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Benefits and Costs of Following Comparative Advantage

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ABSTRACT

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This paper is the text of a lecture given on November 20, 1997 to inaugurate the John W. Sweetland Chair in International Economics, in the Department of Economics of the University of Michigan. Its message is that international trade theory, and in particular the theory of comparative advantage, is really just an application of benefit-cost analysis. This is true both of many of the tools of trade theory, which are familiar as the same tools by which benefit-cost examines all sorts of public projects and policies, and of the implications of the theory. Trade theory does *not* say, as sometimes claimed, that international trade is necessarily and always good for everyone. On the contrary, the theory of comparative advantage identifies both winners and losers from international trade, and the subtlety of the argument, much like many applications of benefit-cost analysis, consists of quantifying and comparing the gains and losses. The paper works through both the partial and the general equilibrium analyses of trade under a range of assumptions from implausibly perfect to realistically messy. It discusses who gains and who loses from trade in each case, as well as the strength of the argument that the gains outweigh the losses.

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I. Introduction

Let me start by thanking several people who have helped to make this event possible. First and foremost is of course John Sweetland, whose gift to the university funded the Sweetland Chair. John has been a most extraordinary friend to the department and a benefactor far beyond anything we could have hoped for. His gift of this chair, and his promise of several more together with additional funds for graduate student support, will I hope be decisive in helping us to strengthen the ranks of our faculty and students. Also of course, I personally owe him a debt of thanks in exchange for the financial benefits that accompany the chair. And I want to thank him for not vetoing me as the holder of the chair, knowing as he does how ignorant I am about international trade in cement.

In addition, I would like to thank Saul Hymans for the important role he played in facilitating John's decision to help the Department and for inviting me to give this lecture here at the Outlook Conference. I am especially grateful to my colleagues in the Department of Economics for awarding me the chair, especially Paul Courant who was Department Chair when the decision was made. I feel extremely honored. I owe thanks also to several colleagues and students with whom I have discussed the topic of this

lecture, especially Bob Stern, Jim Levinsohn, Saul Hymans, and two of my students, Ting Gao and Simeon Djankov.

Finally, let me thank my family, three of whom are here this evening. I thank my wife, Pat, for putting up with my distracted frame of mind for the last few days as I've tried to think of what to say, and I thank my kids, Ryan and Allie, for putting up with it as well, although we see so little of each other these days that I doubt they noticed. Most of all, I thank them all for coming this evening to listen. I know that neither economics nor international trade are high on their list of interests.

My topic tonight grows out of 27 years of teaching comparative advantage and out of less than one year of teaching benefit-cost analysis. Two years ago, the dean of the School of Public Policy, then Ned Gramlich[1], asked me if I would teach benefit cost. I felt that I knew nothing about the subject, but he assured me that I did. "That's all trade theory is," he said. And he was right. As you will see tonight, I had been "speaking benefit cost" my whole career, without knowing it.

Another reason for talking about this tonight is a certain amount of irritation I have felt with the public's lack of understanding about what economists know about comparative advantage. I don't mean the difficulty they have in understanding the concept of comparative advantage itself. That is a tough one, which my colleagues and even I get wrong from time to time when we're not careful. No, what bothers me is two opposite misperceptions that many in the public seem to hold at once. One is that the

[1] Who is now a Governor of the Federal Reserve System. It's hard to believe that this really nice guy, with whom several of us have played low-stakes poker here in Ann Arbor, is now playing in the biggest poker game there is. With *our* money!

theory of comparative advantage is only valid under very limited and special circumstances. The other is that economists believe it to be valid under all circumstances. Neither is true. On the one hand, the theory of comparative advantage is much more broadly valid than you would guess from the simple numerical examples that may have been your only exposure to it. But on the other hand, there *are* limitations to the theory, and we economists are very well aware of them.

Before I try to make this clearer, let me first remind you of what comparative advantage is. A simple definition is this: Comparative advantage is **low relative cost of a good compared to other countries**. This statement may appear to be repetitive, using the two words "relative" and "compared to" redundantly. Doesn't "relative" already mean that something is being compared? Yes, but in this case it is being compared to something else. "Relative cost" here means the cost of a good relative to other goods. It is then this price ratio that is to be compared across countries. Comparative advantage, then, involves a double comparison, across both goods and countries, and that is critical both to understanding it and to why it works. Because it is such a double comparison, for example, it is impossible by definition for a country to have a comparative *dis*advantage in every good. The worst that could happen would be that all of these ratios of costs be the same across countries, in which case the countries would have neither comparative advantage nor comparative disadvantage in anything. That would require an incredible coincidence. In practice, every country will have a comparative advantage in something.

So far this is just a definition. The importance of the concept of comparative advantage is the economic theory that incorporates it and that generates what has been called the Law of Comparative Advantage. Actually, there are two laws, one "positive"

predicting what countries *will* do if given the chance, and one "normative" implying what countries *should* do:

> **The Positive Law of Comparative Advantage:** If permitted to trade, a country will export the goods in which it has a comparative advantage.
>
> **The Normative Law of Comparative Advantage:** If permitted to trade, a country will gain; i.e., the benefits of trade exceed the costs.

Both of these points are routinely made in the most elementary introductory economics courses, but they are illustrated using a numerical example much like David Ricardo used 200 years ago to explain comparative advantage when he discovered the idea. The example has just two countries and two goods, both of which are used only for consumption, only one factor of production (homogeneous labor), perfect competition, and perfectly free trade without even transport costs. The example is so unrealistic that perhaps students can be forgiven for thinking that it has little bearing on the world they live in. But in fact, both of the laws of comparative advantage have been shown to be valid in much more general models, dropping every one of these assumptions.

That is one of the messages that I want to get out, the good news that I want to spread: Comparative advantage and its implications are much more robust than even many economists are aware, if they do not specialize in trade. The fact that the real world is incredibly complicated, with all sorts of goods and services being produced in all sorts of ways and used for all sorts of purposes, with all sorts of natural and artificial barriers to international trade, does not undermine the economic basis for trade following the pattern of comparative advantage and thereby being beneficial.

