

[A Moderate Compromise: Economic Policy Choice in an Era of Globalization](#)
(Excerpt) - by Steve Suranovic (Palgrave MacMillan, 2010)

Chapter 2: Why Economic Theory Can't Tell us What to Do about Policy

Much of what theory can teach us about the appropriate role for government policy can be gleaned by understanding what theory teaches about international trade. This is because international trade theory has largely used what are known as general equilibrium models to understand the effects of trade and domestic policies. General equilibrium models offer a comprehensive view of an economy because they account simultaneously for impacts in the output markets, labor markets and capital markets. Any policy affecting one market is shown to affect every other market both domestically and internationally. Although the focus of trade theory is primarily on trade of course, the general conclusions that derive from studying these models have a much broader applicability.

For many reasons, what to do about trade policy and policies concerning globalization are highly contentious. Many economists support a free trade policy because economic theory suggests that free trade can raise economic efficiency, raise average incomes, and can generate greater economic growth. Economists often say that *countries* will benefit from free trade, thereby positing that an improvement in national benefits, or national welfare, is a criterion for policy choice. This criterion is an application of the traditional philosophical principles of utilitarianism outlined by Jeremy Bentham and John Stuart Mill almost two centuries ago.¹ Economic theory and models implicitly accept this principle whenever they address the welfare effects of policies.

We might ask though, what do people mean when they say that a “country” benefits from trade? Afterall, *countries* can't feel a thing?! To economists it means

something very precise; a country benefits when the total real income gains to some people exceed the income losses to others; it means there is a Pareto improvement; it means that the *net* benefits, however measured, are positive; it means that *average* standard of living rises.ⁱⁱ What it doesn't mean is that every person in the country will benefit from free trade. This is an important point worth emphasizing because it is one of the reasons many people oppose free trade and globalization.

Rodrik (1997; p.3) points out that, "economists' standard approach to globalization is to emphasize the benefits of the free flow of goods, capital and ideas and to overlook the social tensions that may result." Indeed, although advocates of free trade will often acknowledge small, temporary adjustment costs, or even some social tensions, they will usually be quick to turn attention to the long-term benefits. The implications of these arguments seem to be that even if someone suffers a welfare loss, it will be temporary and will be made up with eventual gains in income to compensate. Thus, it is sometimes argued, if we allow enough time to pass, everyone will indeed benefit from trade. Unfortunately for free trade advocates though, whereas benefits from free trade will certainly occur for some people, perhaps even many people, economic theory is also very clear that some individuals will suffer income losses from free trade even in the long term. In other words, there is no assurance from theory that free trade is good for everyone, even eventually.

Economists who support free trade recognize these income redistribution effects. The economic solution to the redistribution "problem" is a proposal to provide *compensation*. Compensation is a transfer of income from those who gain to those who lose. If done right, compensation can assure that everyone in the country will realize

benefits from free trade. However, for compensation to work, the sum of the gains in the overall economy must exceed the sum of the losses. In other words, compensation can only be completely effective if there is an overall increase in economic efficiency.

So, the next reasonable question to ask is whether economic models and theories demonstrate that free trade will lead to increased economic efficiency, or in other words, to net national economic welfare gains. Unfortunately, here the answer is no! Some models do suggest this, but many others don't. The ones that *do* show efficiency improvements tend to be the ones that are simpler in structure; those that *don't* show improvements are the ones that incorporate greater real world complexities.

The notion that free trade may not be best for countries, may be surprising to some, but in fact is a standard result from international trade theory; one that has been known for a very long time. Indeed, Paul Samuelson, one of the founders of modern economics, described the notion that free trade is always good for countries as “a popular polemic untruth.” He argued that, “it is dead wrong about the necessary surplus of winnings over losings (when countries move to free trade).”ⁱⁱⁱ

The real world complexities that make free trade less likely to be beneficial overall are known as market imperfections and market distortions. These terms capture a wide variety of problems including pollution, unemployment, market externalities, information asymmetries, oligopoly markets, cultural influences, and many others things. In fact, it is these “problems” that many critics of trade liberalization claim economists do not take adequately into account.

The critics are both right and wrong. They are wrong because economics has incorporated many of these problems into their analyses and have derived some very

general, and somewhat unsettling results. The critics are right though too, because it turns out that their criticisms highlighting the problems of free trade are often valid. In particular, it has become straightforward to show that free trade may not raise the nation's welfare in the presence of most types of market imperfections.^{iv}

The purpose of this chapter is to explain the effects of trade liberalization by describing the results from a range of economic models and theories. The conclusions drawn at the end of the review are only those that are virtually indisputable, meaning any objective observer should accept these results as valid. But widespread acceptance can only be achieved because the results are very weak; in other words, what can be said with near certainty isn't very much. Nonetheless, the lessons that result, apply not only to the debate over trade policy, but also to the issue of policy choice more generally; the definitive statements that can be made about trade policy are the same statements that can be made about any policy decision.

Redistributive Effects of Trade Liberalization

Income redistribution effects arise in a variety of trade models. That redistribution occurs may not be too surprising, but the complexity of the redistribution is best understood by considering how and why it arises in different economic models.

In general, income redistribution occurs whenever prices change. Prices are the signals that other agents use to make their own decisions. When prices change it affects consumer demand, producer supply, intermediate input demand, wages, rents and many other things. It is the change in prices that causes some to win and some to lose.

In the simplest trade model we imagine there is only one product being exported from one country to another. For example, imagine that a trade liberalization agreement results in a reduction in the tariff on an imported product, say, shrimp. A tariff reduction reduces the price of shrimp in the importing country. Consumers of shrimp, including the food-processing companies who make shrimp-based products, restaurants who purchase shrimp, and final consumers who purchase raw shrimp for cooking in their own homes, all will pay less for shrimp and thus benefit from the lower prices. Domestic shrimp fisherman, facing a declining price of imported shrimp, will be forced by greater import competition to reduce their own prices or face a decrease in demand. Regardless of how they respond, domestic shrimp producers will suffer losses. The third effect of a tariff reduction is a decline in tariff revenue collected by the federal government.^v Less revenue will either require an increase in taxes to offset the decline or a decrease in spending resulting in the loss of some government services. Of course, the government could borrow more to make up for the shortfall but this would just mean pushing the effects off until later. In any case taxpayers or government spending beneficiaries either now or later will lose out.

When tariffs are reduced by large importers it will also cause an increase in the world price of shrimp.^{vi} Foreign consumers of shrimp will pay more for shrimp at the market, in restaurants and for other shrimp products and will lose out somewhat. Foreign producers of shrimp will benefit expand production and see profits rise.

