

## GLOBALIZATION AND INEQUALITY

RACHEL McCULLOCH

*Brandeis University*

Goods and services now move more freely among countries than ever before. Ongoing declines in the cost of long-distance communication and transportation and in national restrictions on international trade and investment have allowed economies around the world to become increasingly integrated, thereby enhancing productivity growth and expanding consumer choices. In parts of the developing world and especially in East Asia, globalization has been accompanied by an increase in living standard hardly imagined just a generation ago. At the same time, globalization has also become the focus of widespread controversy. In particular, concerns about adverse consequences for income distribution have fueled policy initiatives that threaten to turn back the clock.

An especially troubling development was the emergence of a popular backlash to globalization in the United States, even when the country was enjoying record growth and the lowest unemployment rate in decades. An article in *The Economist* ("Globalization and the Rise of Inequality," January 18, 2007), written while the U.S. economy was expanding, highlights "a poisonous mix of inequality and sluggish wages" as the force underlying a globalization backlash in the United States as well as Japan and the European Union. Once America's long period of expansion reached an abrupt end, market-opening trade accords such as the North American Free Trade Agreement (NAFTA) became lightning rods for public concern about stagnating real incomes, job losses, and increased economic insecurity.

In the midst of the global recession that followed, most Americans and their counterparts abroad continued to acknowledge the benefits of globalization in terms of overall productive efficiency, lower prices, and increased consumer choices. The backlash, both in the United States and worldwide, has largely been a response to the perceived

*redistributive* consequences of increased openness, especially openness to imports and immigration. Even if a country "as a whole" is made better off, and not everyone accepts this premise, there remain concerns about the well-being of particular groups within its borders. Indeed, increased globalization has been accompanied by increased inequality not only in the United States but in many other countries. But is globalization a major *cause* of increased inequality?

While there is little disagreement that globalization has been *accompanied by* increased inequality within many countries, both rich and poor, this is not the same as establishing a causal relationship. On the contrary, numerous systematic studies have concluded that the redistributive changes the public and policy makers often attribute to globalization are due mainly to other changes in the economy. Thus, while discussions of globalization frequently turn to its contribution to inequality, discussions of rising inequality often fail even to mention globalization or dismiss it as playing at most a minor role in explaining recent trends in income distribution. Many U.S. trade and labor economists conclude that the primary cause of increased wage inequality is that the rate of skill-biased technical change has exceeded the growth rate of skilled labor. However, most technical change is not exogenous but the result of profit-motivated investment. By altering the incentives firms face, openness to trade may promote development and adoption of new production methods. The rate of skill-biased technical change may also respond to increases in the availability of skilled labor, so that demand and supply interact over time.

Finally, even the fact of increased inequality is subject to challenge. While most studies confirm substantial inequality both within countries and between them, conclusions regarding recent trends are highly sensitive to specifics of

the methodology: definition of inequality, data sources, and estimation techniques. Do we mean greater wage inequality? For the United States, trends in household earnings tend to follow trends in wages because labor earnings are so important in total earnings. But in developing countries, a much larger share of income, especially at the low end of the distribution, comes from self-employment.

Although *globalization* typically refers to expanded trade in goods and services, much of the controversy actually arises from other aspects of global integration: immigration, foreign investment, technology transfer, and cross-border cultural transmission. This chapter focuses on just one dimension of globalization: international trade. The question is important because the political feasibility of maintaining open international markets for goods and services depends on the anticipated shares of specific groups as well as the aggregate benefits to the nation. The chapter reviews theory and empirical evidence on the likely consequences of expanded trade for inequality and poverty worldwide, within the United States, and within developing countries. It concludes with a discussion of the ability of policy makers in the United States and other countries to moderate pressures for a reversal of globalization trends.

## Defining, Measuring, and Evaluating Inequality

### Inequality Across What Population?

Most studies linking changes in inequality to globalization or increased trade focus on inequality within a single economy, that is, among households or, often, among workers employed in manufacturing industries. Some also look at relative earnings by race or gender, where inequality trends do not necessarily mirror those for the entire population. However, other researchers have emphasized the impact of globalization across nations or at the individual level for the world population. The focus is important because inequality across countries may be declining at the same time that inequality within individual countries is rising.

China and India offer clear examples of how answers to seemingly similar questions may be quite different. Both countries have recently experienced high rates of growth, in both cases resulting in a major reduction in the fraction of their population living in poverty. Growth has also translated to corresponding gains to an “average” individual in those countries as measured by gross domestic product (GDP) per capita, a figure that is often used in comparisons across countries. Moreover, rapid increases in GDP per capita have reduced the gap between these still-poor countries and the much richer nations of the Organisation of Economic Co-operation and Development (OECD); global inequality measured on this basis has thus fallen. But *within* most of the world’s nations, whether rich or poor in terms of GDP per capita, inequality has risen. In

the United States, inequality in U.S. incomes has been increasing since 1980, most recently due to increased wage dispersion at the very top of the distribution (Goldin & Katz, 2007; Piketty & Saez, 2003).