On the other hand, even these broad generalizations of the laws of comparative advantage still do require some assumptions, assumptions that are frequently violated in practice. Furthermore, even when those assumptions are not violated, notice that the normative law does not say that everybody gains from trade. It acknowledges that there are costs due to trade, and then says that there are also benefits that are larger. For both of these reasons, then, there is a downside to international trade of which economists are well aware. Indeed, no responsible economist will teach that trade is an unambiguously good thing. Even in the best of worlds, some people lose from trade, and the case for free trade is only that other people gain more. Furthermore, this is not the best of worlds, and there are many conditions in the real world that may, in some cases, cause even the net effects of trade to be harmful. We know this, but the tools of comparative advantage and trade theory also tell us many things about how best to deal with these conditions. The bottom line, at least for the many quantifiable benefits and costs due to trade, is that once one accounts for all of them, in most cases we are better off not restricting trade. Rather we should permit it to occur freely, following comparative advantage. There are other more appropriate means of dealing with the failings of the economy than restricting trade.

In other words, the case for liberal trade is neither weak nor simple. It requires a careful and dispassionate look at all of the benefits and costs of trade. That is what I will attempt in the rest of this lecture.

II. A Standard Benefit Cost Analysis of Opening a Single Market

As I have learned in this last year of teaching, the standard tools of benefit cost analysis are simply supply and demand. Most benefit cost studies focus on individual markets and

use the tools of partial equilibrium analysis to identify and quantify benefits and costs within those markets. These tools are easily applied to international trade.

I will not attempt to actually do such an analysis here – we've just had dinner, after all. But I cannot resist showing you these tools for you to admire. Figure 1 shows two supply and demand diagrams, panel (a) for an export and panel (b) for an import. The lessons that could be derived from these diagrams if we had the time and inclination are summarized in Table 1, as follows.

The direction of trade – whether a good is exported or imported – depends simply on whether its domestic price is above or below its world price. If it is below the world price, then the good will be exported. This will benefit the suppliers of the good, both the owners of the firms that produce it and the workers they employ. But it will harm domestic demanders of the good who will be forced to pay more for it, and these demanders include not only consumers, if it is a final good, but also other producers (and their workers) who use the good as an input. What the theory shows, however, is that the gains on the supply side of such a market are larger than the losses on the demand side, in the sense that the gainers could afford to compensate the losers and still remain better off. The net gain from exports, if you are interested, is the shaded triangle in Figure 1(a).

If the domestic price of a good is higher than the world price, then the direction of trade will be the opposite: it will be imported. Here again their are gainers and losers, but they are on opposite sides of the market from the other case. It is the demanders of imports who gain from their lower price, again both consumers and firms buying them as inputs. And it is the suppliers, not of the imports themselves but of domestic goods that compete with them, who lose. It is this cost to import-competing suppliers, both firms

and workers, that is often the most visible effect of trade. The losers themselves as well as advocates on their behalf often seem to believe that economists are simply unaware of this cost, but we are not. Our models, as you see here, include that loss and trust me, we do take it seriously. But we do not focus on it exclusively, as the suppliers themselves may understandably want to do. We must look at the benefits as well as at the costs.

Now you might think that, since everything else in the import case is opposite to what it was in the export case, the net welfare effect should be negative. But lo and behold, it is not. The net effect is positive, as shown again by the shaded triangle in Figure 1(b). Need I say more? Take it as part of the miracle of comparative advantage that, when trade follows the dictates of comparative relative prices (for that is really what is happening in Figure 1), the gains outweigh the costs in markets for both exports and imports. Or, if you want more of a reason for this result, note that as prices move away from domestic market equilibrium toward their world levels, the losers in both markets cut their losses, reducing their quantities bought or sold, while the gainers take advantage of the opportunity by increasing quantities. It is these induced changes in quantities that generate the net gain in both markets.

The bottom line in Table 1 then, literally, is that a standard benefit cost analysis of international trade yields an unambiguous result: benefits are greater than costs.

III. General Equilibrium Analysis of Opening a Whole Economy

From the time of Ricardo, trade economists have recognized that there is more to trade than can be captured in a partial equilibrium analysis like Figure 1. Trade affects so much of the economy simultaneously that its full effects must include numerous

interactions among different markets. Most importantly, partial equilibrium analysis cannot capture the effects of trade on factor markets, especially on wages, which turn out to be both important and often contentious. Trade theorists have developed a variety of distinctive tools to analyze the general equilibrium effects of trade, and they have used these tools to establish several important results that concern us here.

As before, there is no real need for you to see the tools themselves, but I cannot resist showing you some of them. Figure 2 includes two of the most distinctive general equilibrium diagrams from trade theory, panel (a) illustrating the gains from trade and panel (b) illustrating how one factor of production – in this case labor – may lose from trade due to a drop in its real wage.

More important are the results themselves, which are summarized in Table 2. In addition to all of the effects on suppliers and demanders from Table 1, which still tend to be true on average for most markets even in general equilibrium, Table 2 reports effects on factors of production. It turns out that these effects depend on several different aspects of a factor's relationship to industries and to the economy. Factors of production that are "specific" to an industry, for example, in the sense that they cannot leave it but are also not subjected to competition from entry by more of the same factor, gain or lose from trade depending upon whether their industry exports or imports. But factors that are mobile among industries do not depend directly on the performance of the industry in which they are employed, but rather on how trade overall affects their economy-wide factor market. For example, owners of a factor that is used intensively in export sectors will gain from trade, even if the particular units of the factor that they own are employed elsewhere. Likewise, owners of factors that are abundant in the country compared to

other countries will also gain, as trade provides an outlet for what they can produce. But the flip side is that owners of scarce factors, and of factors used intensively in import sectors, will lose in real terms from trade.

This is the famous Stolper-Samuelson Theorem, proved over fifty years ago by Paul Samuelson, who later won the Nobel Prize, and Wolfgang Stolper, who has spent most of his career on our own faculty. This theorem, which identifies both gainers and losers from trade within a country, has become more important with time as international trade has grown. Applied to the United States, with our abundance of skilled labor and scarcity of unskilled labor, the Stolper-Samuelson theorem implies that trade will make low-wage unskilled workers worse off. This indeed has been happening over the last 15 or 20 years, and while there are other contributing causes of this phenomenon as well, there is little doubt but that the opening of world markets and the growing competition from low-wage labor abroad have played a role in the rising inequality among American workers.

The general equilibrium models of trade theory also establish, however, that whatever some factor owners may lose from trade, other factor owners must gain even more. Once again, the benefits of trade outweigh the costs, as stated in the bottom line of Table 2. This is important, for it means that it should be possible to devise social policies that offset the harm to low wage workers while leaving the overall gains from trade to be enjoyed by all. Whether our existing policies accomplish this, however, is another matter.

