
The Effects of Trade and Other Economic Factors on the Rate of Unionization: An Analytical Review

The main empirical focus of this study is on the role of increased international trade in accounting for deunionization in the United States. To explain and then estimate that role empirically in chapter 5, it is also important to understand how other real-side (in contrast to monetary-side) economic forces influencing the US economy may have affected the rate of unionization.

Consequently, this chapter briefly reviews analytically the manner in which increased international trade and three other major real-side economic forces that influenced the US economy during the period of this study can affect the rate of unionization. Then chapter 5 statistically “explains” the effects of increases in trade on changes in unionized and nonunionized employment, taking account of the effects of changes in the other forces, and comparing their relative impact on deunionization. The four forces are

- the rapid expansion of international trade and foreign direct investment as new technologies have lowered transportation and communication costs internationally and permitted greater international fragmentation of production processes, as tariff and nontariff barriers to international commerce have been significantly reduced, and as various market-oriented reforms have been undertaken in many countries;
- the introduction of new technologies that have significantly raised gross domestic product but also have been biased toward the saving of less-skilled and less-educated labor;

- the continuing relative shift in consumer expenditures toward services and away from manufactured goods and primary products as US per capita income levels have risen; and
- the significant increase in the number of workers with more than a high school education relative to those with a high school education or less.

Increases in Trade and Foreign Direct Investment

Both union and nonunion workers are concerned about being displaced from their jobs because of increased imports and foreign outsourcing and, consequently, being forced to take lower-paying jobs or face downward wage pressures even if they do retain their jobs.¹ Union leaders are also concerned about the pressure that increased international competition can bring on employers to seek to deunionize their firms. In studying the economic effects of increased imports, economists have devoted most of their attention to the impact of lower-priced imports on the wages of workers in industrialized countries rather than on the redistribution of employment among industries in these countries brought about by increased imports.² For example, a large literature analyzes the extent to which greater imports have contributed to the widening wage gap between basically educated and more-educated workers since the late 1970s.³

Trade theory points out that there are several ways in which the distribution of workers across industries and trade can interact with each other. Consider a situation about which US labor leaders are very concerned, namely, the greater difficulty of increasing or even maintaining unionization rates in the manufacturing sector, which is the most highly unionized broad sector of the economy. Union leaders believe that unionization rates in manufacturing are falling owing to rising imports of less-skill-intensive manufactured goods from developing and transitional economies that are introducing modern technologies and institutions that enable them to better exploit their comparative advantage based on relatively large endowments of less-skilled labor. The net result is lower relative world prices for these manufactured goods and reductions in output and the number of union workers employed domestically in these industries.

If imports increase appreciably relative to exports in the manufacturing sector as a whole, general equilibrium effects within the economy

1. In his well-known study questioning whether globalization had gone too far, Rodrik (1997) stresses this point as a source of tension between the global market and social stability.

2. See Kletzer (2001) for a recent study that does deal with this latter issue.

3. See Cline (1997) and Slaughter (2000) for surveys of such analyses. Another recent study on the subject is Baldwin and Cain (2000).

are likely to bring about changes in relative factor prices as well as product prices.

For simplicity, consider an economy with only two factors of production, namely, basically educated and more-educated labor. Suppose the country is relatively abundant in more-educated labor and the technology of net import industries uses basically educated labor more intensively compared to more-educated labor than do net export industries.⁴ The decline in the prices of imported goods relative to exported goods as imports increase will lead to not only a decline in output and employment in import-competing industries but a fall in the real wages of the productive factor used relatively intensively in producing imported goods, namely, basically educated labor. At the same time there will be a rise in the real wages of the factor used relatively intensively in producing export goods, namely, more-educated labor.⁵

The decline in the relative wages of basically educated labor also brings about the increased adoption of less-education-intensive production methods across all industries. Because unionization rates are higher in net importing manufacturing industries than in net exporting ones,⁶ the shift of workers out of the former industries tends to reduce the rate of union membership in manufacturing.⁷

