreign sentiment. In such cases, large trade deficits may be seen as an indicator of a country's vulnerability to external shocks. If large inflows of capital and trade deficits make a country more vulnerable to external economic shocks, long-run economic growth may be hampered.

While several studies have found that freer international trade (exports and imports) is an important determinant of cross-country growth rates, trade balances (the difference between exports and imports) have yet to be explored. This section examines the question of whether overall and bilateral trade balances are related to long-run rates of economic growth.

**Overall trade balances.** Empirically, one can imagine circumstances in which the trade balance is correlated to a nation's rate of economic growth, even though it may not cause it. Suppose, for example, that a nation is moving from a relatively closed economy to integration with the world economy—perhaps East Germany after the Berlin Wall fell in 1989. A country just opening up to world markets, like East Germany, would have a relatively high potential for future growth and would likely experience net capital inflows. But large capital inflows would be associated with large trade deficits. Consequently, there would appear to be a positive relationship between trade deficits and higher rates of economic growth. The higher rates of economic growth, however, are not caused by the larger trade deficits but by the opening up of domestic markets.

In contrast, trade deficits may be negatively related to economic growth if they reflect impediments to the market mechanism. Here again, however, the trade deficit itself is not causing lower growth but is itself determined by another factor that affects growth and the trade deficit. For example, it has been shown that the share of government consumption in GDP is negatively correlated to economic growth across countries (Barro 1991, and Levine and Renelt 1992). If a large share of government consumption tends to stimulate the demand for imports, generates a trade deficit, and reduces growth, this would show up as a negative correlation between trade deficits and economic growth, even though there is no causal relationship between the two. What is really decreasing growth is the large share of government consumption in total GDP, not the trade deficit.

**Bilateral trade balances.** While a country's overall trade may be balanced, a country may have bilateral deficits with many of its trading partners. Consequently, the relationship between overall trade balances and economic growth (discussed earlier) should not necessarily be the same as that between bilateral trade balances and economic growth. Nonetheless, we examine the empirical relationship between bilateral trade balances and economic growth because much popular attention has focused on this aspect of our trade account. To do the analysis, we develop a summary measure of bilateral trade balances that indicates the degree to which a country's bilateral trade flows are imbalanced (that is, bilateral exports and imports are unequal).

As is the case with overall trade imbalances, there is no theoretical reason bilateral trade imbalances should be related to economic growth. It is likely that countries that specialize in primary products will have higher bilateral imbalances than countries that specialize in manufactured goods. The reason is that a primary product producer cannot sell much to another country that produces the same primary product. On the other hand, a country that exports manufactured goods can easily sell manufactured goods to another country that exports manufactured goods because of the diversity of manufactured goods and intraindustry trade.

In fact, the correlation between our measure of bilateral imbalances (see note 12) and per capita real GDP is  $-0.62$ . This may be explained by the fact that countries with lower per capita GDPs tend to export fewer manufactured goods. Moreover, if protectionism rises with greater bilateral imbalances, bilateral imbalances



Table 2

**The Role of Trade Balances in Growth**

Dependent variable: average yearly real GDP per capita growth, 1960–89

	(1)	(2)	(3)	(4)	(5)
Constant	15.327 (3.602)	15.653 (4.236)	15.187 (2.902)	15.17 (3.336)	14.279 (3.818)
ln(Y60)	-.837 (-3.852)	-.933 (4.354)	-.801 (-3.546)	-.863 (-3.636)	-.943 (-4.404)
ln(I/Y)	3.251 (8.521)	2.970 (7.634)	3.048 (7.897)	2.963 (7.486)	3.149 (7.651)
ln(School)	.904 (6.651)	.922 (6.973)	.850 (6.185)	.893 (6.447)	.843 (5.607)
Exchange controls		-.005 (-2.495)	-.004 (-1.956)	-.005 (-2.231)	-.005 (-2.414)
Share of all years in deficit			.007 (1.657)		
Trade deficit as a share of trade				-.004 (-.703)	
Bilateral imbalance as a share of trade					-.895 (-.601)
$\bar{R}^2$	.684	.681	.664	.679	.663
RMSE	1.092	1.061	1.081	1.064	1.092
Observations	91	91	91	91	91

NOTES: *t* values are in parentheses. Real per capita growth is the least squares estimate; Y60 is real per capita GDP in 1960; I/Y is investment as a share of GDP, 1960–89; School is secondary-school enrollment rates, 1960–89; exchange controls is the black market premium.

