



# *Trade, Protectionism, and the U.S. Economy*

## *Examining the Evidence*

by Robert Krol

### Executive Summary

The expansion of international trade has provided considerable benefits to the United States and its trading partners. Yet the growth of trade also raises concerns about its impact on domestic firms and their workers.

This study surveys the economic research on the causes of expanded international trade, the benefits of trade, the impact of trade on employment and wages, and the cost of international trade restrictions. The findings include the following:

- Income growth accounts for two-thirds of the growth in global trade in recent decades, trade liberalization accounts for one-quarter, and lower transportation costs make up the remainder.
- Trade expansion has fueled faster growth and raised incomes in countries that have liberalized. A 1-percentage-point gain in trade as a share of the economy raises per capita income by 1 percent. Global elimination of all barriers to trade in goods and services would raise global income by \$2 trillion and U.S. income by almost \$500 billion.
- Competition from trade delivers lower prices and more product variety to consumers. Americans are \$300 billion better off today because of the greater product variety from imports.
- International trade directly affects only 15 percent of the U.S. workforce. Most job displacement occurs in sectors that are not engaged in global competition. Net payroll employment in the United States has grown by 36 million in the past two decades, alongside a dramatic increase in imports of goods and services.
- Expanding trade does not explain most of the growing gap between wages earned by skilled and unskilled workers. The relative decline in unskilled wages is mainly caused by technological changes that reward greater skills.
- Trade barriers impose large, net costs on the U.S. economy. The cost to the economy per job saved in protected industries far exceeds the wages paid to workers in those jobs.

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## Introduction

America's trade with the rest of the world expanded significantly after World War II. U.S. goods (exports plus imports) increased from 9.2 percent of gross domestic product in 1960 to 28.6 percent in 2007. This expansion of international trade has benefited the United States and its trading partners considerably. The benefits include a higher standard of living, lower prices for consumers, improved efficiency in production, and a greater variety of goods.

The expansion of international trade raises concerns about the impact on domestic firms. In particular, many people fear that international trade reduces job opportunities for workers and depresses wages. These fears create political support for protectionist policies. However, international trade restrictions are costly to consumers as well as producers.

A recent survey found that 59 percent of Americans have a favorable view of international trade,<sup>1</sup> although survey trends also indicate that a growing number of Americans now view international trade less favorably. When asked about their attitudes concerning the expansion of U.S. trade relations with the rest of the world, 36 percent thought it was "somewhat bad" or "very bad" in 2007 compared with 18 percent in 2002.

In this presidential election year, interest in the international trade views of the likely Democratic and Republican nominees is high. A meaningful way to determine the candidates' thinking on international trade is to look at their legislative voting records.

According to the Cato Institute's Center for Trade Policy Studies, Republican Sen. John McCain (R-AZ) voted against trade restrictions 88 percent of the time over his career.<sup>2</sup> He is classified as a free trader based on his voting record. Sen. Barack Obama (D-IL) voted against trade barriers only 36 percent of the time. Clearly, the outcome of the November election could significantly affect future U.S. trade policy. Whether the United States continues to promote free trade will depend in part on who is elected president.

Opinion surveys and congressional voting records suggest Americans disagree strongly about the costs and benefits of international trade. This paper reviews empirical studies that examine the evidence on how international trade affects the economy. The goal of this paper is to discuss the evidence with respect to four important areas of international trade: the causes of expanded international trade, the benefits of trade, the impact of trade on employment and wages, and the cost of international trade restrictions.