Taking individual *nations* as the unit of observation in an analysis gives equal weight to the world’s largest countries and smallest mini-states. This may be appropriate for some purposes, as when evaluating the effectiveness of different types of political systems or economic policies in achieving sustained growth. However, it is less satisfactory as a way to evaluate how poor *people* (individuals and households) have been affected worldwide. India alone has a larger population than the 53 nations of Africa, and China’s population is even larger. Together, China and India account for a major share of the world’s poor but also of the dramatic recent reduction in the number of poor worldwide. Moreover, these reductions have occurred as the two economic giants have opened their economies to international markets. In part because of what has happened in India and China, the “world inequality level” among households as measured by a Gini coefficient<sup>1</sup> has trended downward since 1973 and by 2000 was nearly the same as in 1910 (Bhalla, 2002).

### Inequality of What?

Inequality may be measured in terms of a wide variety of economic outcomes. Within a country, the yardstick used most frequently is household (or family) income. A household unit often includes elderly persons or children with little or no earnings of their own. Their material well-being thus depends largely on earnings of others in the household. One problem with this approach is that household formation is itself sensitive to economic and demographic conditions. Maintaining a separate household may be a luxury that only the more affluent can afford. Moreover, the incentive for formation of new households depends on the age composition of the population as well as rates of marriage and divorce. Times-series evidence on trends in inequality measured at the household level must therefore be interpreted with care.

A second problem is how to evaluate the economic status of the household unit. Should the measure be monetary earnings? If so, should these be limited to earnings from current employment? Or should other types of income, such as returns on invested capital, business profits, and pension benefits, also be included? Should the measure be gross earnings or earnings net of taxes and cash transfers? In the United States and most other countries, net income is more equally distributed than gross income. What adjustment should be made for the “household production” of those family members whose work is performed in the home or for the market value of the services provided by durable assets (e.g., home, car) owned by the household? And what about the value of goods and services (e.g., food, housing, medical care) directly provided to the household by government units or other institutions?

These considerations suggest an alternative basis for measuring well-being: household consumption. But while consumption is more accurate than income as a means to evaluate the material well-being of a household, it is far less tractable from the point of view of statistical analysis. Data on incomes are largely drawn from statistics routinely collected by government units for other purposes, such as tax records, and coverage is often nearly universal. Household consumption data must be generated by surveys intended specifically for this purpose, with results based on statistical sampling of the population. Moreover, survey instruments and sampling techniques are subject to frequent revision, raising additional problems in evaluating trends over time.

To assess the impact of trade on inequality, researchers often use a much narrower definition: wage inequality, or even inequality of wages within the manufacturing sector and especially the relative earnings of skilled over unskilled workers, often defined as nonproduction relative to production workers. A major advantage of using manufacturing wages is that these can be matched to industry characteristics and exposure to trade. To the extent that trade does affect income or consumption inequality, the impact is most likely to come through changes in wages earned. Yet these changes can occur not only through changes in wage rates but also in employment and hours.

Trade liberalization typically causes some manufacturing sectors to shrink and others to grow. Over time, most industrialized nations have seen manufacturing jobs shrink as a share of total employment, with corresponding growth in the share of services employment. Accordingly, trends in the inequality of wages of manufacturing workers are of declining relevance as a measure of the overall redistributive consequences of expanded trade. An analysis focusing only on wages in manufacturing industries also misses income changes that occur when workers are displaced from manufacturing and subsequently employed in services, where average earnings are lower. For developing countries, manufacturing wages may be even more flawed as a base for evaluating changes in overall inequality. Rural families relying on self-employment or working for wages outside manufacturing are omitted, even though they are a disproportionate share of the population at the low end of the income distribution.

Regardless of the measure chosen, gaining an accurate account of the economic status of the poorest and the richest households is likely to pose additional challenges. For the poor, official statistics are likely to miss some or all income earned in the “informal sector” in developing countries and the “underground economy” in richer nations. Keeping employment off the books may be a means to avoid taxes or, in many cases more important, to maintain eligibility for income-tested government benefits; some unreported income is earned by individuals not legally eligible for employment, such as undocumented immigrants and underage workers. But such households may also be reluctant to provide a government employee with accurate

consumption data. Surveyors may even find it too difficult or dangerous to locate such households—some at the very bottom of the income distribution are homeless, while others live in areas where crime is rampant. At the other end of the income distribution, tracking incomes of the rich can be limited by topcoding (which assigns an arbitrary maximum income value to preserve confidentiality of individual responses) and by complex legal instruments used by the rich to minimize taxes.