SOURCES OF PRIMARY DATA: Real per capita growth and Y60, Summers and Heston (1991) Penn World Tables, version 5.6; I/Y, World Bank National Accounts; School, Barro (1991); exchange controls, Levine and Renelt (1992); trade deficit as a share of total trade, bilateral imbalance as a share of total trade, and share of all years in deficit, authors' calculations based on data from the International Monetary Fund, *Direction of Trade Statistics*.

may be negatively related to economic growth. For example, U.S. protectionism against Japanese products may rise as the U.S. bilateral trade deficit with Japan increases. Because several studies on the determinants of economic growth have found that protectionism tends to decrease long-run growth rates, there may be a negative correlation between bilateral imbalances and economic growth.<sup>6</sup> The next section attempts to empirically determine whether there is any relationship between overall and bilateral trade balances and economic growth when taking into consideration the underlying fundamental determinants of economic growth.

**Trade balances and economic growth**

**The benchmark model.** Before examining the role of trade balances in economic growth, we first present the results of a basic benchmark growth model. The model utilizes a formulation that is common to many of the recent cross-country empirical examinations of growth and attempts to control for the underlying determi-

nants of long-run economic growth.<sup>7</sup> Equation 1 of Table 2 presents the estimation results of the benchmark model.<sup>8</sup> The dependent variable is the average annual real per capita GDP growth rate between 1960 and 1989,<sup>9</sup> and the explanatory variables are (1) the log of real GDP per capita in 1960, ln(Y60); (2) physical capital savings, which is the log of the share of investment in gross domestic product, ln(I/Y); and (3) a proxy for human capital savings—the log of secondary-school enrollment rates in 1960–89, ln(School).

The results of the benchmark model are consistent with most recent growth studies. Real GDP per capita in 1960 is negative and highly significant, suggesting income convergence conditional on human capital.<sup>10</sup> Physical capital savings and the proxy for human capital savings, ln(I/Y) and ln(School), are positive and significant at the 1-percent level, consistent with the empirical findings of Levine and Renelt (1992).

Equation 2 of Table 2 examines the role of capital controls, as proxied by black market

