



The Levy Economics Institute of Bard College

Public Policy Brief

No. 86, 2006

RETHINKING TRADE AND TRADE POLICY

Gomory, Baumol, and Samuelson
on Comparative Advantage

THOMAS I. PALLEY

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ISSN 1063-5297

ISBN 1-931493-56-1

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Preface

The theory of comparative advantage says that there are gains from trade for the global economy as a whole. In this second brief of a three-part study of the international economy (see also Public Policy Brief No. 85), Research Associate Thomas I. Palley observes that comparative advantage is driven by technology, which can be influenced by human action and policy. These associations have huge implications for the distribution of gains from trade and raise concerns about the future impact of international trade on the U.S. economy. Palley calls for strategically designed U.S. trade policy that can influence the nature of the global equilibrium and change the distribution of gains from trade.

Recent works by Ralph Gomory and William Baumol and Paul Samuelson use pure trade theory to question the distribution of trade gains across countries over time and to challenge commonly held beliefs. These microeconomic and trade theorists identify a new issue: the dynamic evolution of comparative advantage and its impact on the distribution of gains from trade, which depends on changing global demand and supply conditions.

Palley reviews the tenets of trade theory and reasons that it is only by chance that the prevailing equilibrium maximizes global output; i.e., the allocation of production across countries may be globally inefficient. He also reasons that increasing returns to scale can give rise to trade conflict as country incomes converge. In light of dramatic implications when countries lose their industrial base or when industries relocate to other countries, Palley sees a need to redefine trade policy in terms of the forces driving industrial and technological development within countries, and strategic policy rivalry between countries.

Palley questions the wisdom of international outsourcing when company and national interests diverge. Although profit maximization by

firms contributes toward maximizing global output, it does not necessarily maximize national output. This potential outcome is not understood by national policymakers, he says. There is a need for a new national policy agenda that realigns the business objectives of corporations with the national interest (an approach taken by the government of China), as well as a need for international labor and environmental standards.

Palley recommends that the U.S. government bolster public expenditures on science education and research and development (and change its tax laws accordingly), and invest in the latest technologies and equipment. These investments were formerly viewed as domestic policy, but they are now part of trade policy in the era of globalization.

Since exchange rates are extremely important for global production and employment outcomes, they should be considered when formulating trade policy. In a world of increasing returns to scale, countries can use undervalued exchange rates to move down average cost schedules and acquire ruling competitive advantage. This action can permanently change the equilibrium and lock in new patterns of global production. Although exchange rates are central to trade policy and trade agreements, U.S. policymakers reject this approach, so the United States is being outgamed by other countries (especially those in East Asia). The result is a loss of industry and large trade deficits that carry future burdens.

The United States may now lack the capacity to produce the manufactured goods that it now imports. The effects on manufacturing jobs and investment provide concrete support for the concerns raised by Gomory and Baumol and Samuelson. Moreover, export-led growth by other countries raises a host of controversial issues that can adversely change the character of global economic competition: global financial imbalances, a race-to-the-bottom style of competition, and global deflation. These impacts are not addressed in standard microeconomic trade theory.

As always, I welcome your comments.

Dimitri B. Papadimitriou, *President*

October 2006

Rethinking Trade and Trade Policy

Ralph Gomory and William Baumol (2000) and Paul Samuelson (2004) have recently raised concerns about the future impact of international trade on the U.S. economy and national income. Having Messrs. Gomory, Baumol, and Samuelson, whom I refer to as GBS, speak out on trade is an important and significant event. Gomory is president of the Alfred P. Sloan Foundation. Baumol is a renowned microeconomic theorist and former president of the American Economics Association, while Samuelson is one of the originators of the modern theory of comparative advantage that is widely used to explain and justify international trade (Samuelson 1948, 1949). That theory, known as the Heckscher–Ohlin–Samuelson model of trade, is learned everywhere by graduate students interested in international trade.

These observations lead to two points: Point 1 is that GBS’s questioning of current trade developments has nothing to do with “protectionism.” GBS are strongly in favor of trade, believing there are gains to be had by all. What is open to question is how the size of those gains and their distribution across countries may change over time. That raises critical policy issues regarding what can be done to maximize the U.S. share of gains from trade and hold on to it. This issue is their ultimate concern.