### Is Inequality Bad?

Most writers begin from the presumption that inequality is bad in itself, evidence of some underlying unfairness in the economic system. International organizations such as the World Bank often evaluate trends over time within a country in terms of their effect on the country’s Gini coefficient or another measure of income inequality. In questioning inequality reduction as a social goal, Feldstein (1998) contrasts the conclusions regarding social welfare to be drawn from the Pareto criterion—that a change is good if it makes someone better off without making anyone else worse off—versus the Gini coefficient criterion—that a change is good if it lowers the Gini coefficient. When a change benefits those who are already best off without affecting others, the Pareto criterion judges it to constitute an improvement in social welfare. However, because it represents an increase in inequality, according to the Gini coefficient or similar measures, it is judged to worsen social welfare; given its distribution, the impact of a rise in the economy’s total resources is then seen as having a *negative* impact from the social perspective.

Of course, few economic changes create benefits for some but losses for none. Most economic gains, no matter how significant in total, benefit some while hurting others. Certainly this is true of expanded trade as well as technological advance. In such cases, the likely redistributive consequences are indeed germane for public policy. However, it is important to distinguish situations in which inequality rises due mainly to increases at the very top of the income distribution (as in the United States and some other countries in the late 1990s and early 2000s) from those in which the rise in inequality is due at least partly to an absolute decline in the economic status of those already at the lower end in the income distribution.

Moreover, some degree of inequality is intrinsic to the efficient functioning of the market system. In particular, wage premiums earned by those with superior education, training, and job experience provide incentives to invest in those forms of “human capital.” Likewise, profits earned by successful entrepreneurs provide the incentive to engage in new and usually risky ventures. Differences across individuals in rate of time preference imply that any measure of their economic well-being at a point in time will also differ even if each individual begins with an identical endowment and each maximizes expected lifetime utility. Because higher income households are

likely to save a larger share of total income, the distribution of income and wealth may also affect the savings rate in an economy and thus its rate of capital accumulation and growth.

Also discussed in the literature on economic inequality are the related issues of individuals' and households' mobility within the income distribution and inequality of outcomes versus inequality of opportunity. Society's concern regarding those at the low end of the income distribution is greater if their status is permanent rather than transitory. The evidence on these considerations provides some comfort, at least for the United States. A recent U.S. Treasury study (U.S. Department of the Treasury, 2007) finds significant mobility over time between income groups at both the top and the bottom of the U.S. income distribution. However, family income and wealth remain major determinants of children's educational attainments—and thus of their future earnings.

### Inequality Versus Poverty

Inequality refers to the properties of the entire distribution of income or another measure of economic well-being over all individuals or households in a country or other economic unit. In contrast, poverty refers to the status of a bottom group in the distribution. This group may be defined in terms of an absolute standard, such as \$1 a day (extreme poverty) and \$2 a day (moderate poverty) yardsticks used by the World Bank to measure progress in eradicating poverty in the poorest nations. The World Bank's goal in using these absolute measures is to treat two people with the same purchasing power equally (and judge them either to be poor or not poor) even if they live in different countries (Chen & Ravallion, 2008).

In contrast, the poverty lines countries use to evaluate their own progress in poverty eradication over time vary, with richer countries typically adopting a higher standard. The United Nations (2008) *Human Development Report 2007–8* uses explicitly different standards for developing countries and high-income OECD countries. Their broad “human poverty index” looks at (a) likelihood of surviving to age 40 (60) in developing (OECD) countries, (b) percentage of adults who are illiterate, and (c) material living standard. The last is measured for developing countries by percentage without access to safe water and percentage of children underweight for their age, but in the OECD group by the percentage below 50% of median household disposable income in that country—which is also the standard used by the OECD and the European Union in defining poverty. Thus, especially for wealthier countries, the line between poverty and inequality is blurred. A rise in incomes of others can result in a higher poverty line and thus an observed increase in the incidence of “poverty,” even with no decline in the material well-being of those at the bottom of the income distribution. Measured trends in poverty rates may also be affected by the use of the same

price deflators for all income levels, even though typical consumption weights differ by income.

For very poor countries with a significant part of the population already living close to the edge of subsistence, the redistributive consequences of increased trade (and of other types of economic changes resulting from policy decisions) are of fundamental significance. However, this is not because they may increase inequality but because they may increase or exacerbate poverty. Critics of efforts by the World Trade Organization (WTO), World Bank, and International Monetary Fund to promote trade liberalization in developing countries often argue that the poor do not benefit from any resulting increase in growth. In theory, a country could enjoy sustained rapid growth without any benefit to its poorest households if income disparities grew significantly—in other words, if the rich got richer while the incomes of the poor stagnated or declined. However, evidence suggests precisely the opposite. On average, World Bank researchers find that openness to foreign trade benefits the poor to the same extent that it improves overall economic performance (Dollar & Kraay, 2002). Even Rodrik (2000), skeptical regarding trade liberalization as a panacea for developing countries, acknowledges strong evidence that the poorest people usually benefit whenever a country gains overall: The number of people living in poverty has declined in every developing country that has sustained rapid growth over the past few decades. For the developing world as a whole, increased integration with global markets has been accompanied by a record decline in the percentage of poor people (Bhalla, 2002).

