International Trade Policy

October 18, 2022

Our focus thus far has been on individual agents – consumers, firms, workers, etc., their behavior, and how policy changes affect their behavior. We shift now to redefining the term "agent" as a country so that we can discuss some aspects of international economic policy. We could frame the discussion around individual agents because the principles apply equally as well to consumers or firms, but they seem more natural to discuss in terms of countries. In the previous set of notes, we briefly discussed how different countries had used price controls throughout history. The focus of these notes will be on international trade and policies that are enacted that affect trade between countries, though there are other considerations for international economic policy, particularly if one is interested in development economics and growth.

While we have discussed "trading" money for goods and services and how that creates value for both the buyer and the seller, we have not discussed the underlying motivation of trade. Think of everything that you own or rent or use on an everyday basis. Now imagine that you had to create or produce all those items on your own; it is highly unlikely any one individual in modern society could create or produce all the items they currently use on a daily basis. The ability to trade – goods for goods, goods for services, labor for money, money for goods or services – creates the possibility for individuals to take advantage of their own skills and abilities to produce certain items and then trade that production (or monetary payment for that production) for other items. Trade has existed for millenia – the Silk Road, the Amber Road, the Spice Routes, and the Salt Route are just some examples of how goods flowed from one part of the world to another in order to improve living standards.

1 Autarky (Self-sufficiency)

In autarky (which just means a country is economically self-sufficient or independent), a country only consumes what it produces – there is no trade with other countries. While there is no trade, the model of autarky provides a useful starting point. Figure 1 shows Country A's production of Goods 1 and 2. Points on the line assume that Country A fully utilizes its resources; points inside the line are possible but do not fully utilize resources; points beyond the line are unattainable for this country in autarky because it does not have the resources to create that amount of goods.[1] Country A can produce 40 units of Good 1 if it produces zero of Good 2, and it can produce 20 units of Good 2 if it produces zero of Good 1. We assume a constant opportunity cost of production for these goods – if Country A wants to produce 1 unit of Good 2, it must forego production of 2 units of Good 1. Likewise, if Country A wants to produce 1 unit of Good 1, it must forgo $\frac{1}{2}$ unit of Good 2.

If Country A is in autarky, it must choose how much of each good to produce, subject to its constraint. If Country A has a social welfare function, it would choose to produce the combination of goods that would maximize its social welfare. If this problem seems familiar, it is – it is just the consumer choice model with a few slight modifications. Instead of receiving an income, Country A has combinations of possible production it can make – which is the production possibilities curve. This curve performs a similar function as the budget constraint in the consumer choice problem because the production possibilities curve is the constraint on how much a country can produce. Country A would then choose the combination of goods that maximizes social welfare.[2]

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[1] Oftentimes a production possibilities curve is depicted as a curve that is concave to the origin. For ease of exposition we ignore those concerns in this discussion.

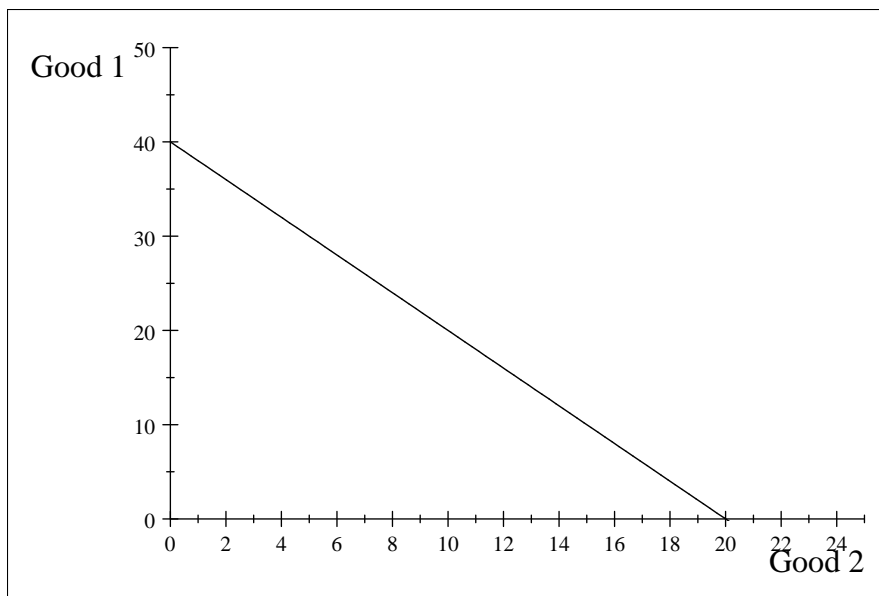[2] As noted in the opening, these concepts apply equally well to individuals or firms.