Thus even the simplest model of trade presents a fairly complex redistribution in welfare around the world as a result of trade liberalization. Trade liberalization will cause income to be redistributed between at least five distinct groups in both the

importing and exporting country. Consumers of the products whose tariffs are reduced will gain in real income in the importing country, but consumers of those same products in the exporting countries will lose income. Owners of firms producing the liberalized products will lose real income in the importing country but will gain real income in the exporting countries. Finally, since government tariff revenues will most likely fall, recipients of government program benefit, or taxpayers, will lose real income.

Redistribution in More Complex Trade Models

The Heckscher-Ohlin-Samuelson, or Factor-Proportions, model assumes there are two countries (say, the US and Mexico) producing two distinct goods (say, clothing and autos) using two factors of production (say, labor and capital). The model assumes workers can work in either industry and will seek the highest wage. Since the model presumes a capitalist economy, someone is assumed to own the capital equipment and machinery, which earns that person a rent. Workers and capital owners use their income to purchase the food and clothing the two industries produce on the basis of their own desires. Firms decide how much food and clothing to produce, the prices to charge, and the wage rates and rental rates so that total supply of each good and factor equals total demand.^{vii}

The key assumptions of the model are two real world regularities; first, some industries use more capital per worker in production than other industries; and second, that some countries have more capital available for use in production per worker than other countries. For example, if autos production use more capital per worker than clothing production, then auto production is called capital intensive and clothing production labor intensive. Also, if the US has more capital per worker overall than

Mexico, the US is called capital abundant and Mexico labor abundant. One key result of this model is that in free trade the capital abundant country exports the capital intensive good while the labor abundant country exports the labor intensive good.

A very interesting result arises with respect to income distribution in this model. When two countries, like the US and Mexico above, open up to free trade, first prices change, and as a result, the real income of the country's abundant factor increases while the income of its scarce factor falls. In other words, free trade generates an increase in the income of capital owners in the US and a decrease in the income of workers. In Mexico the reverse occurs; workers incomes rise while capital owners incomes fall. Trade creates winners and losers, but this time the effect is based on the source of one's income. If someone earns wage income in the US, no matter in which industry he works, he will lose from free trade. If someone earns wage income in Mexico, he will lose from free trade. The reverse is true for capital owners in each country.

In another variation of this model (known as the specific factors model), economists have considered what would happen if an input factor cannot move between industries. This assumption is relevant because in many instances workers develop skills that are specific to the industry in which they work. For example, clothing workers know how to sew but cannot operate robotic auto assemblers. If the clothing industry lays off workers and the auto industry is hiring, these workers might not be employable in the expanding auto industry. Similarly, capital equipment is typically designed for one specific purpose. The robotic assembly equipment in the auto industry cannot be used effectively in the clothing industry. Impediments to factor mobility are real concerns for workers and capital owners threatened by import competition.

These models demonstrate that when trade is liberalized and a factor is specific to an industry, those factors stuck in the export industries, benefit, while the factors stuck, or specific, to the import-competing industries lose. Once again, there are winners and losers, however, the reason why individuals gain or lose changes based on the structure of the model.

Finally, economists recognize that the ability of factors to move across industries improves as time passes. For example, given sufficient time, a worker can learn new skills and find a job in a completely different industry; the seamstress can learn auto assembly skills. Also given enough time, capital equipment eventually depreciates and new investment can be used to purchase newer types of equipment, possibly in a completely different industry. However, because the mobility of a factor changes over time, who gains and loses will also vary with time.

Economic models suggest then that in the short run, before labor and capital can adjust easily to other industries, trade liberalization will harm all income earners in the import industries, and benefit all income earners in the export industry. Eventually though, after factors adjust to new sectors in the long run, the country's abundant factor will gain while its relatively scarce factor will lose. This result implies that some individuals will gain in the short run and lose in the long run. Other will lose in the short run and gain in the long run.

General Implications

Economists have developed even more complex models of international trade including some with multiple goods, multiple factors and multiple countries. However, regardless of the complexity of the model and regardless of which features are included

or excluded, there is one basic result that (almost)^{viii} all models of international trade display: trade liberalization causes income redistribution. This occurs because free trade causes the prices of many goods and services to change; some people benefit while others lose from free trade.

Because income redistribution occurs whenever prices change, this same conclusion applies whether trade is liberalized or protected. It doesn't matter what new set of policies is put into place, any policy change, whatsoever, will cause prices to change and will also result in winners and losers. Thus, if countries lower export subsidies, or implement a carbon tax, or set new health and safety standards, or reduce the income tax, prices of some goods or services will change and this will cause a redistribution of income with some people benefiting and others losing.

In fact, even if there are no policy changes at all, other natural changes like the depletion of resource stocks, technological changes, changes in consumer preferences and changes in fiscal and monetary policies all cause prices to change. This means that even when a country does almost nothing, there will be continual redistributions of income.

The income redistribution result is shown in simple trade models and becomes even more prominent in more complex models. There should be little doubt that this same result carries over to the real world.

As mentioned earlier, the solution to redistribution is to provide compensation to the unlucky losers caused by the policy change, paid for out of the extra earnings accruing to the winners. However, to make redistribution completely effective so that no one loses, the net benefits from the policy change must be positive. Or in other words the

policy must cause an increase in national welfare. We explore this issue with respect to globalization policy in the next section.

National Welfare Effects of Trade Liberalization

Despite the redistribution, most advocates of free trade and globalization believe that, **overall**, trade liberalization will be good for countries. That belief derives from a substantial literature showing that trade can raise economic efficiency. Economists use the term “efficiency” to describe an optimal allocation of resources in production and consumption. More specifically, “Pareto efficiency” refers to an economic outcome in which it is *impossible* to raise the well being of one person without simultaneously reducing the welfare of someone else. If it were possible to make one or several people better off without harming anyone else, then that situation is NOT efficient.

Comparative Advantage and Efficiency Improvements with Free Trade

In general, economic efficiency improves with free trade when countries specialize, or produce more, of the goods and services in which they have a comparative advantage. A comparative advantage, when defined in its most general form, arises when a country enjoys a price advantage (i.e., a lower price) in a particular good or service compared to another country. Different economic models show that a price advantage can arise because of cross-country differences in technology, because countries have different proportions of capital and labor, or because of differences in product demands.