Point 2 is that GBS are microeconomic and trade theorists whose critiques concern trade theory. Their critiques are not another case of counting manufacturing job losses or bemoaning the trade deficit. Instead, they use pure trade theory, which justifies current trade policy, to question some commonly held beliefs. Empirical critiques that focus on jobs and the trade deficit are not enough to change trade policy. The empirical critiques must also be accompanied by theoretical argument, which is what GBS have provided.

The GBS Contribution to the Trade Debate

Before engaging with the substance of GBS's analysis, it is worth distinguishing their argument from some existing theoretical critiques of trade. First, their argument is not about the adverse income distribution impacts of trade. These effects are widely understood, and Samuelson also made pioneering contributions to this area of trade theory in his work with Wolfgang Stolper (1941). According to the Stolper-Samuelson theorem, the factor that is relatively scarce in the pretrade equilibrium loses out when a country opens to trade. In the case of the United States, it means that American workers lose, as they implicitly become part of a global labor market. The income redistribution effect remains operative, but it is distinct from the new concerns raised by GBS.

Second, GBS's argument is not about wage and employment dislocation costs caused by rearranging country production patterns in accordance with the principle of comparative advantage. Such wage losses have been emphasized by the Institute of International Economics (Kletzer and Rosen 2005), which has proposed wage insurance as a means of compensating those who are economically injured by trade. The costs of trade-induced job dislocations and the case for wage insurance remain real and present, but they too are distinct from, and supplementary to, the new concerns of GBS.

The new issue raised by GBS is the dynamic evolution of comparative advantage and the resulting impact on the distribution of gains from trade. The theory of comparative advantage says that there are gains from trade for the global economy as a whole. However, the distribution of those gains between countries depends on demand and supply conditions that determine the terms of trade (i.e., the relative price of imports and exports), and these conditions can change.

One critical factor is the global pattern of demand. A country will benefit more from trade if international demand for its products is strong, as this will drive up the price of its exports. A second factor is the evolution of supply. It is possible that rapid supply growth on a global basis can harm a country by driving down the price of its exports.

This latter possibility was first identified by Harry Johnson (1954, 1955) and subsequently expanded by Jagdish Bhagwati (1958), while the empirical work of Hans Singer (1950) and Raul Prebisch (1968) on declining prices of

commodities relative to manufactured goods gave it operational policy significance. The Johnson–Bhagwati work then spawned a policy literature that showed how countries whose production has an impact on global prices can use export tariffs to tilt the terms of trade in their favor, thereby capturing additional gains from trade.

In the post–World War II period, the United States did relatively well from trade: global capital was scarce, demand for capital goods was strong, and there were relatively few capital goods suppliers. That meant the United States enjoyed favorable terms of trade and captured a large share of the gains from trade. The question is, will this continue over the next 50 years?

The earlier work of Johnson and Bhagwati focused on the effects of domestic technological advances on the terms of trade and the distribution of gains from trade. GBS change the focus and examine the implications of economic catch-up by trading rivals. It is commonly assumed that all countries benefit from a country's technological progress, which expands the global production possibilities frontier (PPF).¹ However, it turns out that, while it is true that the global PPF expands, it is not necessarily true that all countries benefit from the expansion. This is an important theoretical finding.

Samuelson's concern, developed in the context of the debate over international outsourcing and trade with China, is that increases in productivity of foreign trading partners may diminish the United State's share of gains from trade (Samuelson 2004). The economic logic is as follows. As China catches up in the production of goods in which the United States has historically specialized (through its own innovative efforts or by U.S. firms outsourcing production to China), global supply increases and drives down U.S. export prices, thereby worsening the U.S. terms of trade. Although the United States still benefits from trade, its gains may be less than the gains made prior to China's catching up.

Gomory and Baumol (2000) explore similar themes in an environment in which firms also have internal economies of scale, so that average unit costs fall as the volume of production increases. Like Samuelson's model, their context is a world of full employment—the trade problems that they identify are not due to unemployment—and introducing unemployment only compounds their concerns.