Another mechanism by which trade can affect domestic employment and unionization rates is the outsourcing by firms of their less skill-intensive domestic production activities to low-wage countries. This often involves establishing production affiliates abroad through direct foreign investment by these firms. Improvements in transportation and communications technology have acted to facilitate these activities. Not only does the foreign outsourcing tend to displace basically educated US workers, many of whom are unionized, but labor leaders also contend that threats by employers to shift production abroad are widely used to persuade their US workers to vote to deunionize. Of course, the alternative to not shifting less-skill-intensive processes abroad may be a complete closing down of the domestic industry.

4. The 1997 ratio of the number of workers in US manufacturing with 12 or fewer years of education to the number of workers in manufacturing with 13 or more years of schooling in net importing industries was 1.43, compared with a ratio of 1.04 in net exporting industries.

5. The relationship between product prices and factor prices (the Stolper-Samuelson theorem) is explained in detail in Deardorff and Stern (1994).

6. The 1997 ratio of union to nonunion workers in manufacturing industries with an import surplus was 0.22, compared with a ratio of 0.19 in net exporting manufacturing industries.

7. Union leaders are especially concerned that the displaced workers will be reemployed in nonunionized service sectors and that those remaining in the affected industries will agree to deunionize in an effort to preserve their jobs.

In many cases, foreign outsourcing involves exporting skill-intensive components of a product abroad and then continuing the processing of the final product by undertaking production activities that require less-skill-intensive labor on these components. If these less-skill-intensive activities complete the final stages of production, the completed product may then be exported to third countries; but if they do not, the assembled part of the final product may then be exported back to the home country for further high-skill processing activities. In either event, it is possible that increases in exports of skill-intensive components for further processing is associated with a decrease in the domestic employment of less-skilled workers formerly used in the production process.

Direct investment by foreign firms in the United States can also adversely affect unionization rates if these firms are more hostile toward unions and either place their production facilities in less unionized regions or resist unionization efforts more vigorously than do domestic firms.

Technological Changes

Consider the effects of a uniform improvement in technology in all domestic and foreign industries that is not biased toward either basically educated or more-educated labor—a change that raises the productivity of all productive factors in the same proportion. If preferences are also neutral—in the sense that consumers spend the same proportion of income on each good as their incomes rise—the net effect will be that the demand and supply curves for all products simply increase by a uniform proportion without any change in the relative prices of the products. Imports and exports will also rise by the same proportion, but there will be no changes in the utilization of basically educated and more-educated labor among industries. Real wages of these two types of labor will rise by the same proportion, but their wages relative to each other will remain unchanged.

In contrast, suppose that technical progress is uniform across domestic and foreign industries but economizes on basically educated labor and uses more-educated labor (so that firms utilize a lower proportion of basically educated relative to more-educated labor to produce a unit of output at prevailing wage rates for these two types of labor).

This type of technical change has the effect of increasing the output of products intensive in the use of basically educated workers relatively more than the output of products intensive in the use of more-educated workers at any given price ratio for the two product groups.⁸ Because the United States imports goods and services that on balance more in-

8. This takes place as a consequence of the process of fully reemploying the displaced basically educated workers.

tensively use basically educated labor than do the products it exports, the relative prices of the goods intensive in the use of basically educated labor therefore tend to fall.

This relative price decline and the resulting decrease in the relative wages of basically educated labor tend to offset the increase in the output of less-education-intensive products compared with more-education-intensive ones. But such secondary effects usually are weaker than the primary effect. Thus, on balance, both basically educated and more-educated labor tend to shift out of more-education-intensive, export-oriented industries and into import-competing industries that intensively use basically educated labor. To the extent that this occurs, it should be easier to increase total union membership, because unionization rates are higher in the latter set of industries. Of course, if most new jobs are available only in the services sector or if labor-displacing technical progress is concentrated in the manufacturing sector, the overall rate of unionization could decline.

