Low Savings or a High Trade Deficit?

Which Tail Is Wagging Which?

Peter Dorman

Low savings do not drive the trade deficit, argues this author. Rather, the nation has to deal with its propensity to import foreign goods and the high value of the dollar.

THE TOPIC OF THIS PAPER is the elementary macroeconomic identity—net savings minus investment equals the current account surplus or deficit. This formula is derived immediately from the circular flow, and it has been invested with a near-magical power to "explain" why countries find themselves with a surplus or deficit on the trade account. Indeed, it is virtually an article of faith that causation runs from the macro aggregates—savings and investment—to the determination of net exports. When countries such as the United States find themselves mired in an unsustainable external deficit, the advice is always to increase savings, by adopting either restrictive fiscal policies or policies that encourage private savings or penalize consumption.

Indeed, much of the recent discussion of global imbalances has centered almost entirely on savings. The static view, associated with

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Federal Reserve Chairman Ben Bernanke, has it that the U.S. current-account deficit is due to a global "savings glut": very high savings rates in east Asian countries and elsewhere are searching for an outlet, and the United States, whose savings rate has hovered near zero, has been a willing recipient (Bernanke 2005). The dynamic view interprets the situation according to the putative desire of Americans to consume today and save tomorrow, while the residents of surplus countries prefer to reverse these roles (Obstfeld and Rogoff 1995). In either case, the macro aggregates are seen as the dog, and trade balances as the tail.

But the theoretical significance of the presumption that macro balances determine trade is also profound. Comparative advantage, the basis of neoclassical trade theory, requires that trade balance at the margin—that an extra dollar of imports is necessarily offset by the same increased value of exports, and vice versa. Thus, from an open-economy perspective, the theory requires a two-step sequence: first, the aggregate trade balance is set by macro fundamentals, then comparative advantage operates to determine the scale and composition of this trade. If this were not the case—if the microeconomic factors that underlie competitiveness could alter the trade balance, forcing the macro aggregates to adjust—comparative advantage would no longer hold. Clearly, if a policy or other shock caused either exports or imports to increase without sufficiently offsetting imports or exports, it could not be demonstrated that free trade generates the optimal adaptation to that shock. In the simplest case, if lower production costs abroad lead to an increase in net imports, it is not evident that the gains to home country consumers offset the consequences of lost employment (if it occurs) or other adjustments.

The main point of this paper is almost embarrassingly simple: that it is a serious mistake to conflate accounting identities and equilibrium relations. The equality between the current account and the surplus of net national savings over investment is strictly one of accounting and has no implications for equilibrium. Stripped of this error, conventional theories in open economy macro are seen to rely on mechanisms that demonstrably are unable to bear the burden placed

on them. The argument is so elementary that it is difficult to believe it can be correct, but a reading of the international macroeconomics literature demonstrates that the confusion is widespread.

In the next section we review open economy accounting to see why equilibrium arguments concerning the reason the identities "should" arise are logically invalid. Here we see that, ironically, the identities *are* violated, but only under very narrow conditions that have little to do with private-sector behavior. In the second section we look at the mechanisms on which open economy theories are forced to rely in the absence of adjustment-by-accounting. It will be clear that, at least under present circumstances, it is doubtful that the greater part of causation could flow from the net savings and investment to the current account. A brief conclusion will expand briefly on the implications of this assessment and consider why technical proficiency has not protected economists from misperceptions of simple economic mechanics.