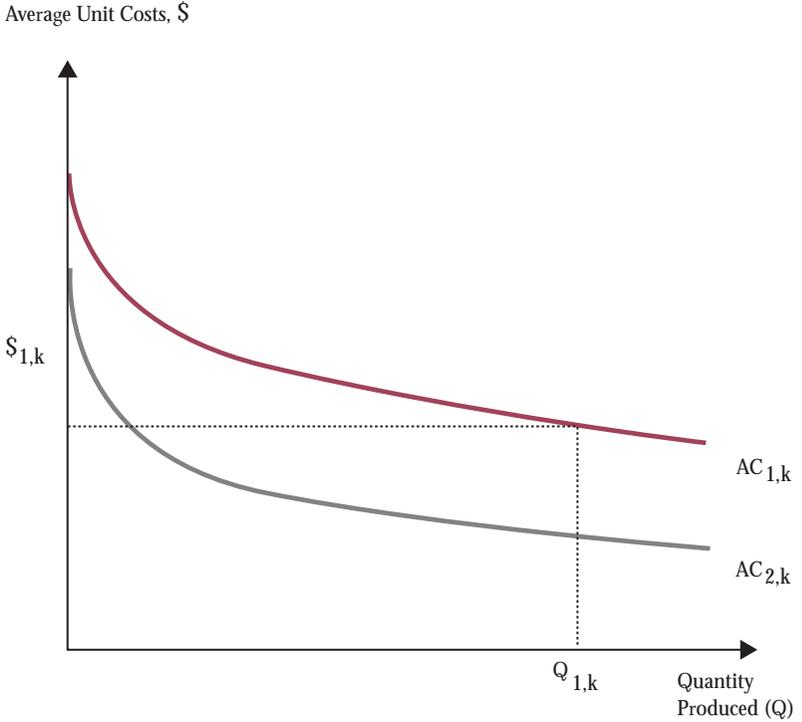
Economies of scale mean that each good is produced by one country only. Gomory and Baumol assume that all countries have access to the same technology. Which country produces what goods depends on which is first to move down its cost curve and gain a cost advantage that locks out other producers. Lockout means that multiple equilibria are possible and that the prevailing equilibrium depends on which country gets a head start in a particular industry.

Multiple equilibria mean that it is only by chance that the prevailing equilibrium maximizes global output, so the allocation of production across countries may be globally inefficient. For instance, a country may get a head start in a large number of industries, thereby blocking new entrants in these industries. Consequently, the scale of production is too small for the global economy. In this situation, rearranging the pattern of production can benefit all countries by expanding the scale in some industries and reducing it in others.

By way of example, consider the case in which there are two identical countries and four industries, and the countries have full employment. Suppose the initial equilibrium has country 1 controlling industries 1 to 3, and country 2 controlling industry 4. In this case, the scale is too small in industries 1 to 3 and too large in industry 4. A superior production plan that expands global income would have each country produce two goods, thereby expanding production in industries 1 to 3 and contracting production in industry 4.

The inefficiencies worsen if the countries have different cost curves. Cost differences can exist because of differences in technology or “external” economies of scale arising from agglomeration effects. Positive agglomeration effects arise when the efficiency of individual firms is enhanced and costs are lowered as the entire industry expands. In this case, not only can there be a global maldistribution of production (Gomory–Baumol inefficiency), but production can also be misallocated to countries with inferior technology and higher costs. Misallocation can happen if a high-cost, inefficient country is the first to move down its average cost curve, thereby becoming the low-cost global producer and acquiring “ruling” cost advantage. Even though other countries are potentially more efficient, they are locked out when a country has a head start in moving down its average cost curve.²

Figure 1 Average Unit Costs in Industry k for Countries 1 and 2

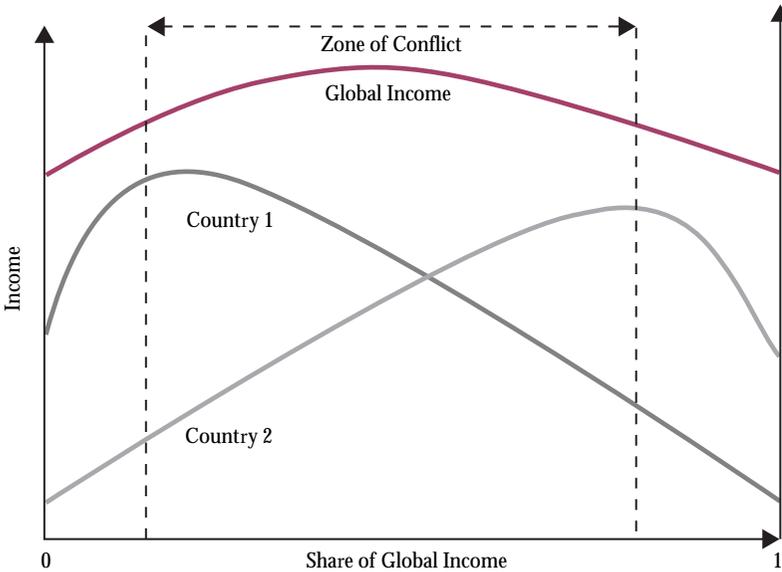


Source: Author's illustration

This situation is illustrated in Figure 1, which shows the average cost curves for industry k in countries 1 and 2. The average cost for industry k in country 1 lies above that of country 2. Yet, country 1 can become the global producer if it gets a head start and is the first to move down its average cost curve, thereby gaining a competitive advantage and locking out the new entrant (country 2).