IV. The Role of Distortions

All of the results discussed so far arise under a large number of assumptions. These assumptions do *not* require, as I noted above, any limits on the numbers or kinds of goods, factors, or countries. Nor do they require free trade. But most of them do require perfect competition (i.e. that market participants are all too small to be able to influence prices) as well as that markets clear (supply equals demand), that producers and consumers bear and enjoy the full costs and benefits of their actions (no externalities), and that buyers and sellers face the same prices (no taxes or other government intervention). All of these assumptions are needed for markets to work as well as possible, and because international trade is just the working of markets on a grand scale, these assumptions are also needed for proofs that the benefits of trade outweigh its costs.

Economists follow the endearing practice of calling any failure of these assumptions a "distortion," as though it is somehow the economy's fault that it does not conform to the way we model it. But the term is also appropriate, for these departures from our assumptions do in fact lower economic welfare compared to what it could be if these distortions were corrected. Furthermore, in most cases we know, in principle at least, what policy should be used to correct these distortions, even though in many cases both the information and the political will needed to implement such policies may be lacking. For example, if production by a polluting industry imposes a cost on the rest of society, then a tax on production equal to that cost will correct the distortion.

What does this have to do with trade? Almost all of these distortions, if they are not corrected by such a policy, mean that the economy is bearing an additional cost or enjoying an additional benefit that depends on the level of some activity that may be

changed by trade. If trade causes a polluting industry to expand, for example, then the extra pollution is an additional cost due to trade. If trade causes this industry to contract, on the other hand, then this is an additional benefit due to trade. Of course, as we have seen, trade always causes some industries to expand and others to contract, as well as some demands to expand and others to contract. Therefore, for every new cost of trade that a distortion introduces if activity goes one direction, there is also a new benefit if it goes the other. It is not surprising, then, that consideration of the role of distortions gives us a rather balanced mix of new costs and benefits. These are summarized in Table 3, for which I have no accompanying art work.

Imperfect Competition

If domestic firms are large enough to have market power – that is, power to influence prices – then they will produce too little and charge too much, leading to inefficient consumer choices and reducing welfare. This has nothing to do with trade. What trade can do, however, is to undermine this market power by making large domestic firms compete with firms abroad. This forces them to behave more like perfect competitors, charging lower prices and benefiting demanders. But even this is not without a cost, since the firms themselves lose profits. Monopolists are people too, after all (or at least they are owned by people, sometimes lots of them), and the loss of monopoly profits is just as real, if not as worrying, as the fall in wages of unskilled workers mentioned above.

Like most trade economists, I am accustomed to arguing, along these lines, that one of the most important benefits from trade is that it fosters competition. I do believe that, especially in small countries. But imperfect competition has also been the basis in

recent years for a plethora of arguments in favor of interfering with trade, as my ingenious colleagues in trade theory have explored the frontier of the "New Trade Theory" and arguments for "Strategic Trade Policy." These arguments rest on the role of trade in determining the international distribution of monopoly profits, and specifically on ways that by interfering with trade or manipulating it governments can help large domestic firms earn greater profits at the expense of foreign firms or consumers. There are too many such arguments to try to capture here, but some of these ideas are represented in the second line of Table 3: An extra benefit of trade is that large domestic firms can earn profits abroad; an extra cost is just the reverse, that our own consumers may contribute to the monopoly profits of foreign firms.

Often associated with imperfect competition is another departure from the standard assumptions of competitive markets: differentiated products. Competitive theory and the standard arguments in favor of free trade assume homogeneous products, or in other words that the products of different firms, including imports, are exactly the same. Suppose instead, as is obviously the case for many manufactured products, that goods produced by different firms are not the same. Suppose they are differentiated, so that each can appeal to a different segment of the market. Then producers of these differentiated products automatically have market power over the goods they sell, and the extra costs and benefits of trade already mentioned may apply.

The reason that I mention product differentiation separately, however, is that it also gives rise to an additional benefit from trade not yet mentioned. Demanders gain from product differentiation because, with more to choose from, they are able to find products that more closely suit their needs. Also, to the extent that consumers simply

enjoy variety *per se* – getting satisfaction out of consuming a variety of different flavors, for example, rather than only a few – they also gain when more varieties are made available rather than less. In both cases, then, international trade provides an additional benefit, especially in a small country, since it gives demanders access to many more varieties of goods than they could buy otherwise. This is another effect of trade that has been stressed in the New Trade Theory, and it seems to be an unambiguous benefit.

A potential cost that may be associated with differentiated products and trade is the one I also mention in Table 3. Product differentiation requires that demanders know about it. This, together perhaps with attempts by producers to imbue their products with greater differentiation than they intrinsically possess, leads to advertising. This, and the effect of trade upon it, has not been examined much by trade theorists, but one can imagine both that advertising is costly and that trade may increase the resources spent on it. Without trade, after all, a small country's firms might not need to advertise at all, since they would face little competition. Trade creates that competition, but it also may create the need for both foreign and domestic firms to devote resources to advertising that might have been used for other purposes. I would be surprised if this adverse effect of trade, even if it is valid, could outweigh the many other benefits of both competition and trade, but the possibility deserves to be mentioned.

Market Disequilibrium

Competitive theory assumes that markets always clear, or in other words the prices always adjust so that the quantity supplied equals the quantity demanded. That is a good assumption in most cases, but there are some important exceptions.

The most obvious is recession. Over time in market economies, the overall level of unemployment fluctuates, for reasons that have been the subject of macroeconomic debate for the better part of a century. Most of the time it seems that the economy is fairly close to an equilibrium in which job vacancies more or less match the number of able workers looking for jobs. The amount of unemployment then represents mostly those workers who are trying to find their way from one job to another, plus a hard core of "structurally unemployed" whose characteristics might preclude them from jobs even in the best of times. However, every few years or so, the cyclical behavior of the aggregate economy causes it to dip into recession. In a recession, a deficiency of aggregate demand combined with downward stickiness of wages causes excess supply in the labor market that is not quickly removed by adjustment of wages.