Identity vs. Equilibrium

The identity in question is this:

$$S + (T - G) - I = Current\ account \tag{1}$$

where *S* is domestic private savings, *(T-G)* is the government's fiscal surplus or deficit, and *I* is the flow of domestic investment. The first two terms on the lefthand side are collectively referred to as "net national savings"; where *(S – I)* is negative, this is referred to as a "financing gap." Meanwhile, the balance of payments identity is

$$Current\ account = Net\ change\ in\ portfolio\ position + net\ change\ in$$
$$foreign\ direct\ investment\ position + change\ in\ currency\ reserves \tag{2}$$

By convention, the righthand side is referred to as the capital account, although some prefer to include only the first two items in this account, placing reserves in the position of a residual. There is no substantive issue involved, of course. A potential confusion arises, however, regarding the term "reserves." In normal usage, this refers to stocks of foreign-currency-denominated assets held by central banks; thus, holdings of U.S. Treasury bonds by the Chinese central bank

are counted as Chinese reserves. From an accounting standpoint, however, changes in the holdings of these bonds fall under the first term on the RHS, and the third term refers only to changes in the holding of currencies.

For now, let us assume that there is no change in reserves, so that current account surpluses and deficits are exactly offset by outflows or inflows of funds for the purchase of financial and other assets. How are the accounting adjustments made? Consider a country with a current-account deficit that is financed through some combination of portfolio and inflows of foreign direct investment. When external wealth-holders purchase home country financial instruments, they reduce by that amount the holdings of domestic wealth-holders, and this shows up as a reduction in *S*. Similarly, if they finance new capital formation in the home country, this increases *I*. In this way, identity (1) is maintained through the normal procedures of double-entry bookkeeping. The process is automatic and instantaneous. There is no need to resort to behavioral narratives about rates of economic growth or changes in interest rates or other prices; on the contrary, as we will see, there is no logical space for such mechanisms.

We can also trace the process in reverse. Suppose there is a domestic purchase of bonds formerly held by foreigners. If this is the only change that takes place on the lefthand side of (1), then (in the case that the home country runs an external deficit) foreign inflows on the capital account fall. If there is no change in reserves, this can only happen if there is less outflow on the current account.

Are the two processes symmetrical? Logically they would appear to be, but the discretionary role of central banking authorities differs, as we shall see. For now, it should be noted that governments may increase or decrease their holdings of foreign debt instruments, thereby adjusting flows on the capital account, but they typically do not play a corresponding discretionary role in the transactions that show up on the current account. However, there is another sense in which there is no symmetry at all. Changes in the current account can drive capital flows in a purely mechanical fashion. For instance, an outflow due to a trade deficit places foreign exchange at the disposal

of exporters and can be either invested directly in assets of the importing country or exchanged for other currencies with third parties who wish to purchase those assets. To put it in common language, the foreign exchange earned via trade surpluses needs to be parked in some fashion. Similarly, if the trade deficit falls, there is less additional foreign exchange to be reinvested. In either case, this is a credible (if incomplete) story about recycling current account flows.

The reverse process, if it existed, would trace inflows of foreign exchange on the capital account, with parties choosing to directly or indirectly purchase imports—but such a story is implausible, since decisions to import or export are made in the markets for goods and services and rarely reflect the need to employ available foreign exchange. To put it simply: if China acquires an inflow of dollars by selling additional computer parts to U.S. consumers, it is reasonable that some of these dollars will be invested in U.S. Treasury bonds or mortgage-backed securities, while the rest are exchanged with third parties willing to increase their dollar position in such assets. But it would be strange to argue that the process could be initiated by Chinese purchases of Treasury bonds, since this would have no comparable (and immediate) effect on the U.S. demand for Chinese products.

From this perspective, the commonly encountered expression that capital account surpluses "suck in" imports qualifies as a mystification, since the availability of funds on the capital account does not drive trade flows. The only acceptable process having such an effect would be one that is mediated: such capital flows might lead to a change in prices, such as interest or exchange rates, that alters the incentives of buyers and sellers. Such mediations will be considered in the following section, but they cannot be the basis for an accounting identity.

From this brief overview we can conclude that the simple mechanics of the circular flow have directionality: from trade and current-account balances to the capital account flows that generate the values of S and I required for identity (1). This bias stamps the system as having the DNA of Keynes rather than Jean-Baptiste Say, although it does not speak to the process by which equilibrium values are determined.