In sum, where cost curves differ across countries, world output can be reduced for two reasons: (1) the country with the lowest cost production technology may not produce; and (2) production may be maldistributed globally (some countries producing too many types of goods and others producing too few), thereby resulting in inefficient exploitation of economies of scale.

Figure 2 How Trade Can Become a Source of Conflict as Country Incomes Converge



Source: Author's illustration

In addition to giving rise to potentially inefficient global-production patterns, Gomory and Baumol show that increasing returns to scale (IRTS) can give rise to trade conflict as country incomes converge. This argument is illustrated in Figure 2. Assuming that two identical countries have identical technologies and demand, global income is maximized when the two countries have the same number of industries and each country produces half of world output. However, individual country income is maximized when the country has more than half of the industries. This means that a zone of conflict exists when reallocating production between countries increases global income, but one country benefits at the expense of the other.

The economic logic for this pattern is as follows. Consider an initial equilibrium where most industries are located in one country. In this case, the scale of production is too low in the country where most industries are located and too high in other countries where there are few industries. Reallocating industries among countries can increase global income by increasing the scale of production. Output expands in the industries that

remain in the various countries because resources are transferred into them and output also increases in the transferred industries, which had limited access to resources before reallocation but now have expanded access to resources in other countries. All countries benefit from the scale effect. In addition, however, there are terms of trade effects, as prices fall for the goods produced by the expanding industries. This means that the marginal gains to the country receiving new industries exceed the gains to the country losing industries. As the incomes of the two countries converge, the scale gains from further reallocations decrease and the terms of trade effects may outweigh them.³ At this stage, further industry transfers lower the income of the country that is losing industries even though the transfers expand global income and other country incomes.⁴

The moral of the story is twofold. First, countries do not benefit from autarky (self-sufficiency) because they lose the benefit of economies of scale. Second, countries still want to retain a more than proportionate share of industry, as this objective restricts global output and drives up prices of goods. Since the countries also export these goods, this objective confers a terms-of-trade benefit that increases income. The implication is that losing too much of its industrial base is bad for a country's economy, although it might be good for the global economy. Correspondingly, a country that has disproportionately few industries has an interest in engaging in strategic policy to attract more industries, thereby gaining both scale and terms of trade improvements.

Policy Implications of GBS's Critique

The central focus of Samuelson's analysis (2004) is the economic implications of technology catch-up in other countries. For Gomory and Baumol, it is the implications of loss of the industrial base and of industry transfers to other countries, both of which have dramatic implications for trade policy. Traditionally, policy has been thought of in terms of tariffs, quotas, and export subsidies. Now, policy needs to be reconceptualized in terms of forces driving industrial and technological development within countries, and it must account for the possibility of rivalrous strategic policy between countries.

Technology transfer and catch-up are particularly critical for Samuelson. Additionally, there is a new emphasis that comparative advantage in the

modern world is created, not endowed. In the 18th century, trade was driven by the search for exotic spices and raw materials. Climate and natural resource endowments significantly determined the pattern of comparative advantage, as little could be done to alter the pattern.⁵ Today, comparative advantage is driven by technology, which can be influenced by human action and policy. This has huge implications for the distribution of gains from trade among countries.

Strategic trade policy is particularly critical in Gomory and Baumol's story. The critical insight within their stylized framework is that equilibrium in a world of IRTS is potentially quite fragile. This insight opens the way for policy interventions that change the equilibrium and redistribute the gains from trade. For instance, policy may confer a temporary benefit on producers, moving them down the average cost curve so that they acquire a ruling-cost advantage. This act can establish a new equilibrium pattern of global production that persists after the policy is removed.