When this happens, because the quantity of employment then depends more on the quantity of aggregate demand than on the more normal balancing of supply and demand within separate markets, it is possible for trade to exacerbate or ameliorate the situation. However, the obvious argument here is likely to be wrong: that by reducing imports a country can create jobs. The problem is that other markets do work, even when labor markets do not. Using a tariff, say, to reduce imports will cause adjustments in other markets, including the market for foreign exchange. These adjustments will reduce exports as well.

However, trade does matter for aggregate employment in recession, even after these adjustments. The direction of its effect depends on the kinds of goods that the country trades, especially their labor intensities. An expansion of trade through trade liberalization, for example, will tend to increase aggregate employment in a country

whose exports are more labor-intensive than its imports, and will tend to reduce employment in countries with the opposite pattern of trade. For the United States, whose comparative advantage is in skilled-labor-intensive goods, this means that greater trade in a recession is likely to stimulate employment of skilled labor and reduce it for unskilled labor.

In an advanced market economy, most markets function fairly well most of the time, but labor markets in some countries are prone to rigidities that interfere with market clearance even when the economy is not in recession. In such cases, change that would have increased wages will show up instead as increased employment, while changes that would have reduced wages will instead reduce employment. Thus the effects on factor markets mentioned in Table 2 will still be present, but they may manifest themselves in the more severe form of changes in employment. The obvious examples here are some of the countries of continental Europe, where legal and institutional restrictions on labor markets that were intended to help workers have contributed instead to a steady rise in aggregate unemployment rates over the last twenty years. In these countries, the same forces of globalization that were mentioned above as contributing to the fall in wages of unskilled workers in the United States have increased unemployment among these workers even outside of recession.

In market economies we seldom see markets other than labor failing to clear in major ways, except in wartime when governments interfere with prices. Countries making the transition to market economies are much more familiar with the bottlenecks that arise when markets fail to clear, especially in their histories with central planning. For such economies, international trade, if it is permitted to occur, can have much greater

and more distinctive effects than we are accustomed to seeing in the West. Most obviously, trade relieves shortages. The incentives to import when goods are rationed are much larger than the incentives that arise from simple comparative advantage, even though the response to shortages is an extreme form of the same phenomenon. Centrally planned economies have routinely had to combat smuggling much more vigorously than is needed in market economies, precisely because of the great benefits that imports could provide to those who managed to get smuggled goods into the country. Indeed, the central planners themselves often would relieve shortages by negotiating trade deals. The only additional cost that trade imposes in such situations is that it may undermine the profits being made by those who exploit market disequilibrium, such as profiteers and bride-taking bureaucrats.

Externalities

I have already described the mechanism by which trade can have additional benefits and costs when there are externalities, and that mechanism can work on a wide variety of issues. Any time the actions of a producer or consumer, supplier or demander, has effects on others in the economy that are not internalized by the decision maker, then there exist such extra costs or benefits depending on whether increased trade expands or contracts the activity of that decision maker. Since trade always expands some supplies and demands while contracting others, one can expect a more or less balanced mix of extra costs and benefits in as many parts of the economy as there are externalities. I will discuss only a few of the most prominent.

Pollution: Pollution is the classic negative externality. Many industries pollute, some more than others. To the extent that pollution varies positively with output, as it

usually does, then expanded trade will impose additional costs if the polluting industry exports, and it will provide additional benefits (domestically) if the polluting industry competes with imports. This all assumes that the polluters are insufficiently regulated that they are continuing to bear smaller costs than they inflict on society. Of course, in the case of a polluter who competes with imports, the producers themselves will not view trade as a benefit, and they may hasten to point out the environmental damage being done abroad, but both of these effects have already been covered above.

If polluters are optimally regulated, perhaps by paying a production tax equal to the marginal damage that they do to society, then the externality is no longer a distortion and trade causes no additional costs or benefits. If an exporter continues to export even in the presence of a correctly set environmental tax, then standard theory tells us that the benefits from that production exceed all of the costs. If an import-competing producer must reduce output in the presence of such a tax, then it follows that the benefits from its production did not exceed the costs. Naturally, in the latter case producers will disagree, and they will argue that trade has undermined them because their foreign competitors may not be subject to the same tax. But whether that is the case or not is irrelevant to the welfare of the import-competing producer's own country. If imports undercut domestic production in the presence of a correct pollution tax, then the cost of domestic production including its pollution is higher than the cost of imports and the country gains by importing. Domestic producers do lose, of course, but for the same reasons they always lose when imports expand.

Pollution also raises the question of whether trade may create "pollution havens" – countries or locations where pollution is tolerated and where polluting industries tend to

congregate, at the expense of both their own populations and of producers in other countries where pollution is taxed or otherwise regulated. The answer is clearly yes, if environmental policies differ across locations. But this is not undesirable, so long as the policies reflect and cause producers to internalize the true costs of their actions. Suppose that a location has a low tax on pollution, either because its geography makes pollution less costly (high winds dissipate the smoke, for example) or because the local population is more willing than populations elsewhere to bear the costs of pollution in exchange for other things. Then that location has a comparative advantage in polluting activities, and that is exactly where these should be located.

If environmental policies differ across countries not because the true costs differ but because of differences in the effectiveness of governments, then the costs of creating pollution havens may exceed their benefits, and something should probably be done. But the right policy is to fix environmental policies, not to restrict trade.

Spillovers: The most commonly mentioned positive externality used as a reason for interfering with trade is the technology spillover. In many industries it is suggested – especially if doing so may gain them protection – that individual firms make other firms better off, either within the same industry or across industries. The source of this gain is usually thought to be technology. Over time, firms expand the knowledge of how to produce their product, both by research and development and by learning by doing. They are only imperfectly able to retain for themselves the benefits of these advances, which spill over to other firms as products are exchanged and as workers move among employers. Therefore once again, the social benefit from production is different from the private benefit, in this case higher. By the same reasoning as before, exports provide an

additional benefit, by expanding domestic production and thus these spillovers, while imports impose an additional cost.

What distinguishes technology spillovers from other externalities like pollution, aside from their direction, is that they may not be subject to diminishing returns. The benefits from further curbing of pollution tend to decrease as the level pollution declines, and therefore the optimal policy choice, easily achieved with a tax, is to reduce production and thus pollution somewhat, but not necessarily to zero. Technology spillovers, in contrast, may become stronger, not weaker, as they accumulate. A single technological advance may not be worth much without other such advances to work with, so that costs fall faster and faster as the size of the industry generating these spillovers expands. Thus, spillovers may be associated with a form of increasing returns to scale.