Comparative Advantage via Differences in Technology

In the Ricardian model, countries are assumed to differ only in their productive capacities. It was in this model that David Ricardo first formally demonstrated the

principle of comparative advantage. An important conclusion from the Ricardian model is that advantages from trade do not disappear just because another country has lower wages, nor do they disappear just because another country is more productive in all industries. Ricardo demonstrated that by specializing in producing the products that one has a comparative advantage, the world can expand total world output with the same quantity of resources. The expansion of output *is* the realization of increased economic efficiency that economists always talk about. Finally, given the expanded output, international trade can assure that all countries in the model gain from the surplus that's created. In other words, without raising the quantity of resources, the world economy would be able to produce greater output and generate higher living standards for everyone. Economic efficiency will rise both internationally and nationally. This is how all nations can benefit from free trade.

Comparative Advantage via Differences in Resources

The Heckscher-Ohlin-Samuelson, also known as the Factor Proportions model, assumes differences in resources between countries and comparative advantage is determined by differences in factor proportions. The capital abundant country has a comparative advantage in the capital-intensive good and the labor abundant country has it in the labor-intensive good.

In the model, world production is maximized when the capital-abundant country produces relatively more of the capital-intensive good and exports it, while the labor abundant country produces more of the labor-intensive good and exports that. Although as discussed earlier, a movement to free trade redistributes income from the countries' scarce factors to its abundant factors, the net national welfare effect is positive. In other

words, the sum of the benefits to the abundant factor is larger than the sum of the losses to the scarce factor. Thus, the model displays an improvement in overall economic efficiency with free trade, and with appropriate compensation provided, all people in all countries could conceivably be made better off.

Advantages via Economies of Scale

More recent models of trade focus attention on economies of scale. Economies of scale, also called increasing returns to scale, occur when a larger production volume enables cheaper production. For example, in heavy industries, such as chemical or steel production, the cost of producing each unit of output falls substantially if large volumes are produced at one place and time. Clearly in these cases it makes sense to produce at a very large scale so as to reduce the production costs per unit.

At the international level, the presence of economies of scale in production has been identified as a potential source of benefits from free trade. In this case, we would not say that trade is based on comparative advantage because it does not rely on differences between countries.

As an example, suppose two countries produce two goods, steel and chemicals, which exhibit economies of scale. One possible production arrangement is for both countries to close themselves off from trade and produce the two goods for themselves. In contrast, if one country were to specialize in steel production and the other in chemical production, and if each industry supplied its product to the entire world, rather than just one country, then the scale of production would be higher in these industries and the cost of producing each good lower (due to economies of scale). Thus, once again, because of

international trade economic efficiency can be improved and the overall welfare of both nations increased.

Efficiency and the Division of Labor

In all cases efficiency improvements derive from one fundamental principle; the division of labor. From at least the time of Plato people have recognized that when individuals concentrate their productive effort along one production task, it becomes possible to significantly increase output. Adam Smith began his famous treatise, *The Wealth of Nations* with a detailed explanation of the division of labor.^{ix} Using an example of a pin factory, he explained how specialization in particular tasks within a production process would enable each person to become more efficient in that task, and when combined with others performing other tasks, would result in a substantial increase in the output of pins.

It is worth recognizing that the economic efficiency improvements from international trade, as depicted in all models of trade, are demonstrating that *additional* gains can be realized by extending the division of labor internationally. If individuals can reap benefits domestically through specialization and trade, then countries can extend these gains to its fullest potential via international specialization in one's comparative advantage goods followed by trade. To deny that international trade can be beneficial is to deny that the division of labor extends internationally. This seems highly unlikely. However, what one could argue is that other complications in the world may cause additional inefficiencies that overwhelm the positive effects caused by extending the division of labor. For this reason we take up the issue of market imperfections next.

Market Imperfections and Distortions

In all of the basic trade models, certain real world complications, known as market imperfections or market distortions, are assumed away. When these imperfections are incorporated into the models, the traditional result that countries will gain from trade due to improvements in economic efficiency is undermined.

The term *market imperfection* is used to describe these situations because each represents a deviation away from the standard assumptions of perfect competition, upon which many economic models are based. Perfectly competitive models include numerous assumptions. Some of them are made because it is believed they describe an important aspect of the world. However, many other assumptions are made to simplify the analysis. In many ways, the world described by the model of perfect competition is indeed perfect. It's a kind of "economic nirvana;" an idealistic outcome that we should never expect to arise naturally in the world, nor should we ever expect to attain it – except perhaps in a future life!^x

When economists build models of the world that incorporate imperfect competition they often describe these cases as *second-best*. When things are imperfect, we are in a second-best world. On the other hand, the state of economic nirvana that arises in perfect competition is often referred to as *first-best*.

Next I'll describe several models with market imperfections and discuss the implications for free trade for each of these. Afterwards, we'll consider the implications for a world that is awash in imperfections, as we may well expect to see in the real world. As economists often cryptically proclaim, we live in a second-best world.

International Trade by Large Countries

The first hint students of international economics get that free trade is not always best for a country happens when they learn about optimal tariffs in a large country case. Countries are classified as large or small on the basis of whether their trade policies can influence the price of a product in international markets. Thus, when a “large” country places a tariff on an imported good, the price of that product in the rest of the world is pushed downward because of lower international demand. In contrast, a small country’s import tariff would have no effect upon the price in the world market. Largeness also applies on the export side. If a large country introduces an export subsidy on a product, the price of the product in the world market is pushed down, this time because of increased international supply. A small country’s export subsidy, however, has no effect upon the world price.

What students learn in an international trade class is that a relatively small tariff implemented by a *large* importing country *raises* national welfare; in other words economic efficiency improves with protection. The same positive effect on welfare is possible on the export side when a large country implements an export tax. In contrast, if any tariff or export tax is implemented by a small country, national welfare falls.

To see that it is not just a theoretical curiosity, one need only look to the welfare benefits achieved by OPEC countries during the oil embargo era of the 1970s. When oil supplies to the world market were temporarily curtailed, the world price of oil rose threefold and revenues streamed into OPEC government coffers. This is the same effect as described in models of a large country implementing an export tax. An export tax, or an export quantity restraint, by a large country raises world prices and result in a flood of

revenues to the government. The effect was even more profound for oil because oil demand is very inelastic in the short run^{xi} due to a lack of cheap substitutes. From this, it is not hard to imagine that welfare improving import tariffs are also a very real phenomenon.

The reason free trade is not optimal in the large country case is because there is an apparent market imperfection. An imperfection exists here because a nation's ability to influence the world price gives it the same kind of ability as monopoly firms in a domestic market who are able to affect the market price. These price-influencing capabilities are assumed away in perfect competition. To get a truly perfectly competitive setting in international trade requires each country in the world to be too small to be able to influence world prices. This is what we assume in the small country scenario. However, when a country is large, it can use its international market power to influence the price to its advantage.

