

COUNCIL *on*
FOREIGN
RELATIONS

ENERGY REPORT

Implications of Reduced Oil Imports for the U.S. Trade Deficit

Robert Z. Lawrence

January 2014

*This report is made possible through the generous support of the Alfred P. Sloan
Foundation.*

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INTRODUCTION

The United States has recently run historically large trade deficits. Between 2000 and 2012, the cumulative total of U.S. spending on imports of goods and services exceeded U.S. export earnings by \$7.1 trillion dollars. Although Americans have also enjoyed capital gains on their foreign assets, they have nonetheless accumulated large debts to both official and private foreign lenders. This development has raised doubts in many quarters about the United States' ability to play its leading role in the global financial system and concerns about the burdens of U.S. international indebtedness for future generations.

Deficits in U.S. petroleum trade have been equal to a large fraction of the imbalance between U.S. imports and exports. Between 2000 and 2012, the cumulative total of U.S. trade deficits in crude oil and refined petroleum products amounted to \$2.87 trillion, 40.5 percent of the cumulative deficits in all goods and services over the period.¹ And oil's role has increased in importance over the time: in 2012, for example, the trade deficit in oil was equal to 55 percent of the overall trade deficit in goods and services.

Yet U.S. oil trade deficits are likely to decline considerably. Remarkably, the possibility of the United States actually eliminating net oil imports can no longer be dismissed. (The latest long-term Annual Energy Outlook of the U.S. Energy Information Administration [EIA] includes a scenario with zero net U.S. imports.²) Stimulated by high prices and technological developments, domestic oil production is expected to grow. Domestic demand, meanwhile, will grow modestly or even decline because of increased conservation spurred by tougher fuel-economy standards, high oil prices, and the substitution of other sources of energy for oil.

Given the significant role oil has historically played in U.S. trade deficits, many observers are predicting that a strong move toward oil self-sufficiency will lead to large declines in the overall U.S. trade deficit.³ Indeed, holding everything else constant, eliminating a large negative entry for oil in the balance of payments accounts would lead to smaller totals for the trade deficit. Similarly, cheaper U.S. energy (notably natural gas) could make some types of U.S. manufacturing more competitive, cutting manufactured imports and boosting manufactured exports. But the premise that other things will remain constant is invalid.

Table 1. Findings

Falling Oil Imports Resulting From...	Short-Run Consequences	Long-Run Consequences
...Rising Oil Production	<ul style="list-style-type: none"> ▪ Effect on the U.S. trade deficit would be ambiguous. ▪ Each dollar saved from falling foreign oil purchases would reduce the U.S. trade deficit by twenty to eighty cents. ▪ Each dollar saved would increase the U.S. trade deficit by up to sixty cents. 	<ul style="list-style-type: none"> ▪ Effect on the U.S. trade deficit would be minimal. ▪ At most, each dollar of savings on oil imports would yield only a ten-cent reduction in the U.S. trade deficit. ▪ Reductions in the oil trade balance would be offset by increases in the non-oil trade deficit.
...Falling Oil Consumption	<ul style="list-style-type: none"> ▪ U.S. trade deficit would be reduced. ▪ Each dollar of savings from falling oil consumption would reduce the U.S. trade deficit by twenty to eighty cents. 	<ul style="list-style-type: none"> ▪ Effect on the U.S. trade deficit would be minimal. ▪ Purchases of oil alternatives would rise, some of which would be imported. ▪ Reductions in the oil trade balance would be offset by increases in the non-oil trade deficit.

Absent other changes in the economy, I show in this paper that a decline in net imports of oil and energy-intensive manufactured goods is likely to be offset by greater net imports in other goods and services. In the long run, the changes in oil and non-oil trade balances could well cancel each other, leading to little or no change in the overall U.S. trade deficit. In the short run, though, the conventional wisdom could have greater validity, since the offsetting effects are likely to be smaller, leading to a decline in the overall U.S. trade deficit. Moreover, as U.S. oil imports fall, sudden changes in the price of oil are likely to have less of an effect on the U.S. trade deficit than they have had historically, making the U.S. trade deficit less volatile. Ultimately, though rising U.S. oil production will yield broader economic gains, its benefits for the long-term U.S. trade deficit have been overstated.

This implies that the economic concerns about growing U.S. international indebtedness, and the geopolitical concerns about the U.S. dependence on borrowing from countries like China, will not automatically be alleviated by oil self-sufficiency.