Table 3  
Trade balances and growth

Country	Growth	Bilateral			Country	Growth	Bilateral		
		Trade deficit as a share of trade	trade imbalance as a share of trade	Share of all years in deficit			Trade deficit as a share of trade	trade imbalance as a share of trade	Share of all years in deficit
Angola	-2.7	-20.7	43.5	25.0	Tanzania	2.3	27.7	36.0	69.0
Chad	-2.4	28.9	49.0	89.3	Colombia	2.3	1.9	24.9	57.6
Mozambique	-2.0	39.4	42.8	100.0	Paraguay	2.3	13.4	38.1	66.7
Madagascar	-1.8	10.2	35.5	81.8	Philippines	2.3	15.1	26.8	93.9
Zambia	-1.4	-11.1	52.3	21.4	Australia	2.3	-8	33.6	42.4
Central African Republic	-5	-2.5	41.2	46.9	Canada	2.4	-4.5	13.5	6.1
Ghana	-5	6.3	37.2	72.7	Costa Rica	2.5	11.9	30.0	100.0
Liberia	-5	-15.5	39.3	4.5	Dominican Republic	2.5	23.7	39.9	54.5
Niger	-4	4.5	37.6	86.7	Iraq	2.5	-8.9	52.0	50.0
Benin	-2	55.3	39.8	100.0	Sweden	2.6	-2.5	19.5	54.5
Senegal	-2	23.3	34.8	96.9	Mexico	2.6	0	18.2	75.8
Uganda	-2	-5.1	52.0	24.2	Ireland	2.7	-3	21.6	75.8
Guyana	0	2.8	33.2	55.2	Morocco	2.8	24.4	27.7	100.0
Sierra Leone	0	11.6	47.5	68.8	Ecuador	2.8	-9.2	35.3	39.4
Mauritania	.1	-12.1	55.8	12.5	Gambia	2.9	25.0	52.6	64.3
Sudan	.1	34.4	44.9	90.9	Turkey	2.9	24.1	25.3	100.0
Zaire	.2	-16.4	39.1	7.7	Denmark	2.9	2.5	18.6	81.8
Somalia	.2	39.4	63.0	93.1	Netherlands	3.0	-2	20.0	63.6
Bangladesh	.2	41.0	47.6	95.2	Iran	3.1	2.3	42.8	60.0
Haiti	.3	34.3	30.9	76.7	Barbados	3.1	39.7	37.3	100.0
Mali	.3	36.9	47.7	96.8	Jordan	3.1	54.6	53.8	100.0
Uruguay	.6	1.6	39.6	45.5	Suriname	3.3	2.1	39.9	58.6
Nigeria	.7	-16.5	42.7	21.9	Trinidad and Tobago	3.3	-8.0	49.2	46.9
India	.8	18.0	31.1	93.9	Tunisia	3.3	22.8	30.2	100.0
Ethiopia	.8	24.0	47.8	96.3	Average	2.7	11.9	32.8	68.9
Papua New Guinea	.8	-4.8	45.3	48.3	Germany, West	3.4	-7.3	15.7	0
Average	-3	12.2	43.4	63.7	France	3.4	3.5	17.5	93.9
Nepal	.9	45.4	48.1	100.0	Norway	3.4	-2.8	27.6	69.7
Bolivia	1.0	-5.6	41.0	30.3	Panama	3.5	60.6	46.8	100.0
Chile	1.0	-5.8	33.0	27.3	Congo	3.5	-18.3	57.1	48.5
Sri Lanka	1.1	16.8	40.0	90.9	Cameroon	3.6	2.3	36.7	54.5
Nicaragua	1.1	24.0	36.6	90.3	Thailand	3.6	12.5	34.6	100.0
Argentina	1.1	-15.0	40.1	22.6	Israel	3.6	24.3	30.7	100.0
Malawi	1.3	17.5	44.3	96.6	Finland	3.6	.5	19.0	69.7
El Salvador	1.3	14.1	29.7	78.8	Spain	3.6	21.7	25.7	97.0
Honduras	1.3	6.9	29.4	90.9	Algeria	3.7	-5.4	30.0	46.7
Guatemala	1.5	10.8	27.4	78.8	Austria	3.9	10.9	21.1	100.0
Burkina Faso	1.6	53.9	43.7	97.0	Malaysia	4.0	-6.3	29.2	7.7
Kenya	1.6	24.7	43.1	100.0	Italy	4.0	4.9	17.5	100.0
Zimbabwe	1.6	-1.0	31.3	40.0	Syria	4.1	22.6	50.1	90.6
South Africa	1.6	-14.5	39.8	21.2	Egypt	4.3	43.7	43.2	93.9
Peru	1.7	-10.7	27.3	15.2	Portugal	4.5	25.5	29.3	100.0
Mauritius	1.7	6.5	60.0	66.7	Greece	4.6	38.9	26.3	100.0
Burundi	1.7	19.7	56.7	87.5	Brazil	4.6	-8.2	29.2	51.5
New Zealand	1.8	.7	25.3	54.5	Gabon	5.2	-31.2	31.7	0
Togo	1.8	30.8	42.3	90.9	Malta	5.4	32.8	37.9	100.0
Jamaica	1.9	20.4	34.5	100.0	Korea, Republic of	5.6	2.3	30.8	84.4
Pakistan	1.9	24.1	35.9	97.0	Hong Kong	6.1	-7	41.9	72.7
United States	1.9	12.5	19.8	69.7	Japan	6.1	-9.8	31.6	39.4
Rwanda	2.0	30.2	50.0	89.7	Singapore	6.6	8.3	30.5	100.0
United Kingdom	2.2	7.3	16.8	100.0	Average	4.3	-9.0	31.7	72.8
Switzerland	2.2	4.7	22.6	93.9					
Venezuela	2.2	-21.2	34.8	12.1					
Average	1.6	11.4	36.7	70.8					

SOURCES OF PRIMARY DATA: Same as Table 2.

exchange rate premia, in economic growth.<sup>11</sup> We include a measure of capital controls in the benchmark equation to account for any negative growth effects due to the lack of capital mobility across nations. Specifically, we do not want to confuse the effects of low capital mobility with the effects of a low trade imbalance. Low capital mobility impedes the development of trade imbalances and is likely to be related to low rates of economic growth.