Relative Shifts in the Demand for Goods and Services

It is well known that as per capita income rises with product prices held fixed, the demand for services as a product group increases by a greater proportion than does the demand for primary products (e.g., agricultural goods) or for manufactured goods as a whole. This force acts to increase relative employment in the services sector. Not surprisingly—given the higher share of a product's value that is added directly by labor and capital in the average service industry than in the average manufacturing or primary-product industry, which relies more on intermediate inputs—the quantity of both basically educated and more-educated labor used per constant dollar's worth of services is greater than for manufactured or primary products.

Consequently, the service sector serves as an important employer of displaced or new supplies of basically educated and more-educated workers. Yet because the ratio of more-educated to basically educated labor used per constant dollar's worth of output is considerably greater in services than the other two product areas, a relative expansion of services tends to increase the wages of more-educated workers compared with those having a high school education or less.⁹ Furthermore, because

9. In 1997, the ratios of more-educated workers to basically educated workers used per dollar of output were 1.08 for the service sector, 0.78 for manufacturing, and 0.48 for the primary-product and construction sectors. In 1977, the ratios were 0.70, 0.33, and 0.29, respectively. There are, of course, parts of the services sector, e.g., eating and drinking places, in which the ratio of the labor coefficients for more-educated workers to basically educated ones is lower than for manufacturing as a whole. In 1997, employment in the industries where this was the case amounted to 19 percent of all workers in the services sector.

the average rate of unionization is lower in services than in manufacturing or primary products and construction, the shift of workers into services tends to reduce the overall unionization rate.

Changes in the Relative Supply of Basically Educated Versus More-Educated Labor

Between 1977 and 1997, the number of workers with 13 or more years of education increased by about 120 percent—in contrast to a 5 percent increase in the number of workers with 12 or fewer years of schooling. This development changed the composition of the labor force so that more-educated surpassed basically educated workers by about 15 percent in 1997, whereas in 1977 the number of more-educated workers equaled only about 55 percent of the number of basically educated ones. This shift was, of course, not just accidental. The higher earnings of more-educated workers relative to basically educated ones—and especially the widening of this gap beginning in the late 1970s, brought about by the developments in trade, technology, and consumer preferences discussed above—stimulated increased investment in human capital.

A fundamental relationship of the standard trade model of many goods and many factors (but more goods than factors) is that if product prices remain unchanged, endowment changes tend on average to increase employment and output the most in those sectors making relatively intensive use of the factors that have increased the most in supply.¹⁰ Because the United States is a significant supplier of goods in world markets, the increased supplies of goods intensively using the factors whose endowments have risen most will, however, likely decline somewhat in relative prices, along with the relative prices of their intensively used factors.

These effects tend to weaken the relationship that holds if product prices remain fixed. But as was noted in the discussion of technical change, such secondary effects usually do not completely offset primary effects. Thus, an increase in the supply of more-educated relative to basically educated individuals causes employment and output to increase the most in industries intensively using this type of labor and in which unionization rates are lower. It also tends to lower the wages of more-educated relative to basically educated labor.

10. The efforts of those factors increasing most in supply to become employed lead to short-run relative declines in the prices of these factors and thereby create new profit opportunities that bring about their employment, mainly in industries producing goods intensively utilizing these factors. With fixed product prices, this shift in the relative composition of output continues until the prices of all factors have returned to their initial equilibrium levels.

Another composition shift in the US labor force that may have contributed to deunionization is the rise in the proportion of foreign-born individuals from 5 percent in 1970 to 7.9 percent in 1990 and 10 percent in 2000 (US State Department; usinfo.state.gov/topical/global/immigration). Foreign-born workers, especially those who are among the basically educated members of the labor force, may be more responsive to the antiunion pressures brought by some employers. Although the proportion of foreign-born workers with a college education is the same as those born within the country, the proportion of foreign-born workers who have completed high school is considerable less than American-born workers: 67 versus 87 percent (US State Department data; as cited above).