Figure 1: Country A's production possibilities curve for Goods 1 and 2.

2 Two Country Model

While autarky provides a basic model of a single country, we need at least two countries in order to study trade. As always, we begin with the simplest possible model to develop economic intuition – two countries (Country A and Country B) and two goods (Good 1 and Good 2). Both countries can produce both goods, but both have different advantages (resources, land, technology) that allow it produce different volumes of goods and at different rates.

Our goal is to determine which country should produce which goods with the goal being to create the most value[3] for global society. We will use the production possibilities curve for Country A in Figure 1. For Country B, Figure 2 shows its production of Goods 1 and 2. Country B can produce 10 units of Good 1 if it produces zero of Good 2, and it can produce 15 units of Good 2 if it produces zero of Good 1. We assume a constant opportunity cost of production for these goods – if Country B wants to produce 1 unit of Good 2, it must forego production of $\frac{2}{3}$ units of Good 1. Likewise, if Country B wants to produce 1 unit of Good 1, it must forgo $\frac{3}{2}$ unit of Good 2.

Suppose each country produces at the midpoint of their respective production possibilities curves. Country A would have 20 units of Good 1 and 10 units of Good 2; Country B would have 5 units of Good 1 and 7.5 units of Good 2. Total production would be 25 units of Good 1 and 17.5 units of Good 2. Notice that Country A can produce more of both goods – that just means that Country A has more productive resources than Country B. It could be that Country A has more people, more natural resources, better production technology, etc. Even though Country A produces more of both goods, can it benefit from trading with Country B?

2.1 Comparative Advantage

The principle of comparative advantage states that, to maximize total output, each country should produce the good for which it is the lowest opportunity cost producer. To produce a unit of Good 1, Country A must give up $\frac{1}{2}$ unit of Good 2 while Country B must give up $\frac{3}{2}$ units. Thus, Country A is the lowest opportunity cost provider of Good 1 because it has to give up less of Good 2. To produce a unit of Good 2, Country A must give up 2 units of Good 1 while Country B must give up $\frac{2}{3}$ unit of Good 1. Thus, Country B is the lowest opportunity cost provider of Good 2 because it has to give up less of Good 1. Once we have identified

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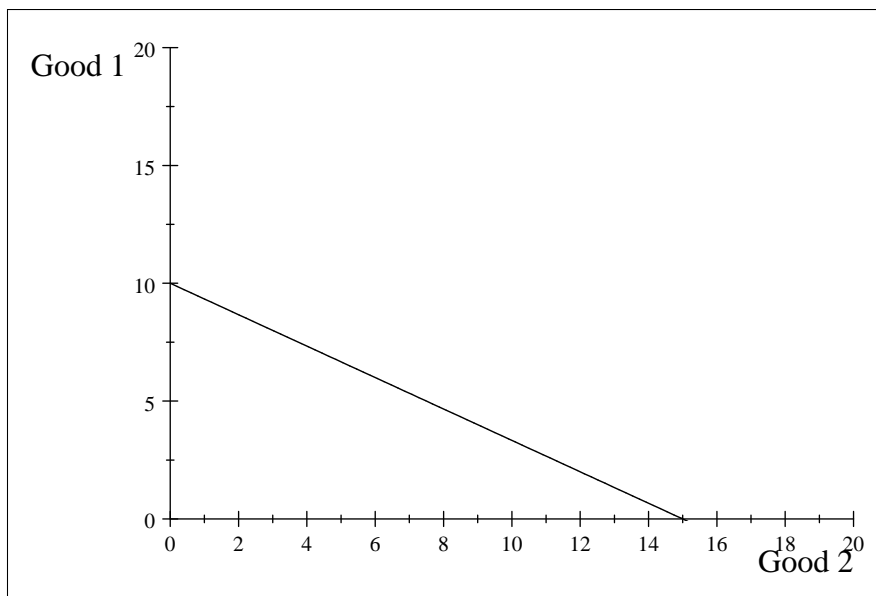[3]For now we can measure value in terms of units of each good produced.