As model 2 shows, exchange controls decrease economic growth and the coefficient is statistically significant and economically important. Holding all else constant, the size of the coefficient suggests that a black market premium of 50 percent, for example, would decrease a country's average growth rate in the range of 0.20 to 0.25 percentage points per year.

**The effects of trade balances.** Can trade balances explain any variation in economic growth once capital controls and the standard determinants of growth are held constant? Before we examine this question, we first present some simple descriptive statistics on the relationship between trade balances and economic growth.

Table 3 summarizes the countries in the data set and shows their average yearly growth rate, the trade deficit as a share of total trade, the share of total years in deficit, and a measure of bilateral trade imbalances as a share of total trade. The trade deficit as a share of total trade is imports minus exports divided by total trade (imports plus exports); the share of total years in deficit is the number of years a country has had a trade deficit over the 1960–89 period divided by the number of years in the period (30); bilateral trade imbalances are measured by summing a country's bilateral trade deficits and surpluses and dividing by that country's total trade and adjusting for overall surpluses and deficits.<sup>12</sup> In other words, our measure of bilateral imbalances represents the percentage of a country's trade that is bilaterally imbalanced (after adjustments for total imbalances).

The countries in Table 3 are grouped according to growth rates; the slowest 25 percent of countries are in the upper left and the fastest 25 percent of countries are in the lower right. Without controlling for the important determinants of growth, there appears to be a weak positive correlation between economic growth and the percentage of years in deficit. The fastest growing countries seem to have more years in deficit than the slower growing countries, although those countries in the middle growth range are not distinguishable as having a higher

or lower share of years in deficit. There is a negative correlation between bilateral imbalances and economic growth. This correlation is stronger than the previous one. The greater the bilateral imbalance, the lower the growth; there is no ambiguity in the middle growth categories. The overall trade deficit as a share of total trade also appears to be negatively related to growth, although it is not a strong relationship. A priori, it is difficult to see any strong relationship between measures of overall or bilateral trade imbalances and economic growth. However, the other factors determining growth should be taken into account before any conclusions can be properly made.

Equation 3 in Table 2 adds the share of years a country's trade account is in deficit to the benchmark model. As the results indicate, the variable is positively related to economic growth, but it is not statistically significant at the standard 5-percent level. However, taking the point estimate seriously, the size of the coefficient suggests that its economic effects are only moderate. For example, the United States, with 69.7 percent of its years in deficit, would experience an increase in its growth rate of about 0.5 percentage points per year.

The weakness of the relationship between trade balances and economic growth is shown by an alternative measure of trade deficit: trade deficit as a share of total trade, shown in equation 4 of Table 2. In this case, the coefficient is negative but is extremely small and statistically insignificant. Taking the point estimate seriously, a trade deficit that is 12 percent of total trade, which is what the United States had over the period 1960–89, would only decrease average yearly per capita real GDP growth by about 0.05 percentage points.

Equation 5 includes bilateral imbalances as a share of trade. As the results indicate, the coefficient on this variable is negative, but, with a *t* value less than 1, it is not statistically significant. Thus, empirical evidence is consistent with the hypothesis that bilateral trade imbalances have no particular impact on economic growth.

## Conclusion

In this study, we have examined, both theoretically and empirically, the relationship between trade balances and long-run economic growth. We find that trade imbalances have little effect on rates of economic growth once we account for the fundamental determinants of economic growth.

For the most part, trade deficits or surpluses are merely a reflection of a country's



international borrowing or lending profile over time. Just as companies borrow to finance investment and purchases, so do countries. A country can have a perpetual trade deficit or surplus simply because income payments from investments allow it to finance the country's desired flow of goods. Far too often, the common wisdom is that large trade deficits signal a fundamentally weak economy, when the empirical evidence suggests that there is no long-run relationship between the two. Trade deficits and surpluses are part of the efficient allocation of economic resources and international risk-sharing that is critical to the long-run health of the world economy. Neither one, by itself, is a better indicator of long-run economic growth than the other.