Such possibilities mean that IRTS creates ample room for economic conflict between countries. Given the existence of multiple equilibria in which the distribution of gains from trade depends on the particulars of the prevailing equilibrium, countries may have an incentive to try and change the equilibrium.⁶ This generic policy implication of IRTS has long been present in new trade theory (Krugman 1984; Brander and Spencer 1985), but Gomory and Baumol's detailed simulations show just how potentially malleable the equilibrium pattern of trade is in the presence of IRTS.

Specifically, there are a number of scenarios in which strategic policy matters. For instance, consider a situation in which technology is initially unequally distributed across countries. In this case, backward countries will have an incentive to use policy to acquire technology and establish production within their borders. Doing so can increase global income, but it may diminish the income of countries losing industries, if the global economy is in Baumol and Gomory's zone of conflict.

Another example is if some industries earn higher profit markups. In this case, countries will have an incentive to wrest control of those industries in order to earn the higher markups. Moreover, even countries with strictly higher average cost curves may have an incentive to wrest control, despite the fact that they are less efficient. Given the presence of IRTS, a high-cost country can effect such a transfer if government provides tempo-

rary assistance that moves domestic producers down their cost schedule and establishes ruling-cost advantage (as shown earlier in Figure 1).

Finally, strategic policy can be useful in a world with unemployment due to inadequate demand. In this case, countries that stimulate their own domestic demand and poach demand from other countries (through measures such as subsidies) increase production in their industries and lower average costs. Consequently, these countries can become the ruling low-cost producer at the expense of others.

Relative productivity decline and loss of technological leadership play an important role in the GBS story. Most immediately, this raises questions about the wisdom of international outsourcing in industries where the United States has had a comparative advantage historically and been an exporter. Such outsourcing involves technology transfer. Although companies benefit from outsourcing by earning foreign profits, outsourcing can diminish U.S. national income if it transfers technology that increases competition versus U.S. exports.

Outsourcing also has some parallels with offsets, whereby countries require companies to promise that they will transfer some part of production to them as a condition of the sales contract. The classic example is the aircraft industry—both civilian and military. Offsets are a way that one country can capture industry from another and they are, therefore, very troubling from a national-interest perspective.⁷ However, companies are much less troubled by offsets because they win the order and then earn profits on foreign production. This highlights the divergence between the company and national interest—about which, more below.

Within the GBS framework, technological leadership is key, and there are signs already that the United States may be slipping. Freeman (2004) reports that the U.S. share of world high-tech exports fell from 30 percent in 1980 to 17 percent in 2001, while the U.S. share of world scientific papers fell from 45 percent to 35 percent and the U.S. share of papers in the chemical-abstracts service fell from 73 percent in 1980 to 40 percent in 2003. China is gaining rapidly in the technology area. It graduated 325,000 B.S. engineers in 2003 versus 65,000 in the United States. The U.S. lead in producing students with science and engineering Ph.D.s is also falling. In 1989, major Asian nations produced 48 Ph.D.s for every 100 Ph.D.s in the United States; in 2001, the number was 96 Ph.D.s for every 100 Ph.D.s in the United States.

This trend suggests that the United States needs to bolster public expenditures on science education and research and development (R&D). Additionally, tax law should be structured to encourage companies to undertake their own R&D spending and to invest in the latest technologies and equipment. What was viewed previously as domestic policy is now part of trade policy in the new era of globalization.

Not only does globalization enhance the significance of science and technology policy, it also adds new difficulties. In the preglobalization era, science and technology innovations that were developed domestically were likely to be applied domestically, so the benefit accrued significantly to the innovating country. Today, with corporations organizing production globally, there is nothing to ensure that innovations developed domestically will be applied domestically. Instead, corporations may simply transfer the innovation to production in a foreign location. This transfer may be the best way for the corporation to maximize profits, but it may not maximize national income. In the era of globalization, profit maximization by firms contributes toward the maximization of global output, but it does not necessarily maximize national output. This relationship is not yet understood by national policymakers.

These observations point to the need for a new policy agenda that addresses corporations and is currently absent. In the 1950s it could reasonably be said that what was good for General Motors was good for the country. This statement was made, not because the managers at General Motors were any more altruistic or patriotic than they are today, but because the global economy was less open and firms were less technologically capable of organizing production on a global basis. Consequently, corporate interests aligned closely with national interests. That alignment has been fractured by globalization. Before globalization, maximization of profits by competitive firms maximized national income. Today, firms maximize profits on the basis of global production allocations, which maximize global output but do not necessarily maximize national income. Hence, the need for national policies that change corporate behavior by realigning profit maximization with the national interest.