So now let us see what happens when reserves *do* change. From the

standpoint of national income accounting, accumulations or decumulations of currency in external accounts constitute a violation of the circular flow constraint. Quite simply, the circular flow postulates that all income is spent, and all spending returns as income, directly or indirectly. But when money spent on exports simply sits in a reservoir abroad, a wedge is driven between the sources and uses of income. In this case, there is in fact no accounting identity (1), at least during the period in which the reserve changes are taking place; instead, the lefthand side will be greater than the righthand side.

It is customary among international economists to regard absorption of current-account imbalances by changes in the reserve account as temporary, and for good reason, since insufficient foreign exchange reserves must be replenished, while excess amounts fail to earn interest. Nevertheless, at any moment there typically are changes in the reserve account, and thus identity (1) holds only to an approximation.

Now we can see why it is simply wrong to look for equilibrating, which is to say behavioral, processes to equalize the macro aggregates (net savings minus investment) and the current account (especially trade): after incorporating the accounting process, there are no degrees of freedom. Except for the special case of reserve account adjustments, there is no possibility for the left- and righthand sides of (1) to differ. An economy can be out of equilibrium but, as long as identity relations hold, not out of identity.

Let us take a closer look at the potential for fallacy. It could be argued that the relationships in (1) depend on a process of interest and exchange rate equilibration. Suppose net savings fall in relation to investment. Then, according to this view, there will be upward pressure on interest rates. This in turn will cause the home currency to appreciate, which in turn results in an increased deficit, or reduced surplus, on the current account. This could be a theory of equilibrium dynamics in an economy, but it has nothing to do with the identity relation expressed by (1) for two reasons:

- Behavioral responses are uncertain, and economies can be out of equilibrium. Because of confounding factors in credit markets, it is possible that interest rates will not respond as hypothesized.

Similarly, movements in the foreign exchange markets, as we will see, are not rendered predictable by prior movements in interest rates. Thus it is entirely possible that the equilibration process will not come to pass—but an identity such as (1) cannot depend on this uncertainty.

- Equilibration takes time. This is particularly true for any process dependent on changes in exchange rates, because the J-curve reflects the experience that devaluations positively influence the current account only after a hiatus of one to two years. Identity, however, is instantaneous.

Thus (1) holds independently of whether or not the theoretical model is valid. This means that it is wrong to appeal to the identity as evidence for the model, or to claim that the purpose of the model is to "explain" the identity. There is nothing to be explained, although it is entirely possible that the *levels* of *S*, *I*, etc. at which the identity holds may be predicted by this or another such model. In that case, however, the direction and extent of causation depend only on the mechanisms through which causation is held to flow; the equalities represented in (1) have nothing to add.

Mechanisms of Equilibration

In principle, we would expect that any true open economy equilibrium would embrace the mutual interaction of macro (savings and investment) and micro (trade competitiveness) factors. Nevertheless, it is valid from a practical standpoint to ask whether the flow of causation runs primarily from macro to micro or the other way around. To reiterate, the answer we provide will not explain identity (1), which holds whether the magnitudes are in equilibrium or not (net of changes in currency reserves), and which is ongoing. Instead, the explanation will apply to a process of equilibrium selection among feasible economic states corresponding to (1), according to one or another subset of factors.

Theories of global balance can be said to have two elements. The first is a model that transforms autonomous changes in state variables such as productive capacities or investor perceptions into changes in what

could be called transmission variables. The second traces the effect of these variables on outcomes. This is perhaps an artificial distinction, but it serves the purpose that interests us in this paper, which is to assess the relative force of macro-to-micro and micro-to-macro causal models. (This approach was pioneered by Robert Blecker; see, for example, Blecker 1992.) We can also be inclusive in what we regard as equilibrium models, encompassing partial equilibrium, cyclical equilibrium (as in Dornbusch's overshooting), and multiple equilibria. We will classify theories first by their directionality of causation and then by the transmission variables they identify.