If so, then several of the standard results from the theory of comparative advantage are overturned, or at least modified. Since costs fall rather than rise as output expands, whether a country has a comparative advantage in a sector may depend primarily on the size of the country and whether it got into the industry first. Furthermore, countries may actually lose from specialization if they happen to specialize in industries with decreasing returns rather than increasing returns. Together these results imply that a country may be better off interfering with trade in order to guide the evolution of its industries toward the sectors from which it will benefit the most. Use of "industrial policy" to pick winners in this way is another of the innovations of the New Trade Theory and its focus on Strategic Trade Policies.

The lessons that trade theorists have ultimately derived from this literature, however, are not that governments should be actively engaged in this kind of policy.

There are many problems with such activist policies, including the chaos that ensues when many governments try to pursue them at once. But perhaps the most important reason to be skeptical is the information needed to identify correctly where these spillovers are and how big they are. By their nature, technological spillovers are not directly observable, even after they have occurred, and policies to take advantage of them need to be used before they happen, not after. Even specialists in an industry are therefore unlikely to know enough about its spillovers to guide policy, which in any case must depend on comparisons of the effects of spillovers across industries. Governments, who must make such policies, will be even less well informed, especially considering the incentives for industry sources to exaggerate their own cases. Most responsible trade economists have therefore come to eschew the advocacy of such policies, despite their theoretical appeal.

Drugs: The last two examples of externality mentioned in Table 3 are both drugs. On the one hand, there are "good drugs" – pharmaceuticals – the consumption of which provides positive externalities, and on the other there are "bad drugs" – addictive street drugs – consumption of which creates negative externalities. Unlike the previous two examples, neither has been a major source of argument for or against trade or trade policy, except trade in the drugs themselves. I include them in Table 3 primarily to illustrate that externalities arise on the consumption side of markets as well as the production side.

Regarding pharmaceuticals, the positive externality is clearest for any drug that prevents or cures a communicable disease, since those who use them not only improve their own health but also make the disease less likely for others. Society therefore has an

interest in promoting the consumption of such drugs when they are needed. Lowering their price by permitting imports contributes to this cause.

Of course, trade may also increase the domestic price of a good, as it does when it is exported. For most pharmaceuticals it is likely that the marginal costs are constant, so that this will not happen except temporarily. Therefore the example I refer to in Table 3 is a much more special one. As I understand it (and my recollection is very dim here), there is a tree in India whose bark has been the source of a traditional medical remedy for centuries. Recently, a large western pharmaceutical company managed to synthesize this drug and market it worldwide. The difficulty for Indian consumers is that the company claimed the rights for not only the synthesized version of the drug, but also the natural one, and of course it sold it for a much higher price than the cost to poor Indians of getting it directly from the tree. To attribute this unfortunate situation to trade is perhaps stretching things, but without trade it is doubtful that this would have happened.

On the other side of the spectrum are street drugs. Here the cost of trade is so obvious that imports of them are routinely banned. The externality cost of the drugs includes the crime and other damage inflicted on society by addicts (although arguably some of this wouldn't occur if they were not banned). This is accompanied by other costs that, while not exactly externalities, are also distortions, such as danger to underage consumers and the drugs' interference with rational choice. These costs rise with the consumption of the drugs, not their production, and this consumption is expanded hugely by international trade, at least in the cases of drugs that cannot be produced domestically.

I have left blank the "benefits" box in Table 3 next to bad drugs. Paul Courant has suggested that I include here the benefit that a drug-exporting country enjoys when

trade raises the prices of such drugs to its own consumers and thus discourages addiction. I could also include here the profits of the drug lords themselves, I suppose. I leave the cell blank, however, because even though I am pretty sure that I favor legalizing many such drugs for a long list of reasons that need not appear here, that list does not include favoring drug use itself. I am reluctant therefore to seem to be saying anything good about it.

Government Intervention

Most of what the government does distorts markets, almost by definition. In many cases, one would hope, the distortions introduced by government policy are intelligently designed to offset other distortions that would exist without it, and thus move the economy to greater welfare. The pollution tax mentioned above is such a case, for example. But governments are not always intelligent, at least by standards of economists, and they interfere in markets in a great many ways that we believe make things worse, not better. Furthermore, even if governments made no such errors of policy, the need for revenue to finance appropriate government activities would require them to tax something, and even economists have not succeeded in showing how that can be done without introducing distortions.

Like any other distortions, then, those created by government can be made worse or better by international trade, just depending on the nature of the distortion and the direction of the trade. The two examples mentioned in Table 3 – one a benefit and one a cost – are just two of the more egregious.

My colleague, Wolf Stolper, is fond of expressing his opinion of smuggling, which he acquired from many years of observing and advising the governments of several

African countries. Many trade economists see smuggling as beneficial, since it is a response to trade barriers that we do not approve of and is therefore just free trade in action. But Wolf takes this view much further. He sees smuggling as the salvation of many African economies, which are so distorted by bad policies that they could not function at all if it were not for smuggling. In his view, then, trade in the form of smuggling (of course, he would prefer even more that it be legal) is the only thing that keeps millions of people alive.

But trade need not make distortions better; it can make them worse. A good example is the common agricultural policy of the European Union. This policy, which does many things, subsidizes agricultural production of a number of products, such as wheat and butter. Were it not for trade, this policy would be bad enough, keeping resources in sectors where they are not productive. But with trade, many of these subsidies are large enough to permit exports of goods for which the EU has a comparative disadvantage. The result is that EU financial resources are used to subsidize production that does not even go to EU consumers, and the budgetary cost of this policy has grown ever larger over time. The one bright side of this picture is that these budgetary costs have finally gotten the attention of EU policy-makers in ways that other economic costs had not, and the EU is now revising the policies. So even here, one could perhaps argue that trade has been beneficial, by making things bad enough that they had to be fixed.

This brings me to the bottom of Table 3, where once again I try to balance the benefits and costs that have been identified. Theory no longer tells us that the benefits of trade must outweigh the costs. Instead, the presence of distortions raises the possibility

that liberalized trade will create greater costs than benefits, and therefore that optimal policies would restrict it.

However, there are two arguments that can still be made in favor of trade. First, as I have noted repeatedly, the presence of a distortion by itself is as likely to cause an additional benefit from trade as an additional cost. Therefore, if both trade and the distortions arise at random, so that there is no particular correlation between how we would like things to change and how trade will make them change, then we might expect the additional effects of trade to be a wash. This whole discussion of distortions will then not matter, and we will be left only with the more basic effects of trade on undistorted markets that we argued above to be, on net, beneficial.