The following points summarize the evidence from a survey of major research in the field:

- Comparative advantage remains the major driver of global trade flows.
- Income growth accounts for two-thirds of the growth in global trade in recent decades, trade liberalization accounts for one-quarter, and lower transportation costs make up the remainder.
- Trade expansion has fueled faster growth and raised incomes in countries that have liberalized. A 1-percentage-point gain in trade as a share of the economy raises per capita income by 1 percent. Global elimination of all barriers to trade in goods and services would raise global income by \$2 trillion and U.S. income by almost \$500 billion.
- Competition from trade delivers lower prices and more product variety to consumers. Americans are \$300 billion better off today than they would be otherwise because of the greater product variety from imports.
- International trade directly affects only 15 percent of the U.S. workforce. Most job displacement occurs in sectors that are not engaged in global competition.
- While trade has probably caused a net loss of manufacturing jobs since 1979, those losses have been more than offset by employment gains in other sectors of the economy. Net payroll employment in the United States has grown by 36 million in the past two decades, along with a dramatic increase in imports of goods and services.
- Growing levels of trade do not explain most of the growing gap between wages

earned by skilled and unskilled workers. The relative decline in unskilled wages is mainly caused by technological changes that reward greater skills. Demand for unskilled workers has been in relative decline in all sectors of the economy, not just those exposed to trade.

- Trade barriers impose large, net costs on the U.S. economy. The cost to the economy per job saved in protected industries far exceeds the wages paid to workers in those jobs.
- Protectionism persists because small, homogeneous, and concentrated interests are better able to lobby the government than the large, heterogeneous, and dispersed mass of consumers.

## Why Countries Trade

Comparative advantage remains the basis of international trade. Differences in production costs within countries determine much of the flow of goods and services across international borders. Economists use the term “comparative advantage” to indicate that a country has a cost advantage in producing certain goods relative to other goods that could be produced within that same country.<sup>3</sup> In other words, what spurs trade and specialization is not the absolute cost advantage that one country’s producers have over their competitors in another country, but the relative advantage they have compared to other sectors within their own country.

Consider the example of a more-developed Country A and a less-developed Country B. Country A may be able to produce t-shirts twice as efficiently as Country B; but if it can produce computers 10 times more efficiently, it will make economic sense for Country A to specialize in producing and exporting computers while importing t-shirts from Country B. Trade allows both countries to direct their internal resources—principally labor and capital—to those sectors where they are relatively more productive compared to other sectors in the domestic economy.

Comparative advantage can spring from multiple sources. A country can have a cost

advantage in the production of a particular good because of superior production technology. This superiority can include better ways to organize the production process or a climate that allows the country to grow certain crops, such as bananas and mangos, more cheaply. It can also include greater investments in skilled labor and equipment that can result in a comparative advantage in such areas as computer software.

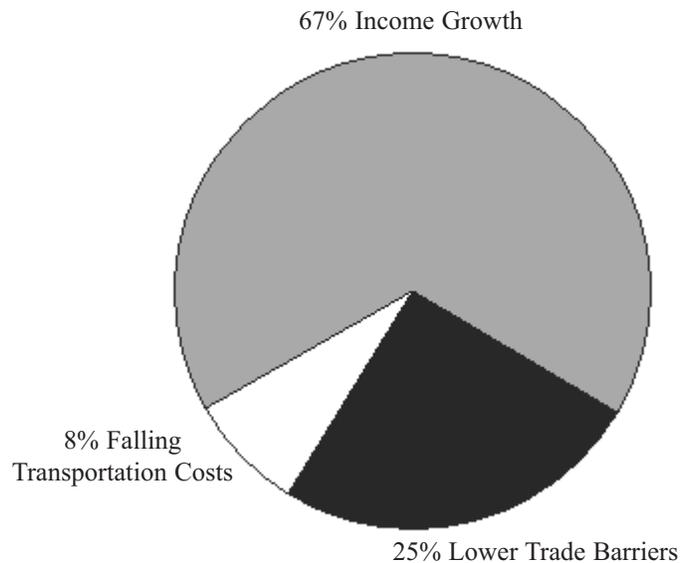
The United States has proportionately more skilled labor than unskilled labor compared with most countries.<sup>4</sup> This makes the United States the low-cost producer for goods that rely on skilled labor and sophisticated machinery. Therefore, the United States exports high-tech manufactured goods that can be produced using relatively more skilled labor and imports shoes and apparel that are produced using a large amount of unskilled labor.