Surely the US, EU, Japan and many other countries with large economies are also large importers and exporters of many products in international markets. Thus, this is a real feature of the world economy, not just a theoretical curiosity. The implication is that when countries have the "largeness imperfection," trade liberalization can actually lower national welfare. Or, in other words, in this setting free trade is not best.

Externalities

One very important type of market imperfection is known as an externality. An externality exists whenever activity in one market has an external effect on firms or individuals in another market, in a way that is not captured by (i.e., external to) the original market itself. Externalities arise in production processes as when chemical

production causes air and water pollution, or when research and development activities spillover to create innovations in other industries. Externalities also arise in consumption as when driving a private auto causes local air pollution or when cigarette consumption has social health costs. Externalities can be either positive or negative in their effects. Pollution causes negative externality effects, whereas landscaping of a corporate headquarters has a positive externality effect.

Infant Industry

A classic argument in support of protection is the infant industry argument. This argument goes back to the time of Adam Smith and before. It is commonly invoked today by less developed countries to support their significantly higher trade barriers.^{xii} It is also another case in which market imperfections in the form of an externality plays a role.

The argument suggests that new industries (infants) in underdeveloped countries are unable to compete head-to-head with firms in more developed countries since they lack the experience and knowledge necessary to reduce production costs. However, if these infant industries are given temporary protection, say in the form of import tariffs, then this will provide time for these firms to learn the skills and knowledge to reduce costs. Eventually, after adequate nurturing while young, these same firms will grow up and be able to compete as equals with the mature firms in the international market.

The market imperfection in the infant industry case is a positive production externality. Thru production of a product, the firms in the infant industry are expected to learn how to reduce production costs and become more efficient over time. Economists

refer to this as “learning by doing.” The external effects of learning are experienced only later in time, perhaps many years after the initial protection is first provided.

If capital markets worked perfectly, then infant industries could easily borrow money in the early years to overcome early production losses, which would then be recovered after the long-term efficiency effects are realized. However, since capital markets rarely work this effectively, the external effects are incompletely captured by the market mechanism.

The market may also not capture the learning effects if they spillover into other industries. For example, if part of the learning process involves new cost-reducing management techniques and if the managers who implement these measures eventually take jobs in other industries, then these other industries may also achieve similar cost-savings. Since these efficiency effects occur external to the industries that first created them, they cannot be captured by the market mechanism.

For these reasons, non-intervention in the presence of infant industries is a second-best outcome. It also means if the long-term benefits of production outweigh the early costs of protection, which indeed they might, then protection can improve overall welfare for a country. In contrast, if a country with potential infant industries reduce, or eliminate, trade barriers, then free trade could reduce long-term economic efficiency of a country in this situation. In other words, trade liberalization, or free trade, may reduce the national welfare in the presence of this type of market imperfection.

Pollution

A classic example of a negative externality is pollution. Water, air, soil and aquifer pollution is caused in numerous production processes whenever active

intervention to control that pollution is not undertaken. Examples include air pollution caused by traditional smokestack industries like steel, chemicals and power generation; water and soil pollution caused by fertilizer and pesticide use in agriculture; and water and aquifer pollution caused by extractive mining industries. Pollution is also caused in some consumption activities; most notably the air pollution caused by household use of automobiles and water pollution in locations without sewage treatment facilities.

Pollution can have serious detrimental effects upon others. Industrial plants have sometimes dumped chemical waste into the ocean causing serious declines in the production of the nearby fishing industry as well as health problems among consumers of seafood. Air pollution causes breathing problems especially for people with respiratory ailments. Water pollution can damage the recreation and fishing industries downstream. Finally, aquifer pollution can affect the safety of public water sources and lead to serious long-term health consequences among consumers.

Economic theory shows that in the presence of production externalities, firms tend to over- or under-produce relative to what's best for society overall. When consumption externalities are present, consumers over- or under-consume relative to what's best. Theory also shows that government intervention with appropriately chosen policies can correct the over or under production and consumption and result in an improvement in the nation's welfare. International trade theory has shown, in turn, that when these externalities arise among *traded* goods and services, *trade* policies can often be applied to improve the nation's welfare.

For example, consider a country that imports crude oil. The oil is refined into gasoline and used by consumers to power their automobiles. In the process of both

production and consumption, air pollution is created in the community. The pollution has negative health effects especially upon those individuals with respiratory ailments. Thus, the use of crude oil exhibits a negative production externality in the refining process and a negative consumption externality when gasoline is used in automobiles. If a free market prevails, refineries will overproduce gasoline, and households will overconsume gasoline relative to what is best for the nation overall.

Trade theory shows that government intervention in the form of an import tariff on crude oil would raise the domestic price of gasoline, reduce gasoline refinery activity and consumption and reduce the amount of pollution. Lower pollution would generate positive health effects in the community. Thus, a protectionist trade policy, if set at the appropriate level, will raise national welfare if the positive health effects outweigh the standard economic efficiency losses of protection. The reverse implication is true too; free trade, or trade liberalization, may lower national welfare in the presence of this externality. Free trade may not be the best policy in the presence of a negative production and consumption externality.

Cultural Externality Effects

Concerns about free trade and global markets have more recently involved the issue of culture. Most of the time, economists portray issues like culture as falling outside the realm of economic analysis. However, culture can be easily introduced as an externality effect.

For example, many countries are especially fearful that American music, films and TV programs will push out local offerings and lead to the Americanization of their culture. For this reason, many countries have laws that require certain minimum levels of

domestic programming for radio and TV broadcasts. Many countries also restrict the percentage of screenings of foreign films. From an economic theory perspective, this is another example of a market imperfection in the form of an externality.

These restrictions can be beneficial for a country because the cultural effects of imported products can be viewed as a negative consumption externality. In this case maintenance of cultural traditions embodied in music, film and TV programming, benefits everyone in the community through the promotion of certain cultural understandings. Since each person's individual consumption is too small to have a noticeable effect on the community welfare, there will be a tendency to underconsume relative to what's best for society from a cultural perspective.

For these reasons, domestic regulations can raise the level of consumption of cultural goods, correct for the under-consumption, and if the cultural benefits outweigh the standard economic efficiency losses due to lower imports, then the national welfare can be increased with protection. As before, the reverse is also true; if cultural restrictions are eliminated as might be agreed to in a trade liberalization measure, the effect may be a reduction in the nation's welfare. Trade liberalization can make a country worse off in the presence of a cultural externality. Thus, it is conceivable that Europe might reduce its national welfare if it eliminated domestic content requirements on television and movie screenings.