In this regard, there may be important differences across countries. American corporations are free to choose business strategies on a global basis, without regard to the national interest. Indeed, taking account of the

national interest would be a breach of fiduciary duty, since managers have an obligation to maximize shareholder value. In contrast, the Chinese government exerts significant control over corporations and the national interest is factored into business strategy. From a national perspective, that means China is advantaged relative to the United States, although shareholders in Chinese corporations are not as well served as those in American corporations.

A third area needing policy attention is exchange rates. This problem is not addressed by GBS, but is implicit in their analysis, which is based on pure trade theory and abstracts from exchange rate issues. In effect, the authors assume that exchange rates are valued at purchasing power parity. However, significant costly distortions arise if exchange rates deviate from this value.

In a world of IRTS, countries can use undervalued exchange rates to give national firms a competitive advantage. Undervalued exchange rates lower the price of exports and increase the price of imports, thereby increasing product demand and output. In this fashion, undervalued exchange rates help firms to move down average cost schedules and acquire ruling comparative advantage. Countries can, therefore, use exchange rates strategically to capture industries from other countries. Moreover, manufacturing firms are clusters of knowledge, skills, and capital, and are themselves clusters in industries. Once firms and industries are destroyed, it is costly and difficult to reassemble them and they may not return, even if the exchange rate undervaluation is corrected. Consequently, episodes of exchange rate undervaluation can permanently impact the structure of global production (Palley 2003a).

Even in conventional trade theory, exchange rate undervaluation gives rise to deviations from comparative advantage and misallocation of production (Blecker 2005a). Comparative advantage is a theory of balanced trade. Consequently, if a country has an undervalued exchange rate and a persistent trade surplus, the implication is that the country is exporting some products in which it lacks a comparative advantage. Likewise, a country running persistent trade deficits may be importing some products in which it has a comparative advantage.

In the presence of unemployment (which is assumed away by pure trade theory), a country can use undervalued exchange rates strategically to poach aggregate demand and reduce unemployment at the expense of other

countries. This possibility was identified long ago by Joan Robinson (1947). She termed such policy a “beggar-my-neighbour” remedy for unemployment.⁸

The bottom line is that exchange rates matter significantly for global production and employment outcomes. In a world without IRTS, undervalued exchange rates result in deviations of production from comparative advantage. In a world with IRTS, exchange rate undervaluation can be used to permanently change the equilibrium and lock in new patterns of global production.

These effects speak to making exchange rates a central part of trade policy and trade agreements. Yet, U.S. policymakers reject exchange rate intervention on the grounds that markets know best. This stance is at odds with reason and evidence. There are many theoretical reasons for believing that foreign exchange markets are prone to herd behavior. There is also strong empirical evidence that exchange rates depart from their theoretically warranted equilibrium levels, whether defined as purchasing power parity or as the exchange rate consistent with sustainable current account deficits. In some cases, countries are strategically manipulating their exchange rates (especially the East Asian economies) and the United States is being outgamed economically—losing industries and racking up large trade deficits that carry future burdens.

Another form of strategic policy is domestic procurement. Here, countries can direct government purchases toward national companies, thereby scaling up production at those firms. In this fashion, they help firms to move down the average cost curve and become the global low-cost producer, thereby grabbing global leadership.

Countries can also engage in labor exploitation to gain advantage. In this case, they shift business’s average cost schedule down rather than moving along the cost curve. This kind of intervention has direct relevance for U.S. trade with China, since American trade unions have accused China of labor exploitation for the purposes of gaining trade advantages.

Labor exploitation is horrendous and unacceptable. A legitimate way of lowering business’s costs concerns the method of providing health and social insurance. Insurance is provided via jobs in the United States, thus making it a job cost. This provision raises the cost of U.S.–based production, competitively disadvantages U.S. producers, and provides an incentive to shift production offshore. Health insurance that is provided through a

national insurance system and funded by federal tax revenues can potentially reduce this incentive.⁹ The same situation holds true for Social Security funding, which suggests partially funding Social Security with general tax revenues. Indeed, to the extent that Social Security is funded by taxing global corporate profits, the cost is partially borne by profits from offshore production.