However, sometimes trade involves similar goods. For example, the United States both exports and imports golf clubs. This type of trade occurs in markets where businesses differentiate their products and experience declining average costs as production expands.<sup>5</sup> In this setting, opening an economy to international trade increases the size of the market. Average costs fall, resulting in lower prices and a wider array of products being sold in each of the trading countries. Consumers can select from products produced by domestic as well as foreign firms. Lower prices and greater variety increase consumer welfare.

Global trade has expanded significantly since World War II for a number of reasons, including lower transportation and information costs, higher per capita income, and changes in government policies. The containerization of shipping has reduced loading times, improving efficiency, just as less expensive air transportation has increased international trade in perishable items. Improvements in information technology have made it less costly for consumers to determine the characteristics of products produced abroad. Information technology has also made it easier for producers to assess consumer preferences, allowing better customization of products and services for buyers in foreign markets. Income growth in developed countries and even in some less-developed countries has increased the demand for goods and ser-

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**Figure 1**  
**Factors Driving Global Trade**



Source: Scott L. Baier and Jeffrey H. Bergstrand, "The Growth of World Trade: Tariffs, Transport Costs, and Income Similarity," *Journal of International Economics* 9, no. 4 (2001).

vices produced domestically as well as from abroad. Finally, trade restrictions have decreased significantly since World War II.

Evidence is now available that quantifies the relative contribution of these different factors to the growth of world trade. Scott Baier and Jeffrey Bergstrand attribute 67 percent of the increase in international trade to income growth, another 25 percent to tariff reductions, and the remaining 8 percent to falling transportation costs.<sup>6</sup> (See Figure 1.) Critics of trade blame trade agreements for spurring global competition, when in fact most trade growth simply stems from rising global incomes. A reversion to protectionism would not necessarily stop the growth of global trade, but it would sacrifice the considerable economic benefits of more open competition.

### **Benefits from International Trade**

Since World War II, multilateral and unilateral tariff negotiations have reduced barriers to

international trade. Several attempts have been made to quantify the resulting welfare gains to consumers and producers.<sup>7</sup> In brief, trade leads to specialization based on comparative advantage, which lowers production costs, allowing for greater levels of output and, therefore, consumption. Individuals are able to purchase products at lower prices, resulting in higher real incomes and a higher standard of living. In addition, trade allows countries to import products that embody new technologies which are not produced at home.

One way to assess the gains from international trade is to compare the level of welfare (measured imperfectly by real per capita GDP) before and after trade restrictions are dropped. A dramatic example of this type of trade reform occurred in Japan during the early 1850s. For 200 years up until then, Japan had almost no economic or cultural contact with other countries. Then the Japanese government signed a treaty with the United States that was designed to shift the country from a no-trade to a free-trade regime in seven years. Daniel Bernhofen

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and John Brown estimate that, with the increase in international trade, Japan's real GDP was 8 percent higher by the end of the seven-year period than if the economy had remained closed.<sup>8</sup> Furthermore, by opening its economy to the rest of the world, Japan was able to import capital goods, new technologies, and new production methods that promoted faster economic growth and even higher living standards over time.

In another historical episode, the United States closed its borders to international trade in 1807 when President Thomas Jefferson imposed a trade embargo to avoid conflicts with the warring British and French navies. Dartmouth economist Douglas Irwin estimates the embargo reduced U.S. GDP by about 5 percent in one year.<sup>9</sup> Jefferson quickly ended the embargo because of the high economic cost it imposed on the country.

Research economists have used computer models of the economy to capture the industry adjustments and aggregate GDP gains from trade liberalization. Work by Drusilla Brown, Alan Deardorff, and Robert Stern represents this type of study.<sup>10</sup> They estimate that a one-third reduction in agricultural, manufacturing, and service-sector trade restrictions worldwide would increase world GDP by \$686 billion (measured in 1995 dollars) over a prereduction baseline. In the United States, GDP would rise 1.8 percent. If all trade barriers were eliminated, world GDP would increase by more than \$2 trillion and U.S. GDP would be \$497 billion, or 4.8 percent, higher than before liberalization.