But increased trade is not invariably accompanied by a higher rate of economic growth. While the growth “success stories” among developing countries are all associated with increased trade (and in most cases with increased foreign direct investment), the empirical evidence that trade liberalization promotes growth is mixed. A path-breaking but controversial study by Sachs and Warner (1995) uses a 0–1 variable to characterize each country as either “closed” or “open” in a given year. This approach is sufficient to link openness to faster growth for the 1970s and 1980s but is less successful in explaining events of the 1990s. A follow-up study by Wacziarg and Welch (2008), based on improved openness measures and an expanded data set covering 1950–1998, finds an average increase in subsequent growth rates of about 1.5 percentage points per year for countries that liberalized trade, relative to their own preliberalization period. But this impressive positive impact is an average and masks considerable variation in the experience of individual nations. Because significant trade liberalization is usually just one of many policy changes made as part of a broader program, the heterogeneity in outcomes for growth needs to be evaluated in terms of the accompanying circumstances and policies; Wacziarg and Welch identify political instability, contractionary macroeconomic policy, and policies intended to shield domestic producers from adjustment to increased

import competition as confounding factors in the low- or no-growth cases.

## Effects of Opening to Trade on Inequality: Theory

Ricardo's nineteenth-century exposition of comparative advantage remains the basis for economists' prediction that a country must benefit from opening to trade. Despite innumerable theoretical refinements to standard trade models, today most economists remain confident that, at least as a practical matter, trade liberalization is almost always beneficial to a country as a whole. A more contentious issue is the domestic distributive consequences of trade liberalization. In particular, how are workers (as opposed to capital owners) affected? And more recently, how are unskilled (as opposed to better educated workers) affected?

### Partial-Equilibrium (Industry-Level) Analysis

Looking only at a single product without considering links to other parts of the economy, trade liberalization reduces the domestic price of the product. A simple supply-demand analysis then predicts that domestic demand for the product will rise, domestic supply will fall, and imports will increase to fill the resulting gap. Moving back along the domestic industry's supply curve implies a reduction in total production spending, which translates into some combination of reduced employment of productive factors, lower payments to those factors, and lower profits to firms in the industry. The immediate "losers" from trade liberalization are productive factors closely tied to the import-competing industry. The immediate gainers are domestic consumers of the product. The negative effect on *real* incomes of workers employed in the industry depends on the relative size of any reduction in money earnings and the gains from an increase in the purchasing power of those earnings due to the lower price of the product. For workers employed elsewhere, there is a clear gain—their (unchanged) earnings can now buy more of the product. The effect on workers overall is therefore ambiguous—it cannot be determined without additional information.

### General-Equilibrium (Economy-Wide) Analysis

Partial-equilibrium analysis provided the foundation for economists' traditional view of the effects of trade on income distribution until the work of Stolper and Samuelson (1941). By adopting a general-equilibrium framework based on the two-good, two-factor Heckscher-Ohlin (H-O) model of international trade, Stolper and Samuelson were able to obtain the unambiguous prediction known as the Stolper-Samuelson (S-S) theorem: Trade liberalization benefits a country's abundant factor

and hurts its scarce factor. Their proof, which centers on varying factor demand and fixed factor supply, is intuitively appealing. The change in relative prices brought about by trade liberalization causes domestic production of the import-competing good to fall and domestic production of the export good to rise. This implies a fall in relative demand for the scarce factor, which according to the H-O theorem is used intensively in production of the import-competing good, and thus a fall in its earnings. For the capital-abundant United States, trade liberalization would unambiguously benefit capital owners and hurt workers, thus increasing income inequality.

Stolper and Samuelson's (1941) proof depends on the assumption that an economy's factor supplies are fixed, but an alternative demonstration by Jones (1965) does not require fixed factor supplies. Jones derives the S-S theorem directly from the equilibrium condition that, under perfect competition and constant returns to scale, unit cost must equal price for each good produced. Moreover, Jones's approach yields a key insight that applies more broadly: When the price of a good falls (for any reason), its average total cost of production must also fall to restore equilibrium. Under the simplifying assumptions of the H-O model, the redistributive impact can be pinned down precisely, as in Stolper and Samuelson. But even in a completely general setting, Jones's dual formulation in terms of factor prices and unit input coefficients (the cost-minimizing amounts of each factor used to produce one unit of the good) remains a useful tool for enumerating potential impacts: lower returns to at least one of the factor inputs employed, lower unit factor-input requirements, or some combination of the two. In fact, improved productivity (i.e., lower input requirements) is one of the "dynamic" benefits often claimed for trade liberalization. If labor can be made more productive as a result of increased import competition, the need for a drop in wages to restore equilibrium may thereby be reduced or even eliminated. Melitz (2003) models trade-related productivity gains achieved through sorting among firms that are heterogeneous with regard to labor productivity. Increased competition allows the most productive firms to expand and pay higher wages, forcing less productive firms to contract or exit.