A stronger argument can also be made. Perhaps the most profound insight about trade, since the law of comparative advantage itself, has been the recognition that trade policies in the presence of distortions are a most second best. That is, as Jagdish Bhagwati and others noted, distortions may indeed create situations in which restricting trade could be beneficial. But Bhagwati also showed that in all such cases there exists at least one better policy than restricting trade, a policy that would offset the distortion more directly and avoid some of the costs of restricting trade. In the case of pollution discussed above, for example, without a pollution tax a trade restriction (in this case of exports) may be beneficial, since it will reduce production and therefore pollution. However, an appropriate tax on pollution itself, or even just on production, will achieve the same or greater benefits in reducing pollution without distorting the choices of demanders in the same market, and it therefore must be a better policy.

It follows from this literature on the second best, then, that in the presence of first-best policies for dealing with all distortions, more liberal trade must be beneficial. This is what is meant by the phrase in parentheses in the bottom line of Table 3.

V. Other Effects of Trade

I have covered a lot of ground so far, but I have talked almost exclusively about effects of trade and of following comparative advantage with which our theories of trade are well-equipped to deal. I have, in effect, let trade theory set the agenda, and it is therefore perhaps not surprising that trade has come out looking fairly good. In Table 4, therefore, I touch on a list of other effects of trade that may have been missed or not adequately dealt with in the preceding discussion. I have tried, here, to let my list be largely motivated by the valid concerns of the opponents of trade.

Environmental Concerns

I begin, again, with the environment. Environmental activists have been among those most vociferously opposed to recent episodes of trade liberalization, most notably the North American Free Trade Agreement (NAFTA). However, the environmental community has actually been divided on trade issues, some important environmental groups favoring expanded trade and others opposed. That is surely appropriate, given again that there are both benefits and costs.

I have already mentioned one of the greatest environmental benefits that trade can provide, by permitting environmentally unfriendly activities to concentrate where they do the least harm. This pollution haven phenomenon, which I take to be desirable, is listed first in Table 4. Alongside it, however, is another kind of environmental problem that is

surely made worse by trade: the destruction of endangered species and habitats. Without trade there would be little market for elephant tusks and rhinoceros horn in the countries where these animals are indigenous, nor would there be much demand for furniture made with tropical hardwoods within the countries where there are rain forests. In both cases one can argue that the problem is the lack or ineffectiveness of direct regulations, but given the international nature of the problems, it may not be unreasonable to regard trade as a major contributing cause.

I also mention a second benefit not raised here before: that trade raises national incomes and therefore allows countries to afford a better environment. There is ample evidence, confirmed by casual observation, that even though rich countries produce far more than poor countries, engaging therefore in activities that potentially harm the environment, they are also willing and able to spend much more on correcting environmental damage and on producing in ways that do less damage in the first place. As a result, rich countries tend to be cleaner than poor countries in spite of all their production.

The reason is simply that a clean environment is a "superior" good – one that people are willing to spend a larger part of their incomes on as their incomes rise. Indeed, it is well documented that as per capita incomes rise, various measures of environmental degradation first get worse, then get better. Therefore, to the extent that poor countries are anywhere near or above that turning point, the best thing we might do for the world environment is to raise the incomes of the poor countries. But that is the whole point of trading and following comparative advantage: it allows countries to get the highest incomes possible from their limited resources. There is also abundant evidence that

countries are better able to expand those resources – growing through capital accumulation, education, and adoption of technology – if they also engage in trade. Therefore many would argue that free trade is the best tool we have for improving the environment.

Not all would agree, however. Environmental protection is costly not only to consumers, who may opt for more as their incomes rise, but also to producers, who must pay for it out of revenues and profits. When protected from competition with imports, firms may be willing to bear such costs, either voluntarily or imposed by government regulation, simply passing them along to their customers. But when competing with imports or for international markets, reducing those costs will seem more critical to their survival, and they will incur them less willingly and resist regulations that impose them. Thus, it is argued, international trade will create a "race to the bottom" in terms of environmental regulations. This concern is valid, although the response to that concern, in my opinion, should be for countries to expand cooperation into the setting environmental policies, rather than to withdraw from the cooperation that they have already achieved in liberalizing trade through the World Trade Organization.

Culture

National culture is an intangible value that many countries view as worth preserving and as important far beyond what can be quantified economically. It is also not uncommon for countries to view international trade as a threat to their cultures, as it causes homogenization of what people consume. The United States is one of the few countries that does not seem to share this concern, perhaps because it does not recognize itself as having a distinctive culture, or perhaps because it is American culture that seems

to be taking over the world. Certainly our success in exporting American goods has contributed to a pervasive influence of American styles of dress, food, and entertainment on life styles of people in other countries. It is that influence that many other countries resist through government pronouncements and policies, although it seems clear that the people they purport to represent must not fully share that concern or it would not be an issue. In any case, I list as a possible cost of trade in Table 4 that it may undermine national identity. Note however that this effect my be due to trade, but it is not a result of following comparative advantage. It is not the fact that countries produce different goods, but rather that they may consume the same goods, that is the issue here.

I would also argue that even the concern for culture permits of an alternative interpretation of trade whereby it adds a benefit, rather than a cost. To me, national cultures derive part of their value from being shared, not confined only to the nations that originate them. The diversity of cultural influences that the shrinking globe permits any one of us to partake of is one of the wonders of modern life. This diversity is best appreciated by travel, and that in turn is a byproduct of international trade in services. But most people cannot travel much, even at today's historically low costs. For them, trade in goods also permits the enjoyment of many of the fruits of diverse cultures, in a way that once would have been impossible. It is true that the entire world now eats at McDonald's. But it is also true that Americans now live on pizza, tacos, and Chinese food, and that we partake occasionally of the cuisines of many other parts of the world as well. International trade may indeed have caused some mixing of national cultures, but the mixing has been far from complete and we have gained a diversity that I, at least, regard as valuable.

Technology

There are many ways that technologies interact with trade, not least of which is that international differences in technology provide the basis for much trade. But this is just comparative advantage in action again, and need not concern us here. The additional concerns that technology raises for trade involve the transmission of technologies from those who have them to those who do not.