MOTIVATION

It is now widely expected that the share of oil imports in U.S. consumption will continue to decline. In its long-term forecast issued in 2012, for example, the EIA projected that oil imports will account for a steadily smaller share of U.S. consumption than they do currently; this is true not only in its

most likely scenario, in which world oil prices rise to \$125 (2010 dollars) per barrel by 2035, but also in its more extreme scenarios, in which oil prices either rise to \$200 or fall to \$50. In November 2012, the International Energy Agency (IEA) produced an even more optimistic view of U.S. prospects: the United States would surpass Saudi Arabia as the world's largest oil producer by 2020, and by 2035 the North American oil trade balance would actually become a surplus.

This development in U.S. net oil imports is widely heralded as having major implications for U.S. national security, U.S. relations with the Middle East, and the internal politics of many oil-producing countries.⁴ Some analysts also expect it to have important economic repercussions, including lower oil prices for consumers and cheaper energy for U.S. industry.⁵ Though some of these claims are likely exaggerated, and all deserve study, this paper focuses more narrowly on one question: What would smaller net petroleum trade deficits mean for the level and composition of the U.S. trade balance?

It is crucial to think about the relationship between oil trade and the broader trade deficit in a macroeconomic framework that adopts an economy-wide perspective rather than looking only at oil. The trade balance in goods and services, or what I will also refer to loosely and interchangeably as “the current account balance,” is commonly defined as the difference between exports and imports of goods and services. (Strictly defined, the current account includes unilateral transfers in addition to the balance on goods, services, and net-factor earnings, but unilateral transfers are typically relatively small.) But the current account is also, by definition, equal to the difference between U.S. national saving and investment, and the change in the net claims of a country on the rest of the world. This means that in order for a given shift toward oil self-sufficiency to induce an equivalent improvement in the overall trade balance in goods and services, it would have to boost U.S. national saving relative to investment by the same amount. For example, if U.S. national investment were unchanged following a drop in net oil imports, Americans would have to increase their national saving by the full value of the oil trade improvement. In 2011, for example, U.S. Gross National Saving was 12.2 percent of Gross Domestic Product (GDP) while the trade deficit in oil was 2.2 percent of GDP. For self-sufficiency in oil to be completely reflected in the overall trade balance in that year, assuming unchanged investment, U.S. national saving would have to rise by almost one-fifth—a massive increase.⁶

Without a change in U.S. national saving and investment, the overall trade balance in goods and services would remain constant. Thus, if the trade deficit in oil was reduced, the deficit in other components of the trade balance would have to increase. Rather than a smaller overall deficit, therefore, the major macroeconomic effects of U.S. oil self-sufficiency would be a stronger dollar and larger deficits in other components of the trade balance in goods and services, some of which would be manufactured goods. This means that with unchanged saving and investment, if energy becomes relatively cheaper in the United States and the dollar strengthens, there could be additional losers as well as winners in U.S. manufacturing.

The proposition that increased oil production could strengthen real exchange rates and thus have adverse effects on the competitiveness of other sectors and other components of the trade balance is not novel. It is a widely recognized phenomenon sometimes known as “Dutch disease,” the term coined by the *Economist* magazine to describe the damaging effect of the discovery of natural gas in the Netherlands in the late 1950s on the competitiveness of Dutch manufacturing.⁷ Dutch disease can work by raising nominal exchange rates—the rates that are actually quoted on currency exchanges—as a country's energy export earnings lead to inflows of foreign exchange. It can also operate in-

directly, as increased earnings from energy are spent by domestic residents, raising domestic wages and prices and thus rendering other sectors internationally uncompetitive.⁸