However, the S-S framework provides an answer to a somewhat different question than the one policy analysts usually ask. In addition to the simplifying assumption of just two traded goods and two productive factors, the H-O model depicts a *long-run* equilibrium: long enough for factors to move freely between sectors, thereby maintaining full employment of both factors and equalizing the earnings of each factor across sectors. Yet for policy makers, the paramount concern is usually the *immediate* and *short-term* impact of trade liberalization—what happens as adjustment to liberalization proceeds, rather than after it has been completed. The same qualification applies to the models considered below of the redistributive consequences of offshoring.



### Short-Run (Specific-Factors) Analysis

While the S-S theorem applies only when productive factors are freely mobile between sectors and a given factor's earnings equalized across sectors, a variant model with some factors specific to one sector may be more relevant in explaining the short-run redistributive impact of trade liberalization. As separately developed by Mayer (1974) and Mussa (1974), the specific-factors model can be viewed as a short-run version of H-O, in which one factor is freely mobile between sectors and two others are either immobile or sector specific. This model predicts that the short-run effect of trade liberalization is to benefit factors tied to the export industry and hurt factors tied to the import-competing industry. The latter result conforms to the popular intuition that, for example, both steel mill owners and steel workers will be hurt by increased competition from imported steel. More surprising is that the predicted change in the real earnings of the mobile factor is ambiguous, contradicting the widespread belief that ability to move or adapt is key to benefiting from trade liberalization.

Both the S-S model and the specific-factors model predict likely gainers and losers from trade liberalization, an important political-economy question. Which model performs better in explaining observed behavior in the political sphere? Because the S-S theorem is based on perfect factor mobility within a country, its implications are best understood as long-term tendencies. Even assuming that factor owners seek to maximize the present discounted value of their lifetime earnings, the more immediate impact, which is better captured by the specific-factors model, is likely to dominate. Magee (1994) summarizes empirical literature evaluating the Stolper-Samuelson and specific-factors models as predictors of political behavior. Consistent with Stolper-Samuelson, Scheve and Slaughter (2001) find evidence that respondents with less education are more likely to favor protection. However, they also find stronger support for protection from those who own homes (i.e., immobile capital) in import-impacted areas.

### Skill-Biased Technical Change and Offshoring

Two further theoretical developments have influenced the most recent literature on the redistributive impact of trade liberalization; both have been stimulated in part by the inability of the highly simplified S-S framework to explain recent trends in inequality. Contrary to the S-S prediction of a lower ratio of skilled to unskilled labor use that would be expected to accompany the higher relative earnings of skilled labor, the use of skilled relative to unskilled labor actually has been rising over time in the United States. Moreover, the same is true in other industrialized countries and also in many developing countries.

#### *Skill-Biased Technical Change*

A possible explanation for the divergence of skilled and unskilled wages, and the one many labor economists favor,

is that technological progress is biased toward the use of skilled labor. Skill-biased technical change could moderate or even reverse producers' tendency to economize on more costly skilled labor as the skill premium rises. As *The Economist* (January 18, 2007) puts the question as to whether trade or skill-biased technical change is responsible, "Should you blame China or your computer?" If the rate of skill-biased technical change exceeds the rate of growth of skilled relative to unskilled labor, the premium paid to skilled labor would be expected to rise over time. However, technical change is itself endogenous, and at least some critics of skill-biased technical change as an explanation of increased inequality argue that increased exposure to imports from low-wage countries may stimulate exactly this type of technological change.

One implication of Jones's (1965) formulation in terms of factor prices discussed above is that an improvement in technology in a particular sector has a redistributive effect similar to that of a rise in the good's domestic relative price. In either case, there is "room" for higher costs and thus higher factor rewards. To restore the required equality of cost and price (this is the zero-profit condition for equilibrium) across industries, the reward to the factor used intensively in the industry with technological progress must rise, while the rewards of the other(s) must fall. Holding output prices fixed (the small-country assumption), this is true regardless of bias in the technological progress. Thus, "factor bias doesn't matter; sector bias does" (Leamer, 1998). But although concentration of productivity improvements in industries that use skilled labor intensively could account for the observed increase in the skill premium, without a skill bias it does not explain why the relative use of skilled labor has been rising.

#### *Offshoring*

A second recent development in trade theory reflects observed changes in the international location of production. Increasingly, trade facilitates a geographical dispersion not only of the production of finished goods on the basis of comparative advantage but also of the individual steps in a production process—what Grossman and Rossi-Hansberg (2006, 2008) describe as "trade in tasks." Part of the rapid growth in trade flows relative to GDP is attributable to a finer international division of labor, in which intermediate products may cross national boundaries multiple times before the finished product reaches its market. This phenomenon is often called outsourcing. However, *offshoring* is a more accurate term for the location abroad of particular steps in the production process, whether this means moving a step to a firm's own foreign subsidiary or contracting with an unrelated foreign firm. (In the industrial organization literature, outsourcing refers to a situation in which a firm uses intermediate goods or services provided by other firms, either domestic or foreign, rather than carrying out a particular production step on its own.)