On the plus side is simply the important role that trade plays in helping new technologies to be diffused around the world to where they can be used most efficiently. New products and processes may initially provide the basis for exporting from the countries where they were discovered, but soon it often becomes more cost-effective to move production of new products or the use of new processes to other locations where costs are lower. In the course of making this transition, it is not only goods that are exchanged, but also the know-how for making them. Whether new technologies are licensed to foreign producers or kept within foreign affiliates of the original owner, the effect is to spread the knowledge of new technologies around the world and ultimately to make everyone better off.

On the minus side, on the other hand, sometimes this process occurs too soon and without proper compensation to the owners of the intellectual property that embodies a new technology. Trade makes it possible for imitators and counterfeiters in countries where intellectual property protection is weak to exploit new technologies without paying for them, and this sort of piracy is surely one of the negative effects of trade. A challenge for the modern international trading system has been to devise rules to permit technology

transfer to take place in an orderly fashion, rules that will promote the spread of new technologies without undermining the returns to developing them.

Child Labor

A prominent concern in recent years has been that some poor countries use child labor to produce for export. This violates international agreements on labor rights, and it also causes chagrin among competing producers in developed countries who view the competition from such low wage labor as unfair. The argument is that child labor is being exploited in a way that violates human rights, and therefore that it should be stopped.

It is undeniable that trade does contribute to the employment of child labor. Without export markets, nobody would employ children to assemble shoes or stitch carpets. Whether this is a cost or a benefit of trade, however, is unclear and depends both on the particular situation and on the alternatives that are available.

I gather that in some countries small children are more or less sold into slavery and then kept by their employers in squalid conditions that barely keep them alive for the few years that they are productive before they die or become crippled or deformed from the rigors of the work. Such cases, where they occur, must be condemned and stopped, as must any trade that arises from them.

But in many other cases, I believe, conditions are not nearly this dire, and the children despite their tiny wages are better off than they would be without these jobs. Even here I can see the case for trying to improve the lot of these child workers by getting them out of the factory and into schools where they will be able to acquire skills to lift them out of poverty in the future. But merely halting the trade that depends upon this child labor will not accomplish this at all, and will only make the lives of these children

worse. When I hear people object to the employment of child labor and condemn the trade that makes it possible without suggesting how the children themselves might be made better off, I wonder about their motives and suspect that their true concern lies with protecting much higher-paid workers in the U.S.

Migration

It is ironic that a country founded on immigration now finds immigration to be a social problem. The high wages in the United States compared to other countries in the South provide a strong incentive for workers to cross our borders, and when many succeed in doing so illegally, it causes social tensions and antipathy among ethnic groups that have immigrated at different times. This problem is not primarily one of trade, but international does play a role in at least two ways.

First, international trade has some tendency to draw wages in different countries closer together. This narrowing of the cross-border wage gap reduced the incentive for migration across the border, and it may therefore ultimately reduce illegal immigration. Indeed, this was one of the goals of the NAFTA, which was expected to provide jobs and raise wages in Mexico sufficiently to draw Mexican workers away from the border and reduce their incentive to try to cross it.

On the other hand, trade across a border can involve such an increase in cross-border activity that enforcement of restrictions on migration can become more difficult. Therefore, at least until increased trade succeeds in reducing wage differentials, one might expect an increase in trade to increase cross-border migration.

Multinational Enterprises

From the perspective of comparative advantage, it does not matter much how production is organized across countries, whether exporters in one country are domestically owned or are owned by foreigners or by a large multinational enterprise (MNE). However, in practice the expansion of international trade has been accompanied by an expansion also of such MNEs, and this is viewed as a cost in itself by those who see MNEs as a force for no good.

One objection to MNEs is that by transcending national borders they also escape from national control of their operations. Indeed, the larger MNEs are larger than many of the countries in which they operate, and they possess an inordinate amount of political and economic power compared to the governments that may seek to control them. This is a problem only if we believe that government control would have improved matters, and in many such countries this is suspect. But it is understandable that the governments themselves see this as a cost to them, in terms of lost leverage over economic activity.

Even here, though, I see trade as a force for good, since it is trade that makes these large MNEs compete with each other. Competition among firms, much more than anything governments could do, is what will curb the power of MNEs and constrain them to act in the world's interest.

VI. Conclusion

Several years ago, while I was perhaps suffering from a mid-life crisis, I became discouraged by the unimportance of the work that I was doing. While some of my colleagues were doing research on the causes and cures for poverty, unemployment, or inequality, I was studying the gains from trade. I should perhaps mention that the efforts

that I and others have made to quantify the gains from trade using the tools of Figures 1 and 2 have led to somewhat discouraging results. The gains from trade are there, all right, but they are depressingly small. Many of us believe that there are greater gains outside our models, perhaps from some of the other effects of trade that I have discussed here. But still it seemed to me that I was devoting my professional life to a cause that ultimately couldn't be all that important in the grand scheme of things.

I mentioned my concerns to my colleague John Jackson, who also has devoted his life to trade on the side of its legal institutions. His response was that he too had had such doubts, but that to him the real importance of international trade was not the economic efficiencies that we economists stress in our models. Rather, to him the motive for liberalizing world trade was world peace. He believed, he said, that the interdependence of the world's economies was an important constraint on their going to war. Indeed – and I'd heard this before, perhaps from him – a major motivation for the founders of the post World War II trading system that they laid out in the General Agreement on Tariffs and Trade (GATT) was to prevent a recurrence of world war. By negotiating the reduction in barriers to trade both within Europe and in the larger world, these people believed that they would make it too costly for countries that were trading with one another to fight each other instead. Certainly the peace that these countries have enjoyed among themselves during the last half of the twentieth century suggests that this may have worked. I therefore list, in the bottom line of Table 4, World Peace as a final one of the effects of trade.

This benefit, which I view as paramount in importance, is not without an associated cost. It is true, I think, that international trade today fosters cooperation among

countries as they recognize the great cost that they would incur if that cooperation and trade were to break down. But historically this has not always been the case. Wars have also been fought precisely over trade routes. And my colleague Jan Kmenta tells me that the Germans prepared for their military takeover of Europe prior to World War II by first using trade to stock up on weapons from other countries like Czechoslovakia. So even here, trade is not an unmixed blessing.