Although the association between free trade and prosperity has been well documented, the correlation between international trade and increased per capita income has been difficult to illustrate—perhaps because countries with higher per capita income choose to trade more. In a well-known study, Jeffrey Frankel and David Romer examined the relationship between international trade and per capita income using 1985 data for a large cross-section of countries.<sup>11</sup> To deal with the causality issue, Frankel and Romer used geographic variables correlated with international trade but not per capita income. This approach isolates the portion of international trade not caused by growth

in per capita income.<sup>12</sup> They found that, as the share of exports-plus-imports to GDP rises by 1 percentage point, per capita income increases by 2 percentage points.

However, Frankel and Romer's work has been criticized because the geographic variables they used may be correlated with other geographic factors that influence GDP. For example, distance from the equator correlates with per capita income, possibly invalidating the results.<sup>13</sup> Marta Noguer and Marc Siscart used an improved specification to reestimate the relationship.<sup>14</sup> Controlling for distance from the equator, they found that a 1-percentage-point increase in trade share raises per capita income by 1 percentage point. Noguer and Siscart concluded that trade does indeed raise a country's standard of living.

More recently, Romain Wacziarg and Karen Horn Welch examined the relationship between trade and economic growth for 133 countries over most of the post-World War II period.<sup>15</sup> Using country case studies and trade policy indicators, they identified the year countries in the study liberalized their trade policies. They found that, on average, countries grew 1.5 percentage points faster per year following trade liberalization during the period 1950 to 1998. Focusing on a subgroup of countries that had at least eight years of data before and after liberalization, they found 54 percent of these countries grew faster. Of the remaining countries examined, 21 percent did not experience faster growth while 25 percent of the countries grew more slowly.

Wacziarg and Welch found that the countries that experienced faster economic growth maintained their liberalization policies while the others did not. Also, some of the countries that did not grow faster following trade liberalization experienced political instability and restrictive macroeconomic policies that hindered growth in the post-trade-liberalization period. Obviously, trade liberalization alone is not always enough to overcome other factors inhibiting growth.

Economists have also turned to individual factory-level data to better understand the connection between international trade and a country's standard of living.<sup>16</sup> Looking at U.S.

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manufacturing data from 1987 to 1997, Andrew Bernard, J. Bradford Jensen, and Peter Schott found that a one-standard-deviation decrease in tariffs and transportation costs increased productivity growth by 0.2 percentage points per year, primarily as a result of a shift in production from low- to high-productivity plants. Many low-productivity plants closed. At the same time, however, exports from plants already exporting increased, and high-productivity plants that previously produced only for the domestic market entered the export market.

Daniel Trefler found productivity gains of 1.9 percent per year in Canadian manufacturing following the implementation of the 1989 free trade agreement with the United States. Average manufacturing employment fell by 5 percent in the seven years following the agreement. Those job losses were disproportionately in manufacturing plants that received the greatest tariff protection prior to the trade agreement. However, employment growth in more efficient manufacturing plants helped to reemploy displaced workers over time. These studies show that the short-run adjustment costs and job displacement associated with the closing of inefficient plants can be offset by greater productivity and higher standards of living in the longer-run.

These estimates of the gains from international trade probably underestimate the improvement in well-being that increased trade brings. Moving to freer international trade also increases the variety of goods and services individuals can choose from. If consumers value variety, then welfare improves in an open economy. This welfare gain may not show up in income data, but it does make people better off. In addition, greater variety in intermediate capital goods benefits producers. Better intermediate goods improve efficiency and speed productivity growth, resulting in a higher standard of living for workers.

Christian Broda and David Weinstein examined the benefits of greater import variety in the United States over the period 1972 to 2001.<sup>17</sup> They estimated that the variety of international goods imported into the United States tripled over the period. One traditional measure of the welfare gain from international trade is the

decline in prices as measured by an import price index. However, Broda and Weinstein point out that the United States' import price index is not adjusted for changes in variety. If greater variety increases a consumer's satisfaction and standard of living without raising prices, then consumers should be able to achieve the same level of welfare while spending less. When Broda and Weinstein adjusted the U.S. import price index for changes in variety, they estimated the U.S. welfare gain from a greater variety of imports to be approximately 2.8 percent of GDP, or \$300 billion per year.