Figure 2: Country B's production possibilities curve for Goods 1 and 2.

the lowest opportunity cost provider of each good, that country should specialize in producing the good for which it is the lowest opportunity cost provider. Thus, Country A should produce Good 1 while Country B should produce Good 2. Total global production is then 40 units of Good 1 and 15 units of Good 2.[4]

2.1.1 Personal vs. Impersonal Exchange

At its core exchange is an individual level activity, so I provide a brief digression on personal vs. impersonal exchange. Personal exchange is between two individuals who know each other (two family members, two friends, two acquaintances, etc.) while impersonal exchange is between two individuals who do not. Personal exchange tends to rely on informal rules between the individuals whereas impersonal exchange relies on formal rules and procedures for resolving disputes. Market activity may be personal exchange, but the development of property rights and the enforcement of those rights helps create the basis for impersonal exchange. As consumers we make transactions with online sellers not because we know them personally but because we assume they will deliver the promised goods and if not there are steps one can take to seek a resolution. Our focus in the course is primarily on impersonal exchange.

There are experimental economics papers that show how individuals discover the benefits of comparative advantage and exchange. Crockett, Smith, and Wilson (2009) conduct a laboratory experiment in which exchange is possible but participants are not told it is possible so they must discover it. They find that individuals learn to specialize and use their comparative advantage, but exchange develops in bilateral markets, not in multilateral markets. Kimbrough, Smith, and Wilson (2008) explicitly examine the multilateral exchange environment for long-distance trade in a laboratory experiment. With participants who are able to travel, they have effectively created a "trader" and find that traders act in an impersonal manner (straight to business) when abroad, but more personally when they are in their domestic market. Bulte et al. (2017) conduct a laboratory experiment in the field by constructing a trading environment in 94 villages in rural Sierra Leone. They examine how social norms and other behavioral factors might affect trading behavior. They find that average efficiency of the market is below the theoretical predictions in the market when trad-

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[4]Note that total global production of Good 2 here is actually less than total global production originally, which was 17.5 units. However, initial global production of Good 1 was 25 units and it is now 40 units. That is in part because Country A has larger production than Country B and in part because the midpoint of each production possibilities was chosen. If we wanted more production of both goods globally in the trade market, we could slightly modify the mix of goods produced by Country A to 34 units of Good 1 and 3 units of Good 2. That would give us 34 total units of Good 1 globally and 18 units of Good 2 globally.
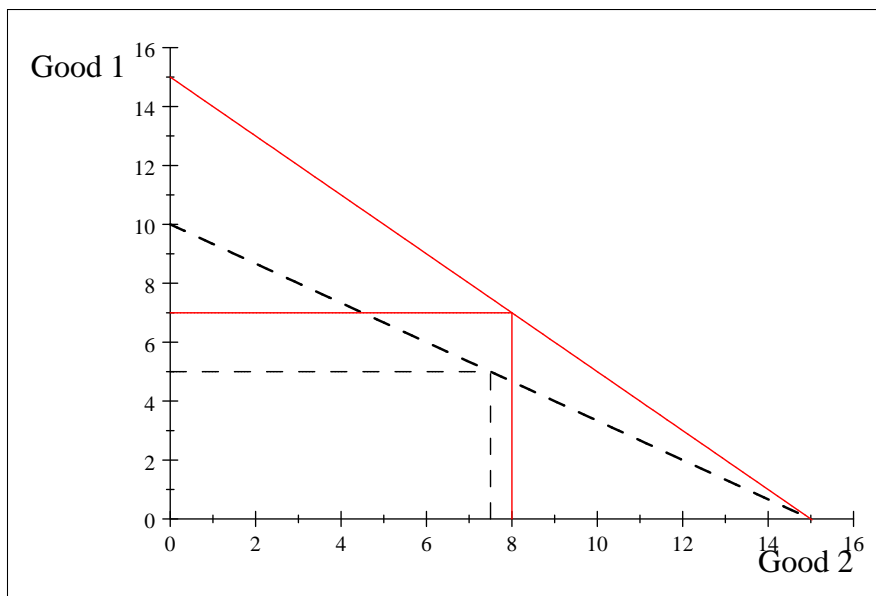
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Figure 3: Country B's original production possibilities curve and choice of production (black dashed lines) and trading possibilities curve and outcome after trading (red solid lines) assuming it specializes in Good 2.

ing with co-villagers and even lower when trading with stranger, leading them to conclude that social norms can affect the efficiency of the trading market. These results occur even when individuals are anonymized providing evidence that the social norms may be used by the individual even when the individual is not in the standard social setting.