In sum, GBS's trade analysis suggests a collection of policies that has some resemblance with what has historically been called industrial or competitiveness policy. However, the proposed policies do not involve "picking winners" by policymakers; there is no reason to believe that they can do it. Instead, it is a matter of establishing the right economic "structure" and "atmosphere." Structure refers to the law and rules, which should provide incentives for firms to innovate and invest, and for workers to improve their skills. It should also ensure that the interests of corporations are aligned with the national interest. Atmosphere refers to business conditions that are favorable to domestic business performance, such as the promotion of full employment and the maintenance of competitively valued exchange rates.

Parallel Macroeconomic Analysis

GBS's analysis of trade is based on pure trade theory. As such, it assumes long-run equilibrium marked by full employment and balanced trade. Their microeconomic analysis can be complemented by conventional macroeconomic analysis that allows for unemployment and trade deficits. Such macroeconomic analysis echoes their concerns and raises additional concerns about economic stability and the character of international competition.

With regard to macroeconomic impacts, the record trade deficits of the last several years have contributed to making the economic recovery from the last recession the weakest since World War II. The U.S. trade deficit rose from \$377.6 billion to \$716.7 billion between 2000 and 2005, equaling 5.7 percent of GDP in 2005. According to the U.S. Commerce Department, the rising trade deficit directly reduced GDP growth by more than 25 percent between 2001 and 2005 by channeling spending to foreign rather than domestically produced goods. Moreover, this reduction excludes additional indirect losses stemming from fewer jobs causing lower spending on domestic production,

and, in turn, causing the United States to forfeit spending and growth that the jobs would have generated.

With regard to employment, Bivens (2004) estimates that the U.S. trade deficit in manufactured goods accounted for 59 percent of manufacturing jobs lost between 1998 and 2003. Based on an input-output methodology, Robert Scott of the Economic Policy Institute in Washington, D.C., estimates that every billion dollars of goods imports embodies approximately 9,500 jobs. Stripping out the OPEC deficit of \$92.7 billion, the goods trade deficit in 2005 was \$695 billion. Using Scott's job multiplier, 6.6 million job opportunities were embedded in the trade deficit.¹⁰ The implication is that, instead of creating jobs at home, a significant chunk of consumer and investment spending has leached out of the U.S. economy in the form of spending on imports.

In addition to adverse short-run employment and output effects, the large U.S. trade deficit also has adverse long-run macroeconomic effects. Undervalued exchange rates in the rest of the world have severely impacted U.S. manufacturing through their impact on the trade deficit, with many U.S. companies closing plants because they cannot compete. Some companies have simply gone out of business, while others have relocated or subcontracted production—to China in particular. The sectoral impacts of the trade deficit with China have been extensively reported in the 2003 and 2004 annual reports of the U.S.–China Economic and Security Review Commission.¹¹

Many companies have also cut back on investment spending or redirected investment elsewhere rather than build new modern capacity in the United States. Blecker (2006) examines the impact of the overvalued dollar on U.S. manufacturing profits and investment spending. His estimates imply that the appreciation of the dollar from 1995 to 2004 lowered U.S. manufacturing investment and manufacturing capital stock by 61 and 17 percent, respectively, in 2004 relative to what the values would have been had the dollar remained at its 1995 level. Dollar appreciation has structurally weakened the U.S. industrial base and made the future task of trade deficit adjustment more difficult, as the United States may now lack the capacity needed to produce the manufactured goods that it now imports.

These effects on manufacturing jobs and investment provide concrete support for GBS's concerns. Manufacturing is key to long-run prosperity because it is a major center of productivity growth and innovation. When

U.S. manufacturing moves offshore, associated R&D can move too, thereby further diminishing future innovations at home.

Another problem is that international trade remains concentrated in goods. This means that, over the long haul, countries need to be able to produce and sell manufactured goods in order to finance imports. The erosion of U.S. manufacturing capacity undermines this ability, potentially risking a future decline in U.S. living standards and the possibility that growth and employment could be constrained by the U.S. balance of payments.

The trade deficit also carries significant adverse financial implications for the United States. In particular, the accumulation of foreign indebtedness makes U.S. financial markets potentially vulnerable to a sell-off by either foreign creditors or domestic investors. If this were to happen, U.S. interest rates would rise and the dollar would fall precipitously. Inflation would also likely increase because of heavy reliance on imported goods and limited domestic manufacturing capacity to replace those goods. The net result is that the United States could experience a return of stagflation.

Finally, the U.S. trade deficit links to the broader issue of export-led growth and the character of global economic development. Export-led growth has countries relying on exports to promote manufacturing growth and development. This strategy encourages undervalued exchange rates as a way of attaining and maintaining international competitiveness. It has been widely adopted by many developing countries and by Europe and Japan, who have also relied on exports to reinflate their economies.