Note, incidentally, that the approach that is sketched below differs greatly from the way theories of this sort are usually "tested." There is an extensive empirical literature on open economy macro models, but they typically look for relationships between exogenous variables and realized outcomes. Since there are a great many plausible empirical models (based on assumptions regarding what should be controlled, functional form, etc.), and because the tests fail to fully discriminate between alternative theories, the evidence is predictably inconclusive. But our purpose is narrower: we are not assessing any particular theory, only the robustness of the transmission processes they incorporate. Since transmission lies in the middle of most of these theories (between autonomous and outcome variables), it is given little notice in the mainstream literature. For us, however, it is the main event.

Macro-to-Micro Theories

These neoclassical approaches are collectively hegemonic in the literature. They all treat the current account as essentially passive in two senses: autonomous shocks do not emanate from the trade sector, and the trade balance is determined as a result of equilibria established in financial or other markets. (This permits the two-step analysis of trade discussed at the beginning of this paper.) Within this category there are two subgroups, the Mundell-Fleming model, whose transmission variables are the exchange rate (via i) and Y, and various monetary and portfolio-analytic models that effectively employ only the exchange

rate. This means there are two types of transmission to consider: one leads from ostensible fundamentals to exchange rates to the trade balance; the other leads from differential rates of economic growth to the trade balance.

The Exchange Rate Channel

Of course, exchange rates are powerful determinants of trade patterns, but the problematic aspect of the channel concerns the manner in which exchange rates themselves are determined. Several different predictive models of exchange rates have been proposed, operating through interest rates (such as Mundell-Fleming and covered interest rate parity) and inflation rates (relative purchasing power parity [PPP]). The empirical literature on these models is large and contains many outliers, but the general consensus has been that, armed with any or all of them, exchange-rate prediction is little better than a random walk (Blecker 2005; Cheung et al. 2002; Frankel and Rose 1997; Meese and Rogoff 1983). In particular, relative PPP operates only in the long run and only approximately, and in any case, if PPP held tightly, it would predict stability of real exchange rates, which suggests that it cannot supply an explanation for changes in the trade account.

Perhaps the only model to do well in empirical testing is covered interest rate parity, which proposes an equilibrium relationship between home and foreign interest rates, home and foreign risk elements (political-economic volatility), and expectations of *future* changes in exchange rates. Unfortunately, this is not a model of current exchange rates, and so it, too, has little to say about current trade flows. Thus, while various open economy macro models provide plausible stories regarding the determination of interest rates and inflation, they do not succeed at the second, crucial stage of enabling explanation or prediction of real exchange rates, and therefore trade flows.

The Economic Growth Channel

Mundell-Fleming also postulates that macro aggregates may enter an equilibrium relationship with net exports via variable rates of eco-

nomic growth. If the home country grows more rapidly than its trading partners, it will undergo a negative shift in its trade balance. (Under Mundell-Fleming, this is a simultaneously determined equilibrium in which domestic interest rates motivate a capital flow that exactly offsets the growth-determined trade balance.) Indeed, it is common to find the income elasticities of imports and exports both well in excess of unity, especially for developed countries, with the estimate for imports exceeding exports (Bayoumi 1999; Marquez 2002) This may be seen as comforting news if one is calculating the amount of austerity needed to close a trade gap, but it leads to the disturbing conclusion that countries growing more rapidly than their trading partners could rather quickly develop unsupportable trade deficits.

If this is the consequence of vigorous growth, then perhaps such growth cannot be sustained in the long run, which is exactly the point of Thirwall's "balance-of-payments constrained growth" (Thirwall 1979). This approach is intuitively plausible and has found substantial empirical support (McCombie 1997; Pacheco-López and Thirwall, 2005). The Thirwall model, however, proposes that causation runs *from* trade balances *to* growth rates, which contradicts the macro-to-micro framework we are now evaluating. It is likely that both growth-induced changes in trade flows and trade-induced effects on growth rates operate in the real world, but there is little evidence on which to base an assessment of their relative influence. For our purposes, we can leave the debate where it stands, noting that the growth channel is unlikely to provide a justification for a predominantly macro-to-micro flow of causation.