The redistributive consequences of offshoring, and indeed of any trade involving intermediate as well as final

goods, are more complex than when only final goods are traded. Consider first a situation in which intermediate as well as final goods are traded internationally. Liberalization of import restrictions on an intermediate good (say steel) has a negative impact on the factors used in its domestic production but benefits domestic producers of import-competing final goods using the intermediate in production (say autos); the *effective-protection rate* on domestic production of the final goods rises. In contrast to the nominal tariff on an import, the effective-protection rate measures the net advantage (or disadvantage) to a particular production process from tariffs on both the output of the process and the inputs to the process. A country's broad trade liberalization program may thus *increase* the amount of protection afforded to a particular sector (autos) if the tariffs on the inputs (steel) used in the sector are reduced by a larger percentage than the tariff on the output. In such a case, even though trade is liberalized (and more inputs are sourced from abroad), the predicted redistributive effects for productive factors used in the auto industry are those associated with an *increase* in protection on the industry's output, including an increase in output and employment. But it is also the result that would follow if the industry experienced an improvement in productivity, as described above.

Additional possibilities arise when tasks as well as purchased inputs are traded. Consider a wide range of productive activities ranked in terms of their skill intensity. If all tasks are equally amenable to being performed abroad, a reduction in the cost of offshoring (e.g., due to improvements in international communications) should increase the extent to which cheaper foreign labor is substituted for domestic labor. Benefits from offshoring may also increase when international capital flows raise the relative productivity of foreign labor. For a country such as the United States, where unskilled labor is relatively scarce, offshoring would relocate the least skill-intensive tasks still performed by U.S. workers to a country such as Mexico, where unskilled labor is more abundant and the relative wage of unskilled labor accordingly lower. As a result, the range of activities carried out in the United States becomes more skill intensive. Yet the same is true in Mexico, because the newly offshored tasks are more skill intensive than those previously performed there. Offshoring thus raises the average skill intensity of production and the relative earnings of skilled workers in *both* countries (Feenstra, 2010; Feenstra & Hanson, 1996).

By incorporating offshoring in a Heckscher-Ohlin model, Grossman and Rossi-Hansberg (2006, 2008) distinguish three effects after long-run equilibrium is restored (i.e., after production patterns and price adjust to reestablish equality of unit costs and prices). The first is a productivity effect: Offshoring some tasks increases the productivity of the domestic industry, an effect that tends to benefit the factor used intensively in that industry. As Grossman and Rossi-Hansberg (2006) observe, this first effect is equivalent to technological progress that augments the productivity of the same type of labor at home.

Thus, if offshoring occurs mainly in industries that use unskilled labor intensively (for the United States, import-competing industries), the productivity effect tends to raise the absolute and relative returns to unskilled labor. However, offshoring has two further effects that work in the opposite direction. In response to the offshoring industry's improved productivity, its production will tend to expand. For a small country, by definition, the resulting impact on international prices can be neglected. But for a large country such as the United States, the expansion will depress the relative price of the industry's output. If the expansion is in the offshoring country's import-competing industry, this means a term of trade improvement, which is beneficial for the country overall but reduces the real return to the intensively used factor via the Stolper-Samuelson effect. Finally, offshoring acts like an expansion of the supply of the relevant factor, again tending to depress its earnings.

These analyses of offshoring show that the effects depend critically on which types of tasks can be offshored (less vs. more skilled) as well as which sectors are most affected (import competing vs. exporting). Early offshoring by U.S. firms affected mainly less-skilled jobs and import-competing industries, as modeled by Feenstra and Hanson (1996). However, recent offshoring also affects medium-skilled jobs such as customer service and transcription and high-skilled jobs such as computer programming and accounting. Jobs most likely to be offshorable are ones where desired performance can be fully specified in advance—what have come to be called “routine” jobs. But even among routine jobs, some require physical proximity while others can be performed remotely. In contrast to labor-intensive manufacturing, where offshoring of routine unskilled jobs is well established, many of the service-sector jobs held by unskilled workers—such as lawn care, janitorial, and food service—are not susceptible to offshoring. Because much of skilled work is carried out using computers, with results easily transmitted electronically, many of the more routine types of skilled tasks—such as legal, accounting, and computer services—have begun to be offshored, a trend that will likely accelerate as international electronic communication continues to improve and the supply of suitably skilled workers in emerging nations continues to grow. Skilled jobs that require ongoing interaction and consultation in the workplace, including many types of managerial jobs, are less likely to be offshored.