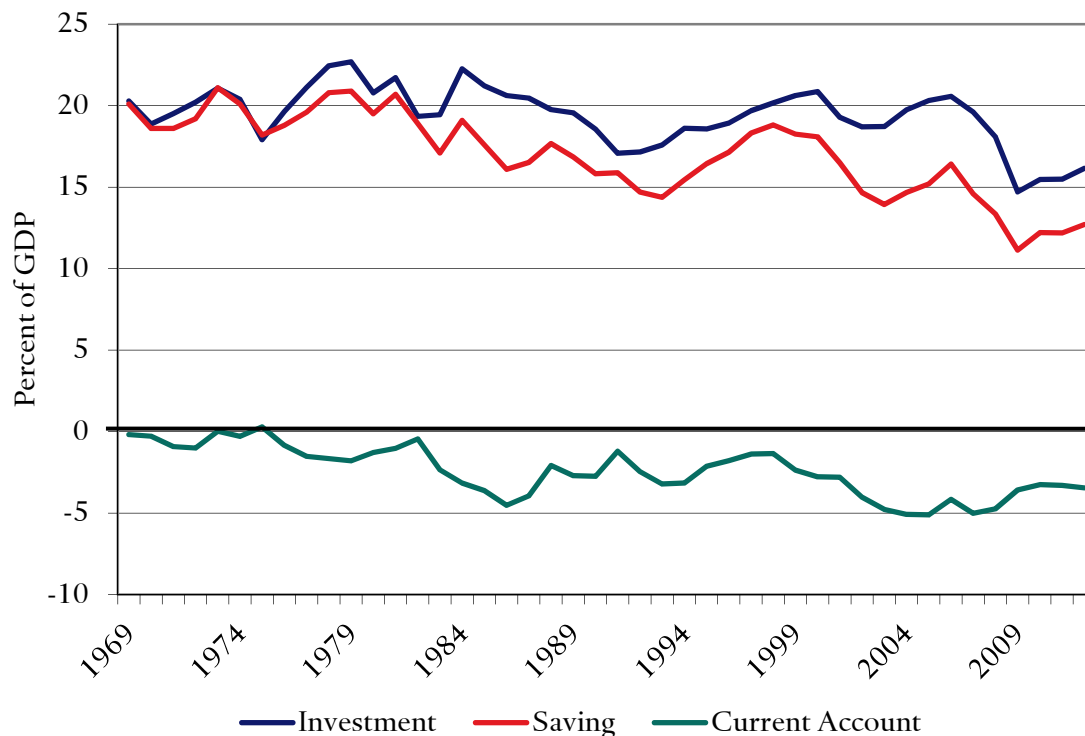
Gradually moving toward oil self-sufficiency will not infect the United States with an extreme case of Dutch disease. But absent offsetting changes in the U.S. economy, the effect would be qualitatively similar.

REFRAMING THE CURRENT ACCOUNT

Putting more details to this requires first fleshing out the savings-investment framework for thinking about the current account. The conventional definition of the current account balance as equivalent to exports minus imports naturally focuses attention on the markets for goods and services. But it is important in thinking about oil self-sufficiency to remember that the current account is also equal to the difference between national saving and investment. If imports exceed exports, domestic residents will be paying more to foreigners than they earn from them. To finance this earnings shortfall, they must either be borrowing more from foreigners or reducing their claims on foreigners. Current account deficits therefore imply that current domestic saving is insufficient to fund domestic investment. Conversely, if exports exceed imports, and a country has a surplus on the current account, it must be lending to the rest of the world. This means that its domestic saving exceeds investment. Thus, for oil self-sufficiency to reduce the trade deficit, it must increase saving relative to investment.

National saving and investment will be directly affected by factors that may be quite different from those affecting decisions to purchase or provide domestic or foreign goods and services at one point in time. And the links between oil self-sufficiency and saving and investment are indirect and tenuous. In particular, both saving and investment depend heavily on decisions about the future.⁹ Saving involves making trade-offs between current and future consumption and depends not only on current income but on expectations of future income as well as people's impatience in waiting to consume later. Investment will hinge on the relationship between the costs of borrowing and expectations about future rates of return. If a shift toward oil self-sufficiency is to permanently affect the U.S. current account, therefore, it must not only affect flows of exports and imports at a point in time, but must also alter the permanent behavior of national saving or investment. If, however, it does not affect saving or investment, there must be offsetting changes that occur within the current account itself to restore equilibrium.

Figure 1. Gross U.S. National Saving, Investment, and the Current Account Balance, 1969–2012



Source: U.S. Bureau of Economic Analysis National Income Accounts data.

The savings-investment perspective provides a coherent account of the emergence of U.S. current account deficits since 1969. The top line in Figure 1 is gross domestic investment as a share of U.S. GDP. It shows that over almost the entire period, U.S. investment has been greater than domestic saving, and the current account has been in deficit. Though the share of GDP invested has fluctuated—slumping in the recessions of the early 1980s and the early 2000s, as well as the financial crisis of 2008—it has not declined much overall over time. By contrast, since 1982, gross domestic saving has moved strongly downward. Although the decline was interrupted by a recovery in the second half of the 1990s, over the past decade the descending trend has been even stronger.¹⁰

The lowest line in the chart represents the current account balance as a share of GDP. It shows the emergence of substantial current account deficits, especially in the mid-1980s (a time of unusually low oil prices) and again in the mid-2000s (a time of relatively high oil prices). Taken together, one can conclude that the United States has been borrowing from the rest of world not because it has been financing more domestic investment, but because it has been consuming increasing shares of its income. (In 2007, for example, when the United States had a current account deficit of 5 percent of

GDP, investment and saving were 19.5 and 14.5 percent of GDP, respectively. By comparison, in 1980, investment and saving were 20.8 and 19.5 percent of GDP, respectively. Thus, the decline in investment was 1.3 percent of GDP, much greater than the decline in saving of 5 percent of GDP.)