Micro-to-Macro Theories

These theories constitute the "underground" of the economic analysis of trade and finance. While they have wide popular appeal, they are regarded as unsophisticated by most economists, since they do not recognize the supposed force of identity (1). Nevertheless, the autonomous role of trade competitiveness has long been endorsed by Keynesians and post-Keynesians, a tradition that extends back to Keynes himself (Keynes 1933). Here again, our purpose is not to evalu-

ate competitiveness theories in their entirety, but only to consider whether the transmission mechanisms they encompass are sufficiently robust to support causation that runs primarily from trade to the macro aggregates. There are three channels to choose from: differential growth rates (Thirwall), exchange rates (transaction demand for foreign exchange), and public policies to alter macroeconomic outcomes (political economy). Since we have already (briefly) discussed Thirwall, we will be concerned only with the second two.

Exchange Rates

Autonomous changes in technology, preferences, or international differences in labor or other factor costs (or noncosts, in the case of uncompensated externalities) can affect exchange rates by changing the relative demand for currencies. This, of course, is simply the gold-age adjustment mechanism in floating exchange-rate garb. In principle, it should be possible to distinguish between this effect and the reciprocal effect of exchange rates on trade flows by identifying leads and lags. The exchange rate can in turn play a role in altering savings and investment behavior by its effect on inflation (and therefore real interest rates) and exchange rate–adjusted rates of return on domestic and foreign capital assets. Empirically, the relationship between trade flows and subsequent exchange rate movements appears robust (see, for instance, Müller-Plantenberg, 2006). This is the case, incidentally, despite identity (2), which implies some measure of resistance on the capital account that must be overcome to finance trade imbalances.

Political Economy

When a country finds itself beset by a large, persistent trade deficit, consideration must be given to measures that can reduce it, such as austerity, devaluation, wage suppression, and the provision of incentives for expanding export capacity. This is the case even when capital account inflows are sufficient to restore payments balance, since such flows are volatile and are self-defeating in the long run. (They prepare

the way for future outflows of investment earnings.) In recent years attention has focused on political interventions imposed from the outside, such as the structural adjustment programs of the International Monetary Fund and World Bank, but the motivation may be internal as well. The empirical literature in support of this channel is largely case-study in character, so it is difficult to say with any precision how much of the macro adjustment that takes place globally is impelled by political economic factors. Taken together, however, the body of evidence assembled in international political economy seems to indicate that the percentage is rather large (Haggard and Kaufman, 1992).

Summing up, the principal channel for macro-to-micro causation—exchange rates—is of doubtful reliability, since currency movements are not well predicted by the macro "fundamentals" anointed by conventional theory. The other channel, differential growth rates, is of uncertain directionality. The chief micro-to-macro channels, however, appear to be highly effective. The conclusion is that, while all relevant economic factors are mutually interactive, causation is likely to run primarily from the microeconomic factors governing trade competitiveness to macroeconomic outcomes like aggregate savings and investment.

Conclusion

The principal justification for the view that national patterns of savings and investment determine trade balances is identity (1), but this rests on an elementary misunderstanding of the difference between behavioral and identity relationships. When the accounting equalities are removed from the analysis, all that remain are the economic channels by which one set of outcomes can engender the other. Judged by the balance of explanatory force found in the empirical literature, it appears likely that trade factors influence macroeconomic aggregates to a greater extent than the opposite.

This is highly consequential for economic theory, particularly the theory of international trade. Once it is allowed that shocks to productivity, factor costs, demand, or other microeconomic determi-

nants of trade flows can alter the trade balance (which is no longer fixed by macro forces), the assumptions required for comparative advantage no longer obtain. This, in turn, would require economists to put aside nearly 200 years of Panglossian theory and to evaluate trade liberalization through a different analytical lens—one that, to be fair, has yet to be specified. Constructing such a model should be an urgent priority for trade theorists.