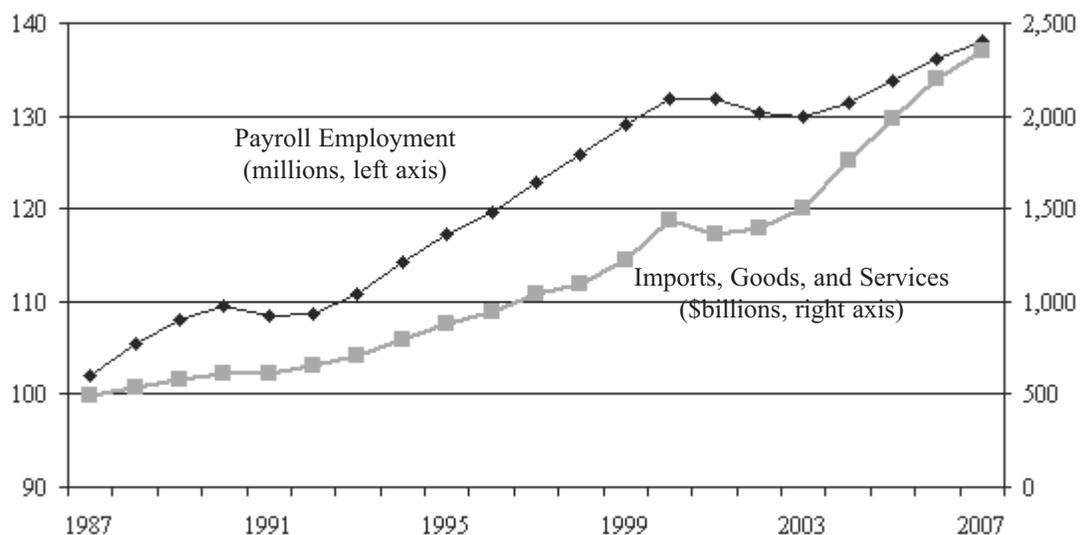
These empirical studies provide evidence that international trade raises income and productivity. They also show that the greater product variety brought about by expanding international trade improves welfare.

## **Trade's Effect on Employment**

People concerned about trade worry that gains in productivity and product variety come at the expense of domestic employment. Yet, the evidence shows little relationship between greater imports and any change in *aggregate* employment.<sup>18</sup> Over the past 20 years, U.S. aggregate net employment has increased from 102 million jobs to nearly 138 million jobs,<sup>19</sup> while imports of goods and services have gone from a little over \$500 billion to \$2.35 trillion.<sup>20</sup> As shown in Figure 2, employment tends to rise along with imports.<sup>21</sup> Demographic trends, worker education and skill levels, labor-market regulations, and business-cycle developments—not trade—are the dominant factors influencing the overall level of employment and the unemployment rate in the U.S. economy.

International trade does have distributive effects. Although the country as a whole is better off, individual groups of workers or industries may be worse off. This occurs because, once a country opens itself up to international trade, import prices fall because of greater competition and export prices rise because producers can sell to a larger global market. Domestic production of import-competing goods contracts while production in export

**Figure 2**  
**Growth of Employment and Imports, 1987–2007**



Sources: Economic Report of the President, 2008; Bureau of Labor Statistics; and U.S. Department of Commerce.

industries expands, changing the real earnings of inputs employed in these sectors.<sup>22</sup>

What are the implications for the United States? As noted earlier, the United States exports goods that use relatively more skilled labor and imports goods that use relatively more unskilled labor. As the economy adjusts to changing trade patterns, the demand for skilled labor increases and the demand for unskilled labor decreases. Thus, as the United States opens its economy to greater international trade, real wages of skilled labor rise relative to the real wages of unskilled labor.<sup>23</sup> Making matters more difficult for unskilled laborers, displaced workers may also experience a period of unemployment before they find a new job.<sup>24</sup>

Researchers who investigate the impact of international trade on employment and wages find that, despite public rhetoric, international trade has a relatively small impact on wages and employment in the United States.<sup>25</sup> Growth in wage inequality over the last 25 years has apparently been driven more by technological change than international trade.