LONG-RUN CONSEQUENCES OF FALLING OIL IMPORTS

One can apply this framework to estimate the likely consequences for increased U.S. oil self-sufficiency. Reflecting on the likely effect of reduced oil imports on U.S. saving and investment suggests that though it is likely to raise the real exchange rate, it may ultimately have very little effect on the U.S. current account, particularly over the long run.

Increased Production

Self-sufficiency can be achieved by a combination of more domestic oil production and less domestic oil consumption. Consider first only an increase in domestic production that achieves U.S. self-sufficiency in oil and think about the response over the long run—perhaps after ten years. For simplicity, assume (as is typically done in analyses like this) that by then the economy is at full employment and that world and domestic oil prices are unchanged by the rise in U.S. oil output.

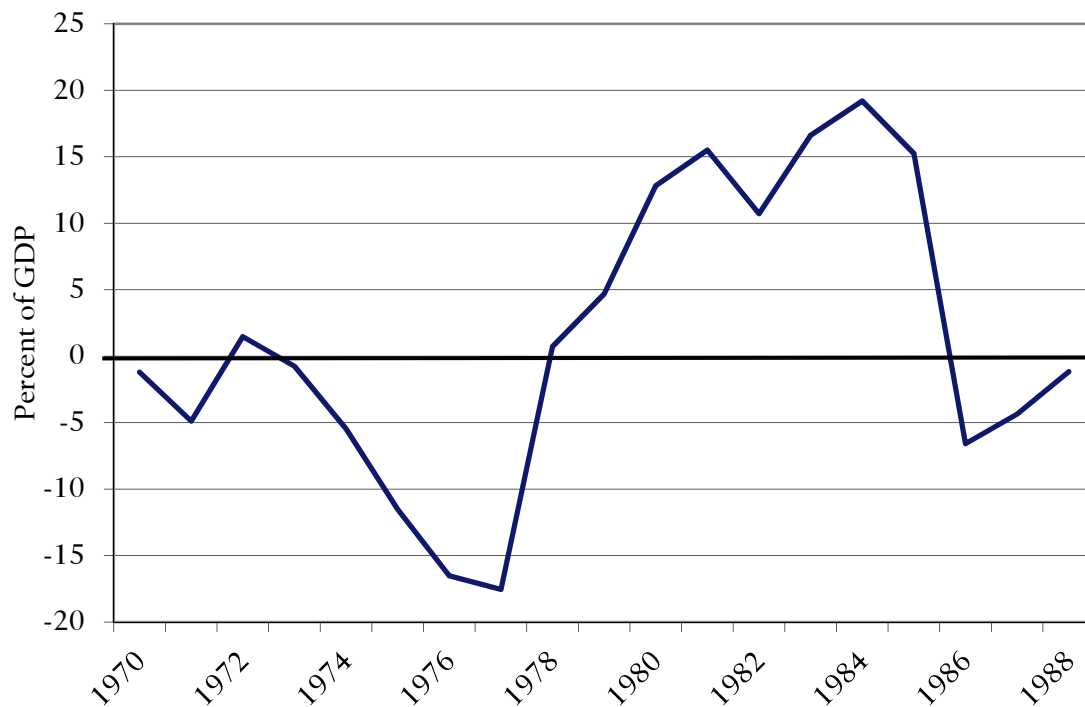
With increased domestic oil production, Americans would be buying more domestic oil and less foreign oil, but with oil prices unchanged there is no reason to expect that their total purchases of oil would change. They would also be earning more of their income by producing oil, and less by producing other goods and services. What effects would this change have on national saving? As a first approximation, the destination and source of income is unlikely to make much difference for most saving decisions. Although more Americans would be earning their incomes from oil rather than other forms of production, the incomes and spending of the vast majority of Americans would be unaffected. To have a significant effect in raising the national saving rate, U.S. oil producers would have to save at rates that were very different from other Americans. And to be noticeable in the macroeconomic aggregates, oil earnings would have to account for a relatively high share of U.S. income. In addition, to have an effect on government saving, the shift would have to generate large net revenues for the government that did not give rise to increased government spending.