Public Goods

Perhaps the most common economic argument in support of government intervention is the need to provide public goods. Public goods, of which national defense is the most notable example, have two defining characteristics: non-excludability

and non-rivalry. Economists have long known that a free market is likely to undersupply public goods, mostly because some beneficiaries are likely to *free ride* on the contributions of others. To solve this undersupply problem, governments can collect taxes and use the money to supply an adequate national defense. In this way government intervention can raise the national welfare of a country.

With the insight of the effects of market imperfections, we can now recognize that if government intervention can raise national welfare in the presence of public goods then public goods must represent a type of market imperfection. Indeed, in a pure perfectly competitive market model, we assume away public goods, imagining they do not exist. When public goods do exist, the inefficiencies that arise when a free market tries to provide them can be reduced with appropriate government intervention.

Indeed, from an economics perspective, the primary rationale for most public policies, is simply the correction of market imperfections and distortions. Regulatory policy to reduce pollution, taxes on cigarette and alcohol purchases, antitrust enforcement, unemployment compensation, the provision of a national defense and income redistribution policies can all be justified by noting that they can correct for market imperfections and result in an improvement of a nation's overall welfare. As discussed above, in many instances trade policies can be applied in a similar way. When goods cross borders, trade policies can effectively correct for these same imperfections and result in an improvement in national welfare.

With perfect competition there are none of these worries or concerns. There are no public goods, no unemployment, no externalities of any kind. As a result, the very best domestic government policy is no policy at all. *Laissez-faire* is the term used to

describe the total avoidance of all government regulatory, tax and subsidy policies. When laissez faire is applied to international trade, it implies free trade.

Policy Imposed Distortions

But what if an economy were perfectly competitive in all respects, but then some policy is added, like a tax on cigarettes, or a production subsidy, or an import tariff? Economic theory shows that for any such policy, national welfare will fall. Government policies in the form of regulations or taxes and subsidies change prices and thereby distorts the allocation of resources causing a loss in economic efficiency. Although previous examples have shown that sometimes efficiency is improved with government policy, that only occurs when it corrects for the negative effects caused by an imperfection. In the absence of an imperfection, *trade policy is the imperfection* ... it is a distortion. Economists sometimes call government taxes, subsidies and regulations *policy-imposed distortions* because the distortion is caused by government action.

Once we recognize that government policy is a distortion in its own right, we can also realize something else very important; that the correction, or improvement, of one imperfection is actually achieved by implementing another imperfection or distortion on top of it. For example, consider the earlier example where a government places an import tariff on crude oil that in turn reduces the use of gasoline and reduces air pollution in its cities. In this case the government is placing a policy-imposed distortion or imperfection (the import tariff) on top of another imperfection (a negative externality). The tariff has two impacts: it corrects the negative externality, but at the same time it reduces efficiency. If the economic efficiency cost of the import tariff, is less than the economic efficiency benefit that results from the reduction in pollution, then the policy

improves the national welfare. That means, somewhat paradoxically, two distortions can be better than one.

Indeed, there are only two ways to make the economy more efficient and move it closer to economic nirvana. The first method is to eliminate the imperfection or distortion directly. For example, if a country really were a small perfectly competitive economy with protective tariffs in place and with no other market imperfections present, then efficiency is best improved by eliminating the tariffs; simply move to free trade. However, if the imperfections are there naturally, as is the case with most externalities, then one can't simply eliminate them. Instead, the only way to improve economic efficiency is to impose an additional, appropriately chosen, policy-imposed distortion.

I say *appropriately chosen* because it is necessary that the corrective distortion be set at the right level. It is easy to show in the pollution case, for example, that if the tariff were set too high, then the efficiency losses caused by the tariff may overwhelm the benefits caused by reduced pollution. Thus, the tariff must be set at the proper level to generate the positive efficiency effects.

Other externality effects

There are many other examples of market imperfections or distortions that we could explore including the presence of monopolies or oligopolies, the problem of imperfect information, and the non-clearing of markets, which arises with unemployment. However, these examples are sufficient to demonstrate the main point: namely that in the presence of a market imperfection it is possible for a government to intervene in a calculable way to improve national economic efficiency and raise the

average well-being of its residents. The common method to correct for these problems is the use of government taxes, transfers and domestic regulations.

Theory of the Second-Best

In studying the effects of various types of market imperfections economists derived an important complementary theory called the “theory of the second-best.” Second-best theory was first formulated by Robert Lipsey and Kelvin Lancaster in the 1950s.^{xiii} A key finding of this theory was to show that if a market imperfection were present, the addition of another distortion could actually improve the outcome for a country.

Second-best theory also demonstrates another critically important proposition: namely the presence of one imperfection or distortion in an otherwise perfectly competitive economy, immediately changes the optimal policy response everywhere else in the system. This is a very significant result.

For example, consider a small economy importing and exporting many different products with no imperfections present or distortions in place. In this case we know that the optimal policy is zero tariffs and zero export taxes or subsidies. In other words, free trade is optimal in every market. However, suppose the government, contrary to the policy advice of its economic advisors, imposes a tariff on imports of one good. One might conclude that this not so bad since the government is choosing free trade for every other import and export good and perhaps this is true. However, according to the theory of the second-best, the optimal policy for every other good and service is no longer free trade. Once a distortion is placed into the system, it will upset the optimality conditions for every other substitutable good or service in the economy. With one distortion present,

the optimal trade policy for other goods and services may be a small tariff, export tax or an export subsidy; we can no longer assume that free trade everywhere else is best. This result has profound implications for our main question: namely whether free trade is beneficial for a country. It is also one reason why the theory of the second-best is one of the most important results in all of economics.

What is the Imperfection?

All of the previous examples, and many more, in which government intervention raises economic efficiency and national or international welfare can always be interpreted as a correction of a market imperfection through the use of a policy-imposed distortion. This is one reason why there are very few interesting new welfare findings in international trade theory. For example in recent years press reports have begun to suggest that the case for free trade has been weakened by new trade theories. Back in the 1980s, theoretical work on strategic trade policies showed that government subsidy or taxes could be used to shift profits from foreign firms and raise a nation's welfare. It seemed, free trade was no longer the best policy. In 2004 when Paul Samuelson published an article suggesting that outsourcing could make a country worse off, once again the popular press declared that the foundations of free trade were weaker than previously believed.^{xiv}

To trade economists, these results were not surprising or new. Once you recognize that trade policy can correct for innumerable market imperfections, any new model or theory that demonstrates that free trade is not best should inspire only one question: what is the imperfection in the model?