The policy implications are also very large, particularly in the face of unprecedented global imbalances. What measures can be taken to reduce the long-term bias of the U.S. economy toward unsustainable trade deficits, and how can future imbalances of this sort be avoided before they reach the critical stage? Conventional wisdom tells us that the solution is to be found in changing global imbalances of savings. The private sector in the United States must be induced to save more, and the U.S. government should run fiscal surpluses. Better insurance against financial volatility in developing countries could reduce precautionary savings that now find outlets in dollar-denominated assets. In some fashion, this is supposed to lead to more modest U.S. current-account deficits consistent with smaller movements on the capital account.

But why? This paper has argued that the answer cannot be that the current account is identically equal to the gap between national savings and investment; this is an elementary mistake. It can only be the result of forces that transmit macro outcomes to demands for internationally traded goods. In the second section of this paper, the candidate forces were briefly surveyed, and it was argued that the transmission mechanisms do not support a predominantly macro-to-micro posture.

If microeconomic forces are more salient, the policy prescriptions will have to change. Direct adjustment of exchange rates, as with the Plaza Accord of 1985, would be the logical place to begin, but the extent of misalignment is now so great that a single instrument will likely no longer suffice. A more complete program, with sectoral elements like energy and agriculture, as well as general measures to directly control imports (such as tradable permits), may be needed. In

the long term, it is becoming clear to many observers that exchange-rate management needs to be part of a new, more stable international financial architecture. To this might be added policies to reduce the most extreme disparities in unit labor costs, as well as debt relief to moderate the pressure on developing countries to over-rely on export promotion. Such measures would serve to minimize the risk of future current-account volatility for the developing world as well as at-risk industrialized countries like New Zealand and the United States.

A final point concerns what might be called the cognitive priors that predispose economists toward the type of analysis criticized in this paper. Economists are trained to look for equilibrium relations between variables. A proper model should translate a set of input data into a testable prediction for outcomes, even on the scale required to grapple with the global economy. The mechanisms that operate to transform inputs into outcomes are thought to possess no independent significance, provided they are formally consistent with the norm of rational, self-regarding behavior.

It is interesting to contrast this methodological commitment with the approach taken by a science that addresses a similarly complex set of phenomena, ecology. To be sure, there is an equilibrium-oriented stream of research, particularly on the size and distribution of species populations, but the explanatory power of such models remains weak. Contrary to popular opinion, for example, there is not yet a preponderance of evidence in favor of the hypothesis that biodiversity fosters ecosystem resilience. The largest part of ecological research instead investigates causal mechanisms at work in ecosystems—nutrient flows, reproductive strategies and other life-cycle factors, and so on. To "explain" in this field is to provide a set of empirically observed processes that are consistent with other branches of scientific research. At the level of practice, the dominant paradigm is adaptive management, taking measures that, based on what is known about the causal linkages of the system in question, are expected to produce an improvement, and then monitoring the system closely to make further interventions as necessary.

Economists seem to disdain causal explanation in this more

straightforward sense, but they would do well to revise their bias. Economic systems are generally too complex to yield themselves to analytically or even computationally tractable equilibrium models, but identifying a workable set of causal processes would be extremely useful in most of the applied tasks economists are called upon to perform. (Most day-to-day market analysis actually proceeds in this way.) Greater attention to processes would also protect economists from the sort of error we have explored in this paper. There is nothing at all complicated about the accounting frameworks invoked above, but one would be inclined to trace the movement of trade or currency flows through them only if one cared about mechanisms. Similarly, the evidence referenced in the second section of this paper is well-known to most economists working in the field of international finance, but since it applies to the intermediate steps in their models—the mechanisms—it has not been seen as dispositive of the models themselves. If the approach taken in this paper is correct, however, it *is* possible to say something important about these models without entering into the elaborate architecture of their equilibrium properties.

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