Are these conditions met in practice? It is certainly possible that since oil revenues tend to be less stable, producers have higher saving rates during good times, but over the long run there is little reason to believe that earning money from oil rather than other activities would radically alter long-run saving. Moreover, even if saving rates differ, the U.S. trade deficit in oil amounted to only 2.2 percent of U.S. GDP in 2011. Assume instead that, after ten years, domestic oil production increased by a similar magnitude. In 2011, the U.S. national (private plus government) saving rate was 12.2 percent of U.S. Gross National Product (GNP). Make the extreme assumption that more income earned from oil combined with some response in reduced government deficits due to higher tax revenues generates a rate of saving twice that in the rest of income, or a rate of 24.4 percent. A shift of 2.2 percent of income toward oil from other activities would thus increase the national saving rate from 12.2 to 12.47 percent, or by just 0.23 percent of GDP—merely one-tenth of the 2.2 percent of GDP improvement in the oil trade balance. This means that the overall trade balance would only improve by this smaller amount.

One also needs to ask how investment might change in the aggregate if Americans were producing more oil at home rather than investing to produce other goods and services. We have seen that there could be small increases in saving, but if that reduced U.S. interest rates, investment could rise as a result. In addition, and more importantly, since oil production is relatively capital intensive, investment could well increase as oil production expands. (The 40 percent share of value-added represented by Gross Operating Surplus in the oil industry, defined as the difference between sales and payments for labor, indirect-taxes and other inputs, is twice the 20 percent share typical of U.S. industries as a whole.) With little or no increase in saving, increased demand for investment in oil production would lead to higher interest rates and less investment elsewhere in the economy. More capital devoted to oil would therefore mean less capital for other activities. At least some of the additional capital would be borrowed internationally, and thus net national investment could in fact rise.

Ironically, the result would be a *larger* current account deficit. That was exactly what happened in Norway when oil was developed in the North Sea in the 1970s: the initial investments required more capital than the Norwegians themselves could finance, and thus current account deficits initially rose up to almost 15 percent of GDP, as foreigners financed some of the North Sea development. Eventually, however, because their oil revenues were so high, Norwegians, especially the government, increased saving in the form of a sovereign wealth fund, and the country ran current account surpluses.

Figure 2. Norway's Current Account as Share of GDP, 1970–1988



Source: Statistics Norway.

The upshot of this analysis is that, by itself, greater oil self-sufficiency is unlikely to reduce the long-term U.S. current account deficit. If the oil trade deficit falls while the current account balance as a whole remains similar, the deficit in the rest of U.S. trade in goods and services will have to grow. If

national spending on oil remains a constant share of income, and more resources are devoted to domestic oil production, fewer resources will be available to meet the demand for other goods and services. This shortfall in the domestic supply of other goods and services will have to be met through an increase in imports or reduction in exports of other goods and services. To induce the required shift from spending on domestic goods and services toward more spending on foreign goods and services, the relative price of U.S. goods and services will have to rise, either through a stronger dollar or domestic inflation that is higher than in other countries; in either case, therefore, the real exchange rate would appreciate.

Reduced Consumption

Suppose, again assuming the economy is at full employment, that self-sufficiency is achieved instead through reduced oil use. This could occur either because Americans substitute other sources of energy for oil or become more efficient in their energy use. In both cases, Americans would be buying alternative products instead of oil. Over the long run, their overall saving rates are unlikely to be affected. Indeed, they would simply be spending less on oil and more on alternative forms of energy and other goods and services. The effect on investment would depend on the capital intensity of the additional products being purchased.

Some of the new spending would fall on imports, but some would increase the demand for (non-oil) U.S. goods and services. If the economy were at full employment, something would need to happen to eliminate this new demand for other U.S. goods and services: U.S. goods and services would have to rise in relative price to induce Americans to produce more and demand fewer domestic goods. This would lead to fewer exports and more imports. The effect again would be a stronger real exchange rate, and larger trade deficits in the non-oil goods and services, but little if any net effect on the overall trade deficit—an effect quite similar to a case of increased production.

CURRENT CONCERNS AND SHORT-RUN CONSEQUENCES

Thinking about the long run is important and useful as a starting point, but the U.S. economy currently has high rates of unemployment and unutilized capacity. It turns out that a shift toward oil self-sufficiency could do more to reduce the current account deficit in these circumstances, by generating more income and thus more saving.

Reduced Consumption

To see how such a shift could reduce the current account deficit, it is useful to start by focusing on increased self-sufficiency resulting purely from lower oil consumption. Americans would spend less on imported oil, and though they could increase their saving, it is more likely that, for the most part, they would increase their spending on other domestic goods and services. Under normal circumstances, this increase in demand could lead to higher interest rates, capital inflows, and an exchange rate appreciation that could offset some or all of the stimulus. However, under current circumstances, the U.S. Federal Reserve is likely to keep interest rates constant, forestalling this crowding-out effect.