## Empirical Evidence on the Links Between Inequality and Trade

Theoretical analyses necessarily abstract from most of the complexities of the marketplace; alternative plausible simplifications offer conflicting predictions on the division of the productivity gains associated with increased trade. Yet all trade models underscore that gains may not be shared equally, and some models indicate the possibility of losses in absolute as well as relative terms. Newer trade models

that incorporate offshoring also suggest that the distribution of gains (and perhaps losses) may be difficult or impossible to anticipate in advance, and these may change over time as the array of tasks for which offshoring is economically advantageous continues to expand.

The increase in inequality documented in both developed and developing countries in recent decades has stimulated an explosion of empirical literature attempting to evaluate the relative importance of various contributing factors. The role of increased trade is particularly relevant from a public-policy perspective because many see trade as an influence readily controlled by the nation's economic policies. Accordingly, most researchers attempt to separate increased trade from other recognized factors, such as declining unionization, increased immigration, a declining real minimum wage, and especially skill-biased technical change. However, these other factors may themselves be influenced by increased trade.

### U.S. Studies

Gordon and Dew-Becker (2008) review a vast body of analysis and evidence on rising U.S. inequality. Labor's overall share in U.S. national income tends to fall during cyclical upturns and rise during cyclical downturns; once data are adjusted for movements associated with the business cycle, Gordon and Dew-Becker find no significant change over the past two decades. However, the recent inequality debate is no longer about the shares of labor and capital—Piketty and Saez (2003) conclude that “the working rich have replaced rentiers at the top of the income distribution”—but about the division of labor's share among those at the top and those lower in the income distribution. In fact, much of the observed increase in inequality arises from changes at the very top 10%, 1%, and even 0.01% of the population. For trade specifically, Gordon and Dew-Becker find evidence that trade with low-wage countries does affect earnings of U.S. workers adversely, but because they report results from a range of studies, they do not attempt to assign a relative ranking to trade among all potential influences.

Several recent studies by international economists focus more explicitly on the role of trade. Lawrence's (2008) analysis centers on the gap for the period 1981–2006 between growth in the wages of blue-collar workers and the overall growth in labor productivity (output per hour of labor input for all worker categories) in the business sector. Lawrence's goal is to determine how much higher blue-collar wages would have been in the absence of increasing inequality. To begin with, he finds that 60% of the gap between the growth rates of blue-collar earnings and overall labor productivity reflects two technical issues: omission of benefits from wage data and use of different price deflators to translate nominal wages and output into real values. He attributes a further 10% of the gap to the rising relative skills and education of non-blue-collar workers.

For the 30% remaining, Lawrence sees technical change as the major explanation, with trade accounting for only about a fifth. Lawrence also points out that the effects of trade on inequality have actually been falling over time, as the U.S. economy moves away from producing the goods that compete most directly with low-cost imports. Expanded imports of products no longer produced at home benefit consumers through lower prices. Moreover, Broda and Romalis (2009) conclude that poorer families may benefit disproportionately from expanded U.S. trade because the expansion has been concentrated in the types of goods that are more important in their total spending.

The trade and inequality literature has focused mainly on wage effects, but Lawrence (2008) devotes a chapter to the role of trade's contribution to worker displacement. Although noting that trade is less important than other factors that cause U.S. workers to lose their jobs, he cites Kletzer's (2001) finding that when workers are displaced, older, less-skilled workers with more years of tenure are likely to experience the largest declines in reemployment earnings. Of workers displaced between 1984 and 2000, only one third of workers displaced from import-competing industries found new jobs in manufacturing, and the largest drop in average earnings after reemployment was for displaced workers who moved into nonmanufacturing industries. Moreover, in many cases displaced workers, especially married women with limited geographic mobility, did not find new employment at all.

Ebenstein, Harrison, McMillan, and Phillips (2009) link industry-level data on offshoring by U.S. multinational firms, import penetration, and export shares with data on individual workers. An important aspect of their empirical analysis is that it focuses on specific occupations rather than sectors. The results confirm the importance of wage effects of trade and offshoring that operate across rather than within industries. Workers who remain in manufacturing are on average *favorably* affected by offshoring. Similar to Kletzer (2001), they find significant downward pressure on wages for those who leave manufacturing to take jobs in agriculture or services. Consistent with the theoretical results of Grossman and Rossi-Hansberg (2008), they find an ambiguous overall impact of offshore employment on domestic wages; offshoring to high-wage locations is positively associated with U.S. wages while offshoring to low-wage locations is not.

### Developing Country Studies

The Stolper-Samuelson theorem predicts that expanded trade in developing countries should benefit unskilled labor, the locally abundant factor, while hurting scarce skilled labor, thus reducing inequality. However, as more developing countries have become integrated into global markets and in many cases experienced rapid growth of per capita income, data on the distribution of economic gains from expanded trade show the opposite. In a survey of



empirical studies covering many developing countries over several decades, Goldberg and Pavcnik (2007) find substantial evidence of “a contemporaneous increase in globalization and inequality.” However, some of these studies do not attempt to examine overall inequality but look only at wage earnings of those working in the formal sector or even only those working in the manufacturing sector.