The issues raised in Table 4 are far too uncertain and amorphous to admit of any unambiguous conclusion. At the bottom of the table, I ask again, are the benefits of trade greater than the costs? But many of these benefits and costs are hard to conceptualize, let alone measure, and there is no way that I can provide an objective answer to this question. At this point I must leave it to you to decide for yourself, weighing the diverse benefits and costs that I have identified and using your judgment to evaluate each. I trust that my own personal conclusion is evident.

Table 1

Opening a Single Market:	**Benefits**	**Costs**
If $P^W > P^D$ Then Export	Suppliers (Firms & Workers)	Demanders (Firms & Consumers)
If $P^W < P^D$ Then Import	Demanders (Firms & Consumers)	Suppliers (Firms & Workers)
Either way →	**Benefits Are Greater than Costs**	

Table 2

Opening a Whole Economy:	**Benefits**	**Costs**
If Relative Prices Differ, Then Export and Import	Owners of Factors Specific in Exports	Owners of Factors Specific in Imports
	Factors Intensive in Exports	Factors Intensive in Imports
	Abundant Factors	Scarce Factors
Always →	**Benefits Are Greater Than Costs**	

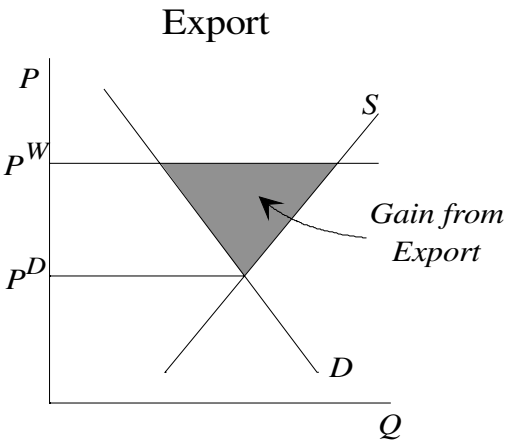
Table 3

Additional Effects in presence of Distortions:	**Benefits**	**Costs**
Monopoly, Oligopoly, etc.	Demanders get lower prices	Monopolists lose market power
	Monopolists earn profits abroad	Cartels dominate world markets
Differentiated Products	Demanders get greater variety	More resources are wasted on advertising
Markets Don't Clear (S≠D)		
Recession	More trade may create employment	More trade may reduce employment
Labor Market Rigidities	Higher wages become employment	Lower wages become unemployment
Bottlenecks	Trade relieves shortages	Profiteers lose profits
Externalities (Examples)		
Pollution	Less if imports	More if exports
Technology Spillovers	More if exports	Less if imports
Good Drugs	More if imports (vaccines)	Less if exports (Indian trees)
Bad Drugs		Imports feed addiction
Government Intervention	Trade under-mines misguided interventions (e.g. smuggling)	Trade expands costs of subsidies (e.g. agriculture)
Probably (and certainly, if better policies are used)	→ **Benefits Are Greater Than Costs**	

Table 4

Other Effects of Trade:	**Benefits**	**Costs**
Environment	Shifts dirty industry where harm is least	Exploits endangered species, rain forest
	Lets poor countries afford environmental improvement	Causes "race to the bottom" in environmental policies
Culture	Shares cultural diversity	Undermines national identity
Technology	Exchange of technology via licensing, etc.	Piracy undermines patents
Child Labor	Raises incomes of children	Makes child labor profitable
Migration	Reduces incentives for illegal migration	Weakens barriers to illegal migration
Multinational Corporations	Forces large firms to compete	Permits firms to transcend national control
World Peace	Trade fosters cooperation	Wars over trade routes
Are Benefits Greater than Costs?	→ **You decide.**	

a)


Export
P
S
P^W
Gain from
Export
P^D
D
Q

b)

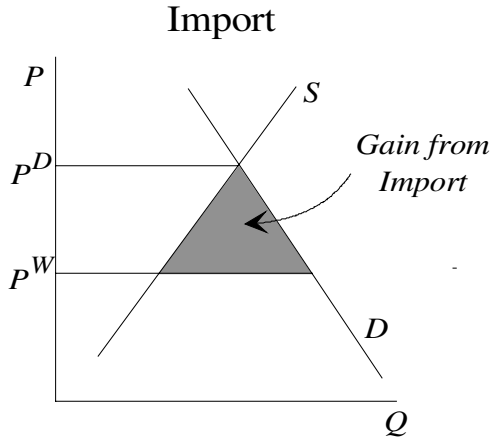
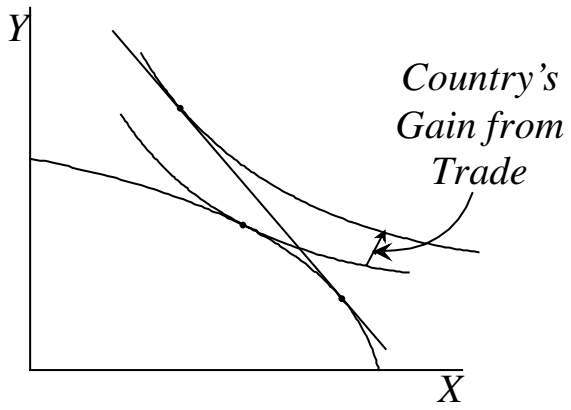

Import
P
S
Gain from
Import
P^D
P^W
D
Q

Figure 1

a)


Y
Country's
Gain from
Trade
X

b)

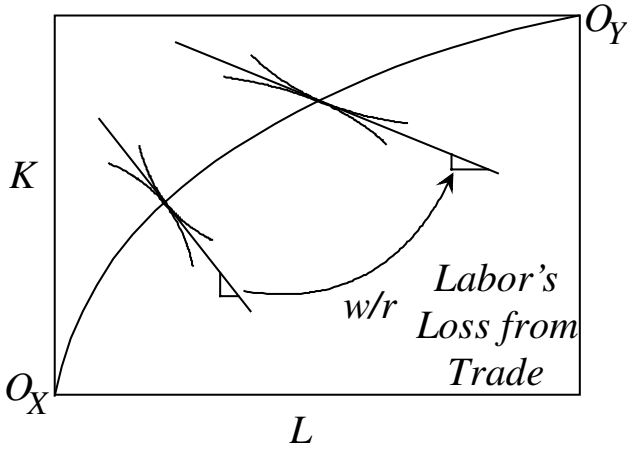

O_Y
K
w/r
Labor's
Loss from
Trade
O_X
L

Figure 2