In the case of a large importing country, the imperfection is monopsony power in trade. Similarly, in the case of a tariff on crude oil reducing pollution, the imperfection is a negative externality. In the case of an infant industry, the imperfection is a positive production externality. These are just a few examples; there are many more imperfections that exist. And for each imperfection, it is highly likely that an appropriately chosen trade policy can raise national welfare.

Reducing Distortions

It is logically tempting to think that if a distortion causes a reduction in economic efficiency, then reducing that distortion will improve efficiency. This proposition is true only when there is just one distortion present. If there are multiple distortions or imperfections present simultaneously, then the theory of the second-best shows that the proposition is no longer generally valid. In a sense we have already seen this result in reverse. In the previous section we noted that one imperfection could be corrected to an extent by appropriately implementing another policy distortion. Since adding a distortion or imperfection *can* be better than just one, it must mean that subtracting one distortion or imperfection *can* be worse than having two. Moving from two distortions to just one can arise only by reducing or eliminating an existing one. There is a classic example of this phenomenon in the trade literature.

Free Trade Area Formation

Free trade areas are an excellent example in the trade literature that displays surprising results because of the presence of multiple distortions. It has been known for a long time that when a country enters a free trade area with another and lowers its tariffs

to zero, it is possible for the country to make itself worse off.^{xv} In other words, despite moving towards free trade, a step that in many circumstances improves economic efficiency, instead it is possible, though not assured, that economic efficiency declines. To economists this is the classic case of *trade diversion*.

This result, namely that an FTA can reduce economic efficiency and make a country worse off, can be interpreted in the context of the theory of the second best. When a country establishes an FTA, it is indeed a step in the direction of the economic nirvana of free trade, however, it is only a partial step. Since the FTA partners continue to maintain tariffs against other countries, some market distortions remain in place. When a tariff is removed only against one country, the liberalization can have the surprising effect of making the remaining distortions more distorting.

Effects with Multiple Imperfections

Trade diversion is the most notable example in which reducing a distortion can lead to a reduction in a nation's welfare. However, what's true in this specific case, is also true more generally. Whenever there is more than one imperfection or distortion in an economic system, reduction or elimination of one distortion need not result in an improvement in economic efficiency and national welfare. It might, but it just as easily might not. The most important implication of this result is what it says about a movement to free trade.

Trade liberalization represents a *reduction* in some policy-imposed distortions, whereas free trade is the *elimination* of some policy-imposed distortions. If either of these actions occurs while other market imperfections or distortions are in place, then there is no guarantee, from theory, that economic efficiency and national welfare will

improve. It may rise, but it just as easily may not. Below we'll consider what we would need to know to determine if the effect of trade liberalization is positive or negative in a real world setting. Before that we consider an alternative justification for free trade that doesn't depend on this knowledge.

Real World Implications

Almost all economic analysis of policy options in a model with market imperfections assumes that there is just one imperfection to be corrected. In those circumstances, it is fairly straightforward to determine the optimal policy and to compare the best trade policy with the best domestic policy. However, things become increasingly complicated if there are numerous imperfections and distortions at work simultaneously. Surely, this is the situation most reflective of the real world.

In the real world, some industries create positive externalities, others negative externalities. Some firms have market power and can affect their market price. Some products are differentiated within an industry. Some consumption activities cause positive externality effects; others cause negative effects; others still cause both positive and negative effects. Unemployment is more likely to develop in some labor markets and is less likely in other markets. Products display different degrees of public good characteristics. Participants in many markets must deal with imperfect and asymmetric information. Finally, some countries have monopoly and monopsony power in trade.

These imperfections not only exist, but they vary in strength and importance across industries and across countries. In some countries, labor markets are more flexible than in others. Some economies have greater problems with environmental externalities than other countries, partially because of the age of the capital stock and the choice of

fuel. Information problems vary from country to country. Some countries have bona fide infant industries; others do not. The extent of monopolization varies widely and is always changing, especially as some countries privatize state-owned enterprises.

In addition, every country implements a complex mix of domestic tax and regulatory policies, all of which represent market distortions relative to the pure state of economic nirvana. Each one of these distortions affects supplies and demands and thereby affects the prices faced by producers and consumers of virtually every good sold in an economy. Anytime prices change, it affects the production and consumption decisions of economic agents, which in turn, interact with the market imperfections that are present, for better and worse. These price effects will also ripple through the economy affecting intermediate goods industries, labor and capital markets and consumption markets for substitutable goods.

Simply imagine any country and think about all the policies that government has put into place. There are social security taxes, income and property taxes, profit and sales taxes. There are agricultural support programs, subsidy programs for low-income households, and food stamp programs. There are programs for health insurance and medical treatment, unemployment compensation schemes. There are health and safety regulations, anti-competition policies, and environmental regulations. In addition, we shouldn't forget about the operations of the country's legal system and its security systems including police and fire protection, national guard operations and the national military defense.

Of course, for each of these domestic policies there is a rationale; the policy was put into place for a reason. More than likely, the reason will involve the correction of a

market problem; some type of market imperfection. If a country is lucky, the collection of policies in place will have moved that country closer to its optimum, its highest level of national welfare. But how would we know if this is the case?

The Theory of the Second-Best and Ethanol Subsidies.

The theory of the second best teaches a very important lesson that's pertinent here; every policy-imposed distortion and every market imperfection affects the optimal policy choice everywhere else in the system. Consider an illustrative example; suppose a country implements a production subsidy on ethanol. The stated rationale for the subsidy may be to stimulate cleaner fuel sources, to mitigate concerns about global warming and to reduce dependence on foreign oil. These rationales represent corrections of market imperfections; one correcting for a negative environmental externality, another promoting the public good provision of national security. However, we can speculate about the effects of this policy to see what ought to be taken into account to choose the correct subsidy level.

First, the subsidy to ethanol production will increase ethanol supply forcing the price down relative to gasoline and lead to substitution of ethanol for gasoline by consumers. This may lower overall carbon emissions and have a long-term positive influence on the global temperature. The subsidy will also reduce demand for gasoline and the imports of crude oil from the rest of the world. However, the ethanol subsidy may also increase the demand for corn, an important input in ethanol production. This will raise the price of corn and inspire an increase in corn production. Greater corn production may stimulate greater demand for fertilizer and, because of its use, cause

greater water pollution in some areas. Higher corn prices may also raise the price of beef and pork thereby encouraging people to substitute more vegetables in their diet. This may have a positive health effect by lowering average cholesterol levels in the population. Reduced demand for beef might also lead to unemployment in the beef industry. For those workers with specialized skills, they may be unemployed for a long period of time leading to higher unemployment compensation expenditures. Despite causing mixed effects on food output, if the overall effect of the subsidies were to raise agricultural production, that could increase the security of the nation in the event of a major war. However, greater corn production might be undertaken largely by conglomerate agribusinesses forcing a more rapid decline of the family farms and a subsequent loss of a national cultural heritage.