## Notes

- <sup>1</sup> Thomas Mun (1664) pointed out that "Our yearly consumption of foreign wares to be for the value of twenty thousand pounds, and our exportations to exceed that two hundred thousand pounds, *which sum wee have therupon affirmed is brought to us in treasure to ballance the accompt*" [emphasis added]. International lending must have been relatively small in the seventeenth century.
- <sup>2</sup> In the eighteenth century, precious metals were referred to as "specie."
- <sup>3</sup> In modern times, currency boards, such as those found in Hong Kong and Argentina, use the U.S. dollar to back their currency, and many other fixed-exchange-rate regimes peg the value of their currencies to the U.S. dollar.
- <sup>4</sup> See Schumpeter (1954, 344–45 and 356–57) for an excellent discussion of mercantilistic thought.
- <sup>5</sup> For an example of this type of analysis, see Duchin and Lange (1988). They argue that eliminating the trade deficit in 1987 would have increased employment by 5.1 million jobs. This figure represented an increase of about 5 percent in total employment from a trade deficit that represented only about 3 percent of GDP.
- <sup>6</sup> See, for example, Krueger (1978); Bhagwati (1978); World Bank (1987); De Long and Summers (1991); Michaely, Papageorgiou, and Choksi (1991); Edwards (1992); Roubini and Sala-i-Martin (1992); and Gould and Ruffin (1995).
- <sup>7</sup> See, for example, Kormendi and Meguire (1985); Barro (1991); Romer (1990); Levine and Renelt (1992); Edwards (1992); Roubini and Sala-i-Martin (1992); Backus, Kehoe, and Kehoe (1992); and Mankiw, Romer, and Weil (1992). These empirical studies typically rely on a closed-economy version of the neoclassical Solow growth model. The closed-economy model would seem inappropriate in a world where capital is internationally mobile. However, an implication of the open-economy neoclassical model

is that countries should experience rapid income convergence because capital can move quickly across borders and does not have to be slowly accumulated at home. But fast income convergence is not borne out by cross-country empirical evidence.

Barro, Mankiw, and Sala-i-Martin (1995) find that the transition to the long run in an open-economy neoclassical model may not be instantaneous if there are some impediments to the flow of capital across countries. Impediments to the flow of capital are likely, especially when considering the flow of human capital across nations.

- <sup>8</sup> The benchmark model utilizes a log-linear formulation for two reasons: it has a basis in Cobb–Douglas production technologies (such as Backus, Kehoe, and Kehoe 1992 and Mankiw, Romer, and Weil 1992), and this model is superior to a simple linear formulation in minimizing the mean squared error.
- <sup>9</sup> Least squares estimates are used because they are less sensitive to the end points of the growth period.
- <sup>10</sup> Although regressing average growth rates against initial income levels suggests income convergence, it does not necessarily provide statistical evidence of convergence. Quah (1990) and Friedman (1992) note that, because of regression to the mean, a negative relationship between average growth rate and initial income does not necessarily provide statistical evidence of convergence.
- <sup>11</sup> The black market exchange rate premium is the percentage by which the official exchange rate deviates from the market exchange rate and is often a good proxy for the degree to which countries attempt to control international capital flows.
- <sup>12</sup> The formula for the bilateral trade imbalance of country  $i$  is  $BIM_i = \frac{\sum_{j=1}^n |X_{ij}^* - M_{ij}|}{X_i + M_i}$ , where  $X_{ij}^* = X_{ij} * \frac{M_i}{X_i}$ ,  $X_i$  is total exports of country  $i$ ,  $M_i$  is total imports of country  $i$ ,  $X_{ij}$  is exports of country  $i$  to country  $j$ , and  $M_{ij}$  is imports to country  $i$  from country  $j$ .

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## Appendix

### A Simple Dynamic Model of Growth, the Balance of Trade, And International Capital Movements

It is not obvious that a long-term creditor country must have a trade deficit, or that a long-term debtor country must have a trade surplus. In other words, why should it be that net investment income necessarily exceeds net capital outflows for a long-term creditor country, or that net debt payments must necessarily exceed net capital inflows for a long-term debtor country? To demonstrate this claim, we consider a world consisting of two countries—home and foreign. For the sake of simplicity, both countries produce a single, identical good that can be either consumed or used as capital.<sup>1</sup> Moreover, to keep the notation simple, we assume both countries have the same population and that there is no depreciation of capital (capital lasts forever or is used up in consumption). To keep one country from overrunning the other, we suppose the labor forces grow at the same rate. Finally, we suppose that the single good is produced under constant returns to scale by only two factors, labor and capital.