Net Effects of the Four Economic Forces

Most of the major real-side economic forces discussed above are not favorable for the union movement in terms either of increasing union membership or raising the relative wages of members. Trade theory indicates that the increased relative importance of international trade in a country relatively abundant in highly educated labor (e.g., the United States), and where import-competing industries use basically educated labor more intensively on average than other industries, tends to lower the relative wages of basically educated workers and shift workers from import-competing industries into more competitive, export-oriented ones and into nontraded goods and services ones.

Because the bulk of US union members had received 12 or fewer years of education at the outset of the study and the unionization rate was (and has remained) lower in export-oriented and services industries than import-competing ones, the increased openness of trade tended to make it more difficult to increase the proportion of union members nationally. Increased US foreign direct investment and outsourcing abroad, as well as foreign direct investment in the United States, may also have contributed to the deunionization trend. Technological progress during the period operated to raise real gross domestic product, but its bias in displacing basically educated workers also had the effect of lowering their real wages compared with more-educated ones. However, the tendency for this type of technical change to shift workers into sectors intensively using basically educated labor operates in the direction of increasing the overall unionization rate.

The continuing shift in preferences away from primary products and manufactures and toward services tended to lower the overall unionization rate owing to the lower union membership rate in the service sectors as a group. Furthermore, because services tend on balance to use relatively more-educated labor, the relative wage pressure from this development

operated in the early years of the study against most union members, who tended to be basically educated. Finally, the rapid growth in the supply of more-educated relative to basically educated workers tended to reduce the overall unionization rate, because the unionization rate among the first group of workers was considerably lower than among those with less schooling. However, in contrast to the increased openness to trade, the biased nature of technical change, and the relative shift in consumer spending toward services, this economic change tended to raise the wages of basically educated workers compared with more-educated ones.

We know, in fact, that the earnings of more-educated workers rose significantly relative to basically educated workers between 1977 and 1997. The ratio of the earnings of workers with 13 or more years of education to the earnings of workers with 12 or fewer years rose from 1.38 in 1977 to 1.52 by 1996.¹¹ Therefore, the relative wage effects of increased trade, education-biased technological progress, and increased relative demand for services must have dominated the opposite relative wage pressures coming from the increase in the relative supply of more educated workers.

Furthermore, even though more-educated workers became more costly relative to basically educated ones, the median industry labor requirement for more-educated labor increased from 2.9 workers per \$1 million of output in 1977 to 3.2 in 1997, while the median industry labor requirement for basically educated labor decreased from 8.6 to 4.5 per \$1 million of output.¹² This is evidence that technological progress meant relatively lower use of less-educated labor and higher use of more-educated labor. It also implies that increased import competition could not have played the dominant role in producing the widened wage gap between workers receiving schooling beyond high school and those with a high school education or less, because in that case the labor coefficient for the former group would have risen relative to that for less-educated workers.

Both output and employment increased to a greater extent in industries that relatively intensively used more-educated labor than in less-education-intensive industries. This implies that the distribution effects on output and employment of increased trade, of the shift in demand toward services, and of the increase in the supply of more-educated compared with basically educated workers dominated those of the biased (against basically educated workers) technical change.

11. See Baldwin and Cain (2000, figure 1 and table 1), for changes in this ratio between 1967 and 1996.

12. The median labor coefficient for more-educated and basically educated workers combined fell from 12.3 to 8.7 per \$1 million of output between 1977 and 1997.

Consequently, the objectives of unions to increase the relative wages of their members and to increase the proportion of workers belonging to unions were hampered by real-side economic forces that brought about both a decline in the relative wages of that part of the labor force most unionized in 1977, namely, basically educated workers, and a relative shift in the industry distribution of the labor force toward sectors with lower rates of unionization, namely, more-education-intensive industries. The relative magnitude of such shifts and offsets is addressed in the next chapter.