Increased demand for U.S. goods and services would thus generate higher U.S. incomes and employment. Some of this increased income would be spent on imports, and thus the overall improve-

ment in the current account would be less than the decline in the net oil trade balance. But some of the increased income would be saved, and as long as this increased saving was greater than any additional investment that might also be induced by a bigger economy, there would be some improvement in the overall trade balance. To the degree that the economy had underutilized capacity, no additional investment would be required to increase output and thus one would expect the effects on saving to outweigh those on investment. Under current circumstances, therefore, greater oil self-sufficiency spurred by reduced oil consumption would reduce the current account deficit.¹¹

How big would this effect be? Estimates of the multiplier effect tend to fall in the range between 1.0 and 2.0, with a plausible number closer to 2.0 when interest rates are maintained at zero. This means that each dollar of reduced spending on imports would raise domestic income by between one dollar and two dollars. This higher income in turn would give rise to increased imports of other goods and services. In 2012, U.S. imports of goods and services accounted for 17.9 percent of U.S. GNP, but in the short run, most import equations indicate that imports typically rise twice as fast as income, suggesting a marginal propensity to import between 0.2 and 0.4. This points to an upper bound improvement in the current account due to conservation of eighty cents for each dollar reduction in imports when the multiplier and marginal propensity to import are both small.¹² But the improvement could also be as low as just twenty cents on the dollar if both the multiplier and marginal propensity to import are large.¹³

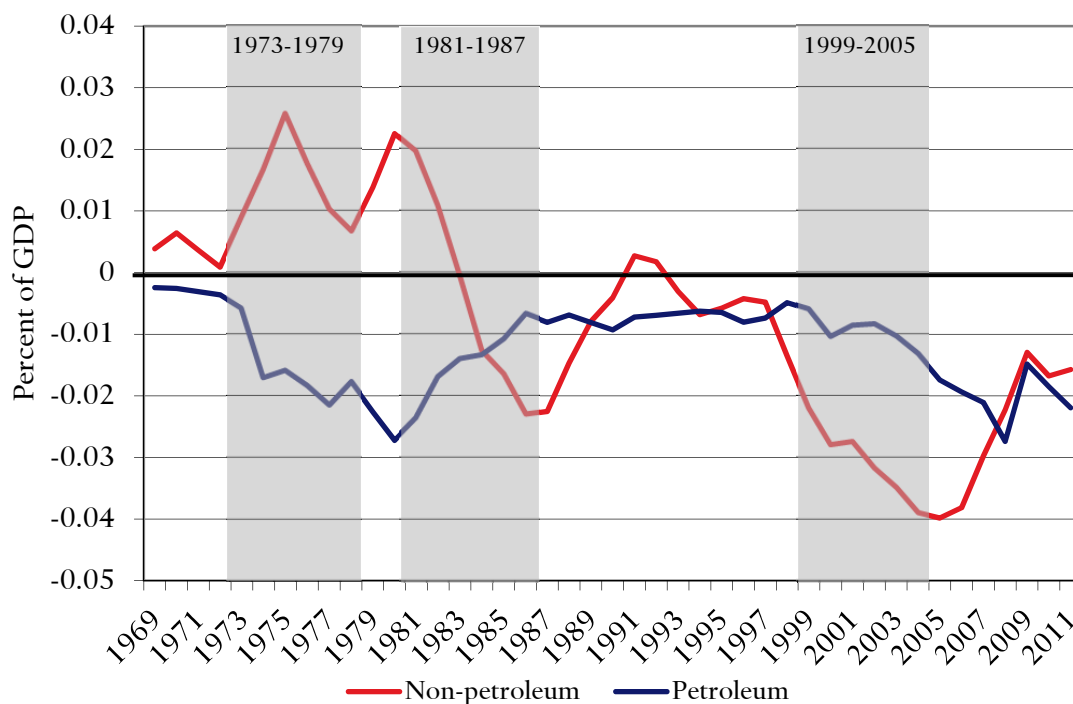
Increased Production

The current account effect could also be positive if greater self-sufficiency were achieved through increased domestic oil production. In this case, domestic income and employment would rise both because of the reduction in oil imports and because increased domestic production would boost domestic investment. But in this case, while oil imports would be reduced, this effect on the trade balance would be offset in part by a rise in imports (resulting from the growth in income).