Two facts shed some light on this general conclusion. First, international trade directly affects only 15 percent of the U.S. workforce. This sug-

gests that international competition is an issue for only a minority of workers. Second, high rates of job loss occur in sectors of the economy that are not engaged in international trade, indicating that factors other than international trade play an important role in labor-market disruptions.

In addition, the decline in employment in the manufacturing sector has been driven primarily by greater labor productivity rather than by growth in international trade. The net employment impact of international trade on manufacturing is small because the United States is both an importer and exporter of manufactured goods.<sup>26</sup>

In a series of studies, Lori Kletzer examined the impact of increased imports on gross U.S. industry employment.<sup>27</sup> For industries most affected by imports, she estimated 7.45 million *gross* manufacturing jobs were lost between 1979 and 2001, or 28,219 per month. This represents a loss of 15 percent of all manufacturing jobs during the 22-year period.

Kletzer points out that data limitations make it difficult to determine if displaced workers have lost their jobs because of imports or for some other reason. Other factors, such as changes in technology or consumer tastes, can

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also result in job loss. For example, high labor-productivity growth has resulted in a long-run decline in manufacturing jobs—independent of foreign competition. These studies also ignore the jobs created from exporting or from the lower business costs that result from imports, which can expand employment in other sectors.

The more important finding is the *net* effect of imports and exports on employment. Economists at the Federal Reserve Bank of New York have estimated the number of workers needed to produce U.S. goods—imports and exports—with the difference representing the net number of jobs gained or lost in the goods sector because of international trade. Because imports are greater than exports, the calculation shows a net loss in jobs from trade. For the period 1997–2003, they found that net job loss from trade averaged 40,000 per month, or 2.4 percent of total employment.<sup>28</sup> However, the study does not capture employment gains in other sectors, like services, which result from access to lower cost inputs and new technology embedded in imports. It is important to recognize that total net employment in the United States increased by 7.2 million jobs over this period, which indicates that job creation in nonmanufacturing sectors more than offset job losses in manufacturing.<sup>29</sup>

## Trade's Impact on Wages

A more contentious labor-market issue concerns the increase in wages of skilled workers relative to unskilled workers. Is this trend the result of changes in information technology, or is international trade to blame? Most studies conclude that international trade has played only a modest role in rising wage inequality. The empirical evidence suggests that skill-biased technological change has had a bigger impact.

First, the demand for skilled labor has increased relative to the demand for unskilled labor in most industries, even those not heavily engaged in international trade. If international trade were driving this trend, we would not observe high relative demand for skilled labor in all sectors, or in sectors that do not

engage in significant international trade.<sup>30</sup>

If international trade was driving the growing wage inequality between skilled and unskilled workers, then import prices of unskilled-labor-intensive goods should be declining over time and export prices of skilled-labor-intensive goods should be rising over time as trade expands. That is, import prices should decline as we replace higher-cost, domestically produced products with similar products produced at lower cost from countries that have a comparative advantage in those items. Similarly, export prices should be higher in foreign markets because those markets tend to be high-cost producers of the products we export due to our comparative advantage. Using aggregate export and import price indices, Robert Lawrence and Matthew Slaughter found this not to be the case over the 1979 to 1991 period.<sup>31</sup> Their result is consistent with many (though not all) studies that take this approach. A few studies did find a shift in relative international prices in the 1970s, but they still concluded that the relative wage change was driven primarily by technological change rather than shifting international prices.<sup>32</sup>

More recently, using a similar approach for the period 1981 to 2006, Robert Lawrence found a 12 percentage-point decline in the ratio of blue- to white-collar compensation which he attributed to greater international trade. Most of the decline occurred during the 1980s, a period of fairly stable import-to-export price ratios.<sup>33</sup> The evidence from the 1980s is inconsistent with the theory that international trade is the primary driver of greater wage inequality.