Let  $k$  and  $k^*$  denote the *owned* capital per unit of labor in the home and foreign countries, respectively. Capital movements take place by the home country's borrowing  $B$  units of capital from the foreign country, so the capital per unit labor *located* in the home country is  $k + b$ , where  $b = B/L$ , while the capital per unit labor *located* in the foreign country is  $k^* - b$ . If capital is freely mobile, the equilibrium per capita stock of foreign investment,  $b$ , is determined by equating the marginal products of capital in both countries—that is,

$$(A.1) \quad f'(k + b) = g'(k^* - b) = r,$$

where  $f$  and  $g$  denote the per capita production functions in the home and foreign countries, respectively, and  $f'$  and  $g'$  denote the derivatives or the marginal products of capital.

Let  $s$  and  $s^*$  denote the constant saving rates in the home and foreign countries, and let  $n$  denote the rate of growth of the labor force in both countries. Per capita incomes are  $f(k + b) - rb$  in the home country and  $g(k^* - b) + rb$  in the foreign country. According to the Solow growth model (Solow 1956), the countries will be in steady-state when savings equal required investment:

$$(A.2) \quad s[f(k + b) - rb] - nk = 0,$$

and

$$(A.3) \quad s^*[g(k^* - b) + rb] + nk^* = 0.$$

Solving equations A.1–A.3 yields steady-state values of  $k$ ,  $k^*$ , and  $b$ .<sup>2</sup> Thus, in the long run,  $db/dt = 0$ .

In the short run,  $db/dt$  may be nonzero. Let us look at the short-run and long-run dynamics of the balance of payments as envisioned by Cairnes (1874). Since  $b = B/L$ , the rate of change in the per capita stock of foreign investment is

$$(A.4) \quad db/dt = (dB/dt)/L - nb,$$

where  $n = (dL/dt)/L$  and  $(dB/dt)/L$  is the per capita inflow of capital to the home country from the foreign country. Equation A.3 may be used to describe the determinants of the per capita trade balance. By definition, the per capita trade surplus,  $x - m$  (exports minus imports), will be per capita foreign debt service,  $rb$ , where  $r$  is the rate of interest [ $r = f'(k + b)$ ] – per capita capital inflows. In other words,

$$(A.5) \quad x - m = rb - (dB/dt)/L.$$

Combining equations A.4 and A.5 results in

$$(A.6) \quad x - m = (r - n)b - db/dt.$$

This is our key equation. The home country's per capita trade balance equals  $(r - n)b$  minus the change in its per capita net indebtedness. In the steady-state,  $db/dt = 0$ , the per capita trade surplus  $(x - m) = (r - n)b$ . Assuming  $r > n$ , if the home country is a net debtor,  $b > 0$ , there will be a surplus. In contrast, if  $b < 0$ , the country will have a long-run deficit. Cairnes claimed that the net creditor's long-run trade balance would be negative, implying that  $r > n$  in the long run. Remarkably, the condition that  $r > n$  is the condition for dynamic economic efficiency (Phelps 1966).

In the above model, the long-run growth rate is simply equal to the population growth rate. This follows because in the steady-state,  $b$ ,  $k$ , and  $k^*$  are constant; accordingly, per capita income remains constant. If we reinterpreted the model in terms of the effective labor supply and labor-augmenting technological progress, per capita income would increase by the rate of technological progress. Whatever interpretation is made, the model is then so constructed that both countries grow at exactly the same rate.

A key conclusion from this analysis is that in the long run, there should be no link between economic growth and the trade balance. The long-run trade balance is determined by the net creditor or debtor status of the country, while the long-run growth rate is determined by the growth rate of the population and technological progress.

<sup>1</sup> This model is based on Ruffin (1979).

<sup>2</sup> Ruffin (1979) demonstrates the conditions under which the above model has a unique solution.