Consider the case where the multiplier is 1.0 and the marginal propensity to import is 0.2. If, for example, each dollar of increased oil output at home required three dollars of investment (a typical ratio of investment to output), this would raise income by four dollars and give rise to imports of eighty cents, with an overall improvement on the trade balance of just twenty cents in the first year for each dollar of increased oil output. To be sure, in this case, once the oil capacity had been installed, the effect might eventually converge to eighty cents. If, however, the multiplier was 2.0 and the marginal propensity to import was 0.20—the other extreme—income would grow by eight dollars and overall imports by \$1.60. In other words, while employment and income would grow significantly, initially the current account could actually worsen.

Thus, predictions for the short-run effect of shifts to self-sufficiency differ from those for the long-run effect. In particular, with conservation one might expect some improvement in the current account in the short run. With increased oil production, though, the improvement is likely to be smaller, and in the short run there could even be some deterioration.

Figure 3. U.S. Trade Balances in Goods and Services as Share of GDP, 1969–2011



Source: U.S. Bureau of Economic Analysis National Income Accounts data.

Evidence

Looking at the historical record can confirm some of these insights. Separating out the precise influence of oil on the current account in historical data from other sources of influence is challenging, but it is still possible to learn from past experience. The correlation between the aggregate movement in the current account and the net oil trade balance has been weak. As shown in Figure 3, two major oil price increases in 1973 and 1979 led to large deficits in net oil trade, but these shocks were offset by improvements in the non-oil current account—in part because they led to recessions. Between 1981 and 1987, by contrast, a shrinking oil deficit coincided with a dramatic decline in the current account (i.e., increasing the current account deficit) because non-oil trade moved in the opposite direction due to the strong dollar brought about by the high interest rates associated with Reaganomics. Although the movement in the two deficits was more closely correlated between 1999 and 2005, the chart clearly suggests that the dominant determinants of the current account lay elsewhere—an account pointing to the importance of taking aggregate saving and investment decisions into account.

More powerful evidence of the weak long-run relationship between oil deficits and current account deficits internationally is provided by Joseph Gagnon in a 2013 study.¹⁴ In his study, which uses two samples of 40 and 115 countries, Gagnon is actually interested in explaining the role of currency intervention in driving the current account. But his results are useful for present purposes because among the many variables he uses in his regressions to explain the current account is each country's net energy-trade balance. Thus, one can interpret his regressions as indicating the effect of changes in the energy trade balance while controlling for other relevant independent variables.

Gagnon's work is thorough. His regressions explain the annual and five-year behavior of the countries' current accounts between 1986 and 2010. He presents a large number of specifications and takes great care to deal with potential statistical problems such as simultaneity bias. His results confirm that changes in the net energy trade balance have relatively small effects on the current account, especially over the longer run. When he uses five-year country averages for current account, he typically finds that for each dollar improvement in the energy balance, the current account improves by just ten cents. When using annual data, the improvement is typically twice as large.¹⁵ Another statistical approach involves the use of vector-autoregression models to explore the effect of oil price shocks. In one such exercise, the International Monetary Fund finds that permanent "oil price shocks have a marked but relatively short-lived impact on current accounts," reinforcing Gagnon's analysis and the broader arguments presented here.¹⁶

CONCLUSIONS

Since the channels by which smaller oil trade balances could raise national saving and reduce national investment in the long run are weak, they are unlikely to have an important long-term effect on the United States' net overall foreign borrowing. For oil self-sufficiency to be fully reflected in reductions in the U.S. current account deficit in the long run, even under the assumption that self-sufficiency does not raise national investment, it would have to increase U.S. national saving by almost 20 percent. The effects on the trade balance could be larger in the short term, since the additional income generated by self-sufficiency could increase national saving; they could initially range somewhere between twenty and eighty cents for each dollar reduction in the oil trade deficit. But even in this case the effects would be temporary. Moreover, if the development of U.S. oil reserves actually requires more investment, the overall trade deficit could worsen in the short run.

Since the long-run response in the current balance is likely to be small, oil self-sufficiency is more likely to result in a stronger dollar and larger trade deficits in other goods and services. By producing its own oil, the United States will have become more competitive—but rather than a smaller trade deficit, the effect would be felt through a stronger real exchange rate associated with any given trade balance. This theoretical reasoning is supported by empirical research based on responses to changing oil trade in other countries, which show relatively small responses in long-run current account balances to changes in oil trade balances.

The implications of this reasoning are especially important for those concerned about the U.S. current account deficit and its geopolitical implications. The way to achieve a smaller deficit is to adopt measures that raise the national saving rate, rather than increasing the production or reducing the consumption of oil. While such measures may bring other benefits, without other changes in U.S. macroeconomic behavior, they should not be expected to have a major effect on the current account in the long run.