These are just a small set of effects one policy might cause. Not only does a policy affect the activity it is directed towards, but it also affects every related activity. Changes in these related activities, in turn affect an even larger set of activities related to these related activities, ad infinitum. To the extent that the related activities and sub-activities influence different sorts of market imperfections or distortions, it will also change the effectiveness of every other policy that was put into place to correct them. This means that to assess the appropriateness – that is, the optimality - of any one policy requires knowledge about the level and effect of every other policy and imperfection that might be influenced either directly or indirectly.

Stated in terms of policy choice: if you change one policy in a complex interconnected economy, it will change the optimal level of every other policy in the system. The only way to identify the optimal policy mix is to accurately specify the

entire economic system and solve for the best policies. Stated in terms of effects: if you change one policy in a complex interconnected economy, it will cause positive effects to occur due to some of the imperfections and distortions and negative effects to occur due to other imperfections and distortions. The only way to know if a particular policy will have net positive or negative effects is to accurately specify the entire economic system with all of its market imperfections and then calculate the effects of the policy change.

Economists generally know about this result, but it is very uncommon for anyone to emphasize the problem. In part that's because these results undermine just about every policy prescription ever made. To advertise these results loudly reduces the reliability of many of the policy claims by the economics profession. Further, without some viable alternative what would be the point of advertising this? Thus instead, recognition of these effects is more likely to be found only in footnotes or mentioned briefly in a conclusion of a policy paper. Lal (2006; p.55) reveals the quiet admission of this problem by quoting a passage from a paper by B Greenwald and Nobel Laureate Joseph Stiglitz. Greenwald and Stiglitz write:

“We have considered relatively simple models, in which there is usually a single distortion... Though the basic qualitative proposition, that markets are constrained Pareto efficient, would obviously remain in a more general formulation, the simplicity of the policy prescriptions would disappear. Does this make our analysis of little policy relevance? The same objection can, of course, be raised against standard optimal tax theory. (Some critics might say, so much the worse for both)” [Quoted from Greenwald and Stiglitz (1986; p. 258)]

The term “constrained Pareto efficient” is the same as saying there are market imperfections. The rest suggests why critics can argue that such simple analysis doesn't

say very much about policy choice in the real world. Lal concludes with a pithy remark, “Quite!”

The real problem with an optimal policy choice that will correct for the vast array of market imperfections that are scattered uniquely through every economy, is that it is unsolvable from a theoretical perspective because of the enormous complexity. It is true that governments do engage in some degree of cost-benefit analysis to decide whether to introduce new policies. It is also true that more and more issues of potential concern are being incorporated when conducting these evaluations. For example, in the US many proposed government projects are required to conduct an environmental impact assessment before the policy is implemented. In this way, the potentially negative externality effects can be incorporated into the decision process. While it is true that this is a step in the direction of completeness, at the same time, it masks the fact that numerous other market imperfection impacts are never even considered in these same studies. Also rarely, would a government decide to adjust the level of all other policies whenever a new policy is being implemented (as would be necessary if we were truly optimizing).

The Problem of Chaos

One way to mitigate this problem of optimal policy choice is to argue that even though every change in the economic system affects everything else in the economy, the magnitude of the effects will vary in a systematic way. For example, the effects of an ethanol subsidy will have its largest effect in the ethanol market itself. It will have a pretty big effect in the corn market since corn is an important input. The effect in the vegetable and beef markets, being one more industry removed, should be affected to a

somewhat smaller degree. The effect on health because of changes in cholesterol consumption or the effect on pollution due to increased fertilizer usage will be even smaller because these effects will be separated to the third degree. In other words the effects beyond the initial market are likely to dampen with each degree of separation from the original policy. Thus, if the effects of all policies follow this systematic pattern of dampening the farther removed an industry is from the initial distortion, then although we might need to consider the implications of a policy change across several levels of effects, we don't really need to consider them across the entirety of the economy. While the problem may still be quite complicated, with the "dampening effects" assumption it is now much less complicated than originally suggested.

The counterargument to this dampening story is chaos theory. Chaos theory has been popularly represented by the following metaphor: one beat of a butterfly's wings in Texas may be sufficient to cause a tornado to form in Florida a week later. I suspect this example leaves many readers puzzled. Is that really possible, one may wonder? The answer is, we don't know; the story is simply an illustration of something that is seen in a mathematical system.

The mathematics of chaos isn't really that difficult. Researchers have discovered that some seemingly simple mathematical relationships display chaotic behavior. Chaotic behavior occurs whenever a very small change in initial conditions (like the flap of a butterfly's wings) can have a dramatically different effect upon the outcome (the tornado). One example of chaos in a mathematical system shows up in the Mandelbrot set. The Mandelbrot set plots different colors depending on whether a simple series converges to a real number or whether the series diverges to infinity (which is a very

different outcome). The discovery of chaos demonstrated that if you moved a parameter input in the series by a very small amount (from something like 5.00001 to 5.00002) the value of the summation, the outcome, can change enormously.

A globalization example of chaos might be something like ethanol subsidies. Suppose an ethanol subsidy, by encouraging a series of impacts that propagates through the global economy over time, saves the world from the disastrous effects of global warming. The oceans don't rise 50 meters, hurricanes don't grow to magnitude 15 and the summer temperature on the north pole does not rise to 40°C. Suppose without the subsidy the world does experience these terrible effects. In this case, avoiding a small change in policy (the subsidy) pushes the human race to extinction (chaotic effect). Of course, this is a fanciful, make-believe example. I wouldn't expect an ethanol subsidy to matter very much in the long run; but then, that's because I don't know whether a chaotic effect exists in this situation or not.

It's true that chaos theory doesn't prove anything about the way the world works. Instead, chaos theory should simply raise suspicions of seemingly reasonable assumptions: such as the expectation that the effects of policy changes in an economy will have a dampening effect as the degree of separation from the policy increases. If chaos is present in some real world situations, it would mean that small changes in policy affecting one market could have very large impacts somewhere else. Once again we can never know what the effects of a policy change will be unless we can accurately specify the entire economic system with all of its market imperfections and calculate the effects of the policy change.