Robert Feenstra and Gary Hanson argue that the outsourcing of less-skilled jobs does reduce demand for unskilled workers in the United States (lowering relative wages), but it is not the primary cause.<sup>34</sup> They examined the impact of this type of outsourcing for 435 U.S. manufacturing industries from 1972 to 1990. For the 1972–1979 period, they found that changes in wage inequality were not related to outsourcing. For the 1979–1990 period, outsourcing appeared to explain about 15 percent of the increased wage inequality, while the introduction of computers explained 35 percent.

Expanding international trade can influence employment patterns and relative wages in an

economy. The evidence reviewed in this paper indicates that trade is not the primary source of U.S. job displacement or wage inequality. Technological change and faster productivity growth play the dominant role in these developments.

## Cost of Protectionism

Countries can influence international trade by using tariffs and quotas. The purpose of an import tariff is to reduce imports and expand domestic production in the protected industry. With higher output, industry profits and employment expand. However, that expansion comes at a cost. Domestic consumers pay more for products, and domestic resources are used less efficiently. Downstream industries that would use imported products as an input face higher costs, lowering output and employment in those industries.

Gary Hufbauer and Kimberly Elliott examined the welfare gains from the elimination of tariffs and other quantitative restrictions in 21 major sectors of the U.S. economy in the 1980s.<sup>35</sup> Perhaps the most interesting and striking result they reported is their calculation of the consumer gains per job lost if the United States were to eliminate tariffs on an industry. They estimated the dollar cost savings for consumers relative to the total number of jobs lost due to the elimination of an international trade restriction. The average for all 21 sectors was \$168,520 per job annually—far higher than the annual earnings of an individual worker. The dollar cost savings ranged from a high of more than \$1 million per job in the ball bearings industry to a low of \$96,532 per job in costume jewelry. For the sugar sector, the figure was \$600,177 per job. For each job “saved,” consumers paid three times the average wage in manufacturing. In other words, trade restrictions impose costs on consumers three times the gain to protected workers.

Why do these costly international trade restrictions remain in place? The simple explanation is that the benefits from these types of policies are concentrated in the affected labor force while the costs are spread out over the entire population of consumers.<sup>36</sup>

Producers tend to be a small, relatively homogeneous group. Often they are geographically concentrated. As a result, the costs per person associated with organizing and lobbying for protection from imports are low. Because they form a small group, the benefits per person (higher profits and wages) from import protection are high. The benefit-cost ratio or payoff associated with lobbying government officials is high. Producers and workers find it worthwhile to organize in order to place political pressure on governments for protection from imports. Since elected officials are interested in reelection, they respond by providing protection in exchange for political support.

For consumers, the benefit-cost ratio per person is low. Consumers are a large, geographically diverse, heterogeneous group. As a result, the costs of organizing to lobby against international trade restrictions are high. Furthermore, although the total cost to consumers of these restrictions is high, the cost is typically low on a per-person basis. The benefit-cost ratio or payoff associated with lobbying elected officials is low. Consumers are less likely to expend the resources needed to generate political action in their favor. For example, in the sugar industry the benefits per producer for import restrictions are more than \$500,000 per year.<sup>37</sup> For sugar consumers, although the total costs are high, the per-person cost comes to only \$5 per year. Not surprisingly, sugar producers actively lobby for import protection and sugar consumers take few steps to oppose it, despite the high total cost to consumers.

## Conclusion

International trade has expanded dramatically since World War II. Recent polls and political rhetoric suggest support for continued trade liberalization may be waning—and that is of concern. A movement away from the relatively open global trading system that is currently in place would impose significant economic costs on the United States and the rest of the world.