Finally, though this paper has focused on oil, the reasoning behind it actually has far broader application. It is often claimed that improvements in U.S. competitiveness brought about through enhanced productivity growth or new product innovation could reduce the current account deficit. Others have argued that the solution lies in inducing a weaker U.S. dollar or implementing tougher U.S. trade policies. But unless at the same time such developments raise U.S. national saving relative to investment, they will induce other responses that could leave the current account unchanged.

Endnotes

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1. U.S. Bureau of Economic Analysis, Table 2a Trade in U.S. Goods, U.S. Department of Commerce. Accessible at <http://www.bea.gov/iTable/iTable.cfm?reqid=6&step=3&isuri=1&600=3#reqid=6&step=3&isuri=1&600=3>.
 2. See U.S. Energy Information Administration, *Annual Energy Outlook 2013*, DOE/EIA00383 (Washington, DC: Department of Energy, April 2013).
 3. See, for example, Edward L. Morse, Eric G. Lee, Daniel P. Ahn, Aakash Doshi, Seth M. Kleinman, and Anthony Yuen, *Energy 2020: North America, the New Middle East?*, Citi GPS: Global Perspectives & Solutions, March 20, 2012.
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 5. Some of these claims reflect flawed reasoning. See William Nordhaus, "The Economics of an Integrated World Oil Market," Keynote Address at the International Energy Workshop, June 17–19, 2009, Venice, Italy. Accessible at http://www.econ.yale.edu/~nordhaus/homepage/documents/jiew_052909.pdf.
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 9. For a comprehensive survey of the current account from an inter-temporal view see Maurice Obstfeld and Kenneth Rogoff, "The Intertemporal Approach to the Current Account," in Gene M. Grossman, and Rogoff, Kenneth (eds), *Handbook of International Economics* (Amsterdam: North Holland Publishing Company, 1995), pp.1731–1799.
 10. For a comprehensive analysis of the factors behind the decline in U.S. national saving, see Barry P. Bosworth, *The Decline in Saving: A Threat to American Prosperity* (Washington, DC: The Brookings Institution, 2012).
 11. An estimate of these effects is given in Edward L. Morse, Eric G. Lee, Daniel P. Ahn, Aakash Doshi, Seth M. Kleinman, and Anthony Yuen, *Energy 2020: North America, the New Middle East?*, Citi GPS: Global Perspectives & Solutions, March 20, 2012.
 12. Specifically, if the multiplier and marginal propensity to import are 1.0 and 0.2 respectively, the improvement in the current account would be $1.0 - 1 * 0.2$.
 13. Specifically, if the multiplier and marginal propensity to import are 2.0 and 0.4, respectively, the improvement in the current account would be $1.0 - 0.4 * 2$.
 14. Joseph E. Gagnon, *The Elephant Hiding in the Room: Currency Intervention and Trade Imbalances*, Working Paper 13-2 (Washington, DC: Peterson Institute for International Economics, March 2013).
 15. Tamim Bayoumi and Christian Saborowski undertake a similar set of regressions and obtain coefficients that are similar to those of Gagnon and lie between 0.11 and 0.19. See Tables 3, 4, and 5 in Bayoumi Tamim and Christian Saborowski, "Accounting for Reserves," IMF Working Paper WP/12/302 (International Monetary Fund, 2012).
 16. International Monetary Fund, *World Economic Outlook: Globalization and Inflation*, World Economic and Financial Surveys (Washington, DC: International Monetary Fund, April 2006), p. 84.

About the Author

Robert Z. Lawrence is the Albert L. Williams professor of trade and investment at the John F. Kennedy School of Government at Harvard University. He is also a senior fellow at the Peterson Institute for International Economics in Washington, DC, and a research associate at the National Bureau of Economic Research. He is a member of the International Advisory Panel of the South African Government's Accelerated and Shared Growth Initiative. He also served as a member of President Bill Clinton's Council of Economic Advisers from March 1999 to January 2001. Lawrence has held the New Century Chair as a nonresident senior fellow at the Brookings Institution, and founded and edited the Brookings Trade Forum. He has been a senior fellow in the Economic Studies Program at the Brookings Institution (1983–91), a research associate at Brookings (1976–82), an instructor at Yale University (1975), and a professorial lecturer at the Johns Hopkins School of Advanced International Studies (1978–81). He has served as a consultant to the Federal Reserve Bank of New York, the World Bank, the OECD, and UNCTAD. He was also a member of the Presidential Commission on United States Pacific Trade and Investment Policy, and has served as a member of the advisory committees of the Institute for International Economics, the Panel on Foreign Trade Statistics of the National Academy of Sciences, the Committee for Economic Development, the Overseas Development Council, and the Panel of Economic Advisers of the Congressional Budget Office.