In addition to considerations highlighted in U.S. studies, such as skill-biased technical change, Goldberg and Pavcnik (2007) point to constrained labor mobility and other factor–market distortions that can inhibit adjustment to changed economic incentives. Where the adjustment process is inhibited, both the increase in inequality but also the total gains are likely to be smaller. Moreover, trade liberalization in developing countries is typically part of a broader policy package, complicating the problem of identifying a causal relationship between increased trade and increased inequality.

Though focused on the relationship between globalization and poverty, most of the cross-country and single-country studies in Harrison (2006) also address the trade-inequality link. Harrison’s introductory essay cautions that some of the poor, especially those employed in import-competing sectors, will indeed lose from trade liberalization. The country studies highlight the central role of complementary policies, such as those addressing deficits in education, infrastructure, and access to credit, in achieving overall gains. Especially important is the ability of workers to relocate from contracting sectors into expanding ones. Likewise, given the inevitable dislocations associated with adjustment to trade liberalization, “careful targeting” is necessary to protect the poor from negative consequences. But notwithstanding concerns about possible increases in poverty or inequality, especially during what may be a protracted adjustment period, Harrison underscores the importance of improving the access of exporters in developing countries to the markets of the affluent developed countries, pointing to “a clear link between export activity and poverty reduction” documented in several of the country studies.

## Can Globalization Be Sustained?

Higher efficiency and faster growth are not ends in themselves. They simply increase the total resources potentially available to achieve society’s preferred goals. Likewise, policies to facilitate globalization (i.e., to achieve greater openness and international integration) do not by themselves ensure progress toward social goals. To be sure, some of the recent backlash to globalization is simply the expression of private interests. As with any important advance in technology, the gains achieved through globalization are accompanied by powerful redistributive consequences associated with the restructuring of firms, industries, and entire economies. Moreover, it is usually

easier to predict who will be the losers from trade liberalization than who will be the winners. Democratic systems give potential losers the power to hold change hostage, to insist on protection or compensation as the price of their assent.

For reasons of both fairness and political feasibility, maintaining the momentum of efficiency-promoting change requires a mechanism for ensuring that the gains are broadly shared. Rodrik (1997) documents a positive relationship between government spending and openness in the OECD countries. He interprets this pattern as indicating that greater exposure to external market forces requires a more active government role to cushion losers and thus ensure a socially and politically acceptable sharing of gains. Likewise, safeguard and antisubsidy provisions in trade agreements, consistent with the rules of the World Trade Organization but often criticized as protectionist loopholes, serve as economic shock absorbers that may be politically necessary if national governments are to liberalize access to their domestic markets.

To the extent that globalization entails redistribution among countries as well as within them, provision of social insurance only at the national level may be inadequate to stave off protectionist responses. The European Union’s successful expansion of an integrated multinational market has required a mechanism for sharing benefits across as well as within national boundaries. If the gains from globalization are large enough, other nations may likewise be willing to cede authority to an international body in order to maintain them, but a more likely outcome is further liberalization along regional lines. As competing regional groups form, they may develop alternative approaches to balancing efficiency gains from integration with mechanisms for ensuring an acceptable division of benefits among members.

Much of the discussion of globalization’s effects concerns the potential for a policy backlash that could reverse the recent trend toward greater integration. We learn from the experience of a century ago that despite its significant contribution to national economic performance, globalization is highly vulnerable to political factors. It is surely no coincidence that the Great Depression unleashed protectionist policy changes in the most important nations around the world. But while the same kinds of redistributive pressures are evident today, most national governments are now better equipped to maintain the viability of openness by ensuring a politically acceptable sharing of its economic benefits within nations and even within regions. Moreover, the rules of the World Trade Organization now help to restrain the protectionist responses of member nations, as has been seen during the global recession. The absence of serious breaches in members’ commitment to WTO rules even in the face of the worst economic downturn the world has experienced since the Great Depression is a reason for optimism that another 1930s-style reversal of the trend toward globalization can be averted.

## Note

1. The Gini coefficient is a standard statistical tool often used to compare inequality across countries at a point in time or in a single country over time. It is based on a Lorenz curve, which shows cumulative share of total income (or expenditure or consumption) on the vertical axis and cumulative share of total population (or total households) on the horizontal axis. For a country in which economic resources are distributed equally, the Lorenz curve is a 45-degree line. The Gini coefficient is computed as twice the area between the 45-degree line and the actual Lorenz curve or, equivalently, the ratio of the area between the 45-degree line and the Lorenz curve and the area below the Lorenz curve. The Gini coefficient is therefore between 0 and 1, where 0 corresponds to perfect equality and 1 corresponds to perfect inequality (one person or household gets everything). A simpler measure often used to measure extremes of inequality is the ratio of the bottom decile (or quintile) to the top decile (or quintile). This measure provides no information regarding those in the middle of the distribution.

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