This paper has provided a comprehensive review of the important empirical studies that

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quantify the impact of trade on the economy. The evidence is clear: International trade raises a country's standard of living. Lower prices on imported products and greater product variety enhance consumer well-being. Specialization based on comparative advantage and increased competition from foreign businesses improves production efficiency, raising GDP. Firms also get access to foreign capital goods that often contain new technologies, further improving productivity.

Concerns over international trade often center on the effect on jobs and wages. The evidence shows trade can result in the displacement of workers in industries that must compete with imports. However, the impact is modest relative to overall employment growth. Although displaced workers do face adjustment costs, overall the United States has experienced robust total employment growth in the presence of expanded trade. Furthermore, studies show that international trade has a relatively small effect on wages. Greater wage inequality has been driven more by skill-biased technological change than by international trade.

Although international trade forces significant adjustments in an economy, as the evidence shows, the costs of international trade restrictions on the economy outweigh the limited benefits these restrictions bring to import-competing industries.

## Notes

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2. "Free Trade, Free Markets: Rating the Congress," Cato Institute, [freetrade.org/congress](http://freetrade.org/congress); and Sallie James, "Race to the Bottom? The Presidential Candidates' Positions on Trade," Cato Institute Trade Briefing Paper no. 27, April 14, 2008.
3. For a good discussion of these issues see Robert C. Feenstra and Alan M. Taylor, *International Economics* (New York: Worth Publishers, 2008); and Robert C. Feenstra, *Advanced International Trade* (Princeton, NJ: Princeton University Press, 2004). For empirical evidence see Daniel Trefler, "The Case of Missing Trade and Other Mysteries," *American Economic Review* 85, no. 4 (1995): 1029–46; and Peter K. Schott, "Across-Product Versus Within-Product Specialization in International Trade," *Quarterly Journal of Economics* 119, no. 2 (2004): 647–78.
4. James Harrigan and Egon Zakrajsek, "Factor Supplies and Specialization in the World Economy," Federal Reserve Bank of New York Staff Report no. 107, August 2000.
5. Paul Krugman, "Increasing Returns to Scale, Monopolistic Competition, and International Trade," *Journal of International Economics* 9, no. 4 (1979): 467–79; and Feenstra, pp. 137–44.
6. Scott L. Baier and Jeffrey H. Bergstrand, "The Growth of World Trade: Tariffs, Transport Costs, and Income Similarity," *Journal of International Economics* 9, no. 4 (2001): 1–27.
7. See, for example, Douglas A. Irwin, *Free Trade under Fire*, 2nd ed. (Princeton, NJ: Princeton University Press, 2005).
8. Daniel M. Bernhofen and John C. Brown, "An Empirical Assessment of the Comparative Advantage Gains from Trade: Evidence from Japan," *American Economic Review* 95, no. 1 (2005): 208–25.
9. Douglas A. Irwin, "The Welfare Cost of Autarky: Evidence from Jeffersonian Trade Embargo, 1807–09," *Review of International Economics* 13, no. 4 (2005): 631–45.
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11. Jeffrey A. Frankel and David Romer, "Does Trade Cause Growth?" *American Economic Review* 89, no. 3 (1999): 379–99.
12. This technique is called instrumental variables regression analysis. To get meaningful statistical results in a regression, the independent variables cannot be influenced by the dependent variable. In this case, per capita income cannot influence trade. For instrumental variables to work, researchers must find variables like trading distance or common borders that are correlated with trade but not influenced by income. The geographic variables are used to predict trade. The predicted trade variables are used in the regression analysis rather than the actual trade variables.
13. Francisco Rodriguez and Dani Rodrik, "Trade Policy and Economic Growth: A Skeptic's Guide to Cross-National Evidence," in *NBER Macroeconomics Annual 2000*, eds. Ben Bernanke and Kenneth Rogoff

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14. Marta Noguera and Marc Siscart, "Trade Raises Income: A Precise and Robust Result," *Journal of International Economics* 65, no. 2 (2005): 447–60. Also see Douglas A. Irwin and Marko Tervio, "Does Trade Raise Income? Evidence from the Twentieth Century," *Journal of International Economics* 58, no. 1 (2002): 1–18.

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