Export-led growth raises a host of controversial issues.¹² These issues include its contribution toward record global financial imbalances (as exemplified by the U.S. trade deficit); its role in promoting a race-to-the-bottom style of competition between countries that are looking for international competitive advantage, however possible; and its tendency to promote global deflation, since countries add to global supply without an equal increase in global demand.

Export-led growth can be viewed as a form of strategic policy that connects to GBS's analysis. Thus, the reliance on undervalued exchange rates to promote exports can result in the capture of industries. It can also be viewed as adversely changing the character of global economic competition—something that is not addressed in standard microeconomic trade theory. This question of the character of competition concerns institutional

economists and provides another angle on the debate about global outsourcing (Palley 2006). It also provides a logical link to the debate regarding the need for international labor and environmental standards (Palley 2004).

Conclusion: The Importance of GBS's Contribution

GBS's theoretical work dramatically changes the trade policy debate. In a sense, their work helps pure trade theory to catch up with the new realities of globalization. Technology is highly mobile and its transfer between countries can be significantly influenced by policy. Strategically designed policy can influence the nature of global equilibrium and thereby change the distribution of gains from trade. Strategic policy includes R&D policy, rules governing corporate behavior, exchange rate manipulation, government procurement policy, offset requirements, and policies that impact the international competitiveness of firms. The bottom line is that it is a mistake for countries to ignore strategic trade policy and it is especially dangerous when a country allows itself to be outgamed by other countries.

Although there are always gains from trade, countries can suffer from further globalization—their future gains from trade may fall, making them worse off than before. This sobering conclusion derives from pure trade theory, which assumes away macroeconomic problems such as unemployment, trade deficits, and financial instability. When these problems are factored in, the case for strategic trade policy becomes even stronger.

Notes

1. For example, see Freeman (2004), in which the tacit assumption is that globalization expands U.S. national income, although workers lose because of a super-sized Stolper–Samuelson effect.
2. Agglomeration economies of scale are particularly complex. Where these are present, a country can appear to have the lower cost curve. However, this may be due to the fact that the country was the first to start production and thereby acquired the extra benefit of agglomeration economies.
3. In the Gomory-Baumol model, given their assumptions of identical technology and cost curves across countries, the critical convergence

factor is industry scale of production. This determines whether there are global efficiency gains to be had by rearranging global production patterns. When all industries are producing at the same scale in all countries, there are no global gains to be had. However, countries can benefit individually by capturing industries, but the gain comes at the expense of other countries.

4. The Gomory-Baumol model assumes identical countries, so that a zone of conflict emerges as country incomes converge. In the real world, countries differ, and a zone of conflict may develop as the distribution of production of tradeable goods is equalized. Thus, China can have a far lower national income than the United States owing to a large, immobile, and unproductive nontradeable sector, but the two countries can still be in the zone of conflict because the distribution of tradeable goods industries is converging.
5. A more precise representation is that Europe had a technological advantage, while the tropics had a climatic advantage.
6. It is also true that, in some instances, cooperatively reorganizing global production patterns can raise incomes and improve welfare for all countries. This can happen when, initially, the world gets locked into an extremely inefficient equilibrium in which a high-cost country is the first country to move down its average cost schedule and acquire “ruling” cost advantage. In this case, all countries can benefit by switching production to the “true” low-cost producer. Even though the first country gives up producing a lucrative product, it gains because costs are so much lower in the latecomer country.
7. Offset requirements are illegal under the WTO; but in countries like China, where the state exerts significant influence over large chunks of the economy, the tacit pressure for offsets is still there. In the United States, airlines get to choose the aircrafts they fly and they do not impose production requirements. Aircraft sales to China, however, are a different proposition.
8. Blecker (2005b) points out how Joan Robinson anticipated many of the macroeconomic policy problems inherent in new trade theory with IRTS.

9. If wages rise to compensate for the burden of higher tax payments that are needed to fund the system, this would reduce the beneficial job-retention impact.
10. Scott's methodology does not include additional jobs that would be created indirectly by expenditure multiplier effects from increased incomes generated by higher manufacturing employment and production. On the other hand, nor does the methodology take account of jobs that may be created by cheaper imported inputs.
11. These reports can be found at www.uscc.gov.
12. For a full treatment of export-led growth, see Blecker (2003) and Palley (2003b).

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