Conclusion

In a nutshell, the definitive lessons about trade policy that we learn from economic theory are: A) trade liberalization will cause a complex redistribution of income with some individuals realizing welfare improvements but others realizing welfare losses; B) due to the complexity of the real world, it will be difficult to identify all but the most immediate effects of trade liberalization; C) due to the presence of numerous market imperfections and distortions it is impossible to determine whether trade liberalization will induce net national benefits or net national losses; and D) after trade liberalization, because of the complexity of the redistributive effects and the inability to know if the net welfare benefits are positive, it is impossible to design a compensation scheme to assure that everyone benefits from trade liberalization.

Thus, the only thing we can be absolutely sure of, on the basis of economic theory, is that trade liberalization will cause some to benefit economically and others to lose. This result is virtually indisputable; it is difficult to imagine anyone arguing convincingly otherwise. The inability to identify the winners and losers may not be obvious to some observers since every economic model *does* identify who gains and who loses. However, one must remember that the real world encompasses all of these individual model effects simultaneously. Although general equilibrium models display a wide array of effects as they propagate through labor, capital and goods markets domestically and internationally, these models never come close to capturing the complexity of the real world. Each model gives us a glimpse of some of the effects, but they do not enable us to pinpoint the detailed outcomes with any reliability.

The argument that free trade may not raise overall national welfare should also be well known, at least in the economics profession, but here too the results comes mostly by imagining a real world that is much more complex than any single model. In a well-specified model it is usually possible to pinpoint precisely which policy option is best. However, some models show free trade is best, while others show that government policy interventions are best. Thus since the world is comprised of features displayed in all of these models, an objective observer should recognize that in reality the effects of a free trade policy are simply unknowable. Finally, the inability to compensate may also not be so obvious to many people since many economists do support compensation as a necessary component of trade liberalization actions. The standard example is the use of trade adjustment assistance to aid workers who lose their jobs because of a free trade agreement. However, it should be obvious even to supporters of compensation plans, that these actions probably do little more than quiet the most vocal adversaries of free trade agreements and have no chance of compensating the vast numbers who lose without knowing why.

Of course, because there will always be gains and losses from any policy change, those who want to believe that free trade is the best policy for a nation will have plenty of positive impacts to point to that can support that view, as long as they ignore the many negative effects, or discount their importance in some way. Thus if someone suggests that trade liberalization is beneficial for a country because it will generate efficiency improvements, or if someone says that protection is harmful for a country because it will reduce the incentive to innovate he is right. At the same time though, any individual who wants to believe that trade protection is best for a nation can show plenty of evidence to

support that view, as long as they ignore or discount the many negative effects caused by these policies. Thus if someone suggests that protection may be beneficial for the country because it will save workers from losing their jobs, or if someone says that free trade is *harmful* to a country because it will spoil the natural environment, theory says that he too may be right.

Finally, what we learn from trade theory applies more generally to any government policy. The redistributive effects described here arise solely because trade policies change prices. Since every other tax, subsidy or regulation will affect prices as well, every new government policy, or any removal of a policy, will cause a redistribution of income. The multitude of market imperfections and distortions are affected as much by domestic policies as they are by trade policies. This means that any government policies will cause some positive impacts, some negative, and because of the complexity of the international economy, it will be impossible to know whether national welfare is raised or lowered because of the policy. This also implies once again, that the use of compensation to assure everyone benefits from any new government policy is well-nigh impossible. This is why economic theory cannot tell us reliably what are the best policies to choose.

There are two possible ways out of this quagmire. One method is empirical measurement. Data collection, computational methods and computing capacity have all expanded enormously in the past century. When theory can't give us a definitive result, one answer lies in measurement. Indeed, when theory gives us several possible outcomes, it is common for economists to proclaim: "it's an empirical question!" The empirical answer is offered in the next chapter. The other way out is to devise a method

of choosing policies that recognizes that positive and negative effects are the norm. In this case we ask the question, under what circumstances is it generally acceptable to implement a policy that will redistribute income between people. We'll need to explore this approach in the second part of the book because of the answer given to the empirical question in the next section.

ⁱ See especially Mill's (1864) work, Utilitarianism.

ⁱⁱ Most economic models assume that welfare (or utility, or happiness) is derived exclusively from the consumption of goods and services. This is why analyses focus on changes in real incomes; if real income rises for an individual then that person can buy more goods and services and consequently is happier. This is what Kuenne (1993) defines as materialism. However, the more general results that will be presented here easily apply to more complex situations in which individuals receive utility from more than goods and services; e.g. from knowing that natural ecosystems are being preserved, or from the safety that one feels with job security.

ⁱⁱⁱ His argument is not based on the market imperfection issue discussed in this chapter, but the points he makes are equally valid under these circumstances. [Samuelson, Journal of Economic Perspectives (2004)]

^{iv} I make a subtle distinction here. Many economic models show that free trade WILL not maximize national welfare. In a simple model we can make definitive statements. However, when we translate that result to the more complex real world we can only say that countries MAY not benefit from trade.

^v Trade liberalization may increase government revenue, but only if the initial tax rate were nearly prohibitive and if the tax reduction were not too large. In some industries in some countries, tariff rates are nearly prohibitive, thus tariff revenue would actually rise before it eventually falls with further liberalization.

^{vi} A country is "large" if its imports are sufficiently large so that a change in import volume can influence world demand and cause a change in the world price. In contrast, for small countries,

trade liberalization would have no effect on prices in countries in the rest of the world. The US, EU Japan and other large economies are large countries with respect to most imports.

^{vii} This is a *general equilibrium model* because it establishes equilibria (i.e., supply = demand) in several markets (food, clothing, labor, capital) in both countries (US and Mexico) simultaneously. This model is much more complex than the simpler *partial equilibrium* model described above, but is also more comprehensive.

^{viii} The one exception I know of is the standard Ricardian model of comparative advantage. In that model, with only one homogeneous factor of production – labor – all workers benefit with trade, or are at least as well-off, in both countries.

^{ix} From Book 1, Chapter 1 in *The Wealth of Nations*:

^x The phrase “economic nirvana” was used in a similar way by Demsetz (1969).

^{xi} Inelastic demand means that demand does not fall very much in response to a price increase.

^{xii} For a modern rendition of this argument see Ha Joon Chang (2005).

^{xiii} See Lipsey and Lancaster (1956)

^{xiv} See Irwin (1996) for an historical account of the cases made for and against free trade.

^{xv} See Viner, Jacob (1950).