2.2 Terms of Trade

Now that we know which country produces which good, we need to determine the terms of trade (price or exchange rate) for the goods. We do not need a concept of money because we can just denote prices in terms of one of the goods. Suppose Country A wanted an additional unit of Good 1 – it can obtain one domestically by "trading" (in the terms of shifting domestic production) $\frac{1}{2}$ unit of Good 2 for one unit of Good 1, so it would need to do better than that in order to complete a voluntary transaction, which means that it will give up, at most $\frac{1}{2}$ units of Good 2 on the trade market, for one unit of Good 1. Its internal (or domestic) exchange rate is 1 Good 1 for 0.5 Good 2. Suppose Country B wanted an additional unit of Good 1 – it can obtain one domestically by giving up 1.5 units of Good 2; its internal (or domestic) exchange rate is 1 Good 1 for 1.5 units of Good 2. The "price" or exchange rate for Good 1 then has to fall somewhere between 0.5 and 1.5 units of Good 2. Country A will need to get at least $0.\dot{5}$ units of Good 2 for a unit of Good 1; Country B will pay at most 1.5 units of Good 2 for a unit of Good 1. Exactly where the terms of trade falls depends on a number of factors.

Suppose the exchange rate is one unit of Good 1 for one unit of Good 2. Country A will accept one unit of Good 2 for Good 1 and Country B is willing to give up 1 unit of Good 2 for Good 1. Suppose that Country A trades 7 units of Good 1 to Country B for 7 units of Good 2. Country B now has 7 units of Good 1 and 8 units of Good 2. Figure 3 shows Country B's original production possibilities curve and choice of production with the black dashed lines. The red solid line now shows their potential trading possibilities curve with the 1 : 1 exchange rate and their new outcome after trading. There is no guarantee that they can achieve each of those points because the trading partner must have units to trade, but it shows the maximum amount of each good they could have under the exchange rate. Note that Country B has more of both goods after the exchange with Country A. If we extend the concepts from consumer choice to that of a country and assume that having more of both goods is better for a country, then it is clear that Country B benefits from this trade.
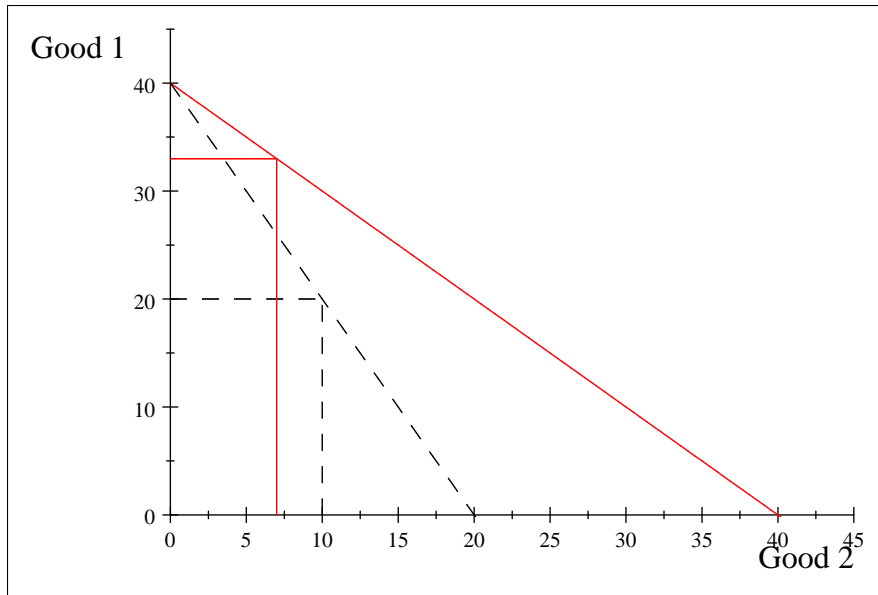
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Figure 4: Country A's original production possibilities curve and choice of production (black dashed lines) and trading possibilities curve and outcome after trading (red solid lines) assuming it specializes in Good 1.

The benefit to Country A is slightly less obvious. Figure 4 shows Country A's original production possibilities curve and choice of production with the black dashed lines. The red solid line now shows their potential trading possibilities curve with the 1 : 1 exchange rate and their new outcome after trading. Again, there is no guarantee that they can achieve each of those points because the trading partner must have units to trade, but it shows the maximum amount of each good they could have under the exchange rate. For instance, Country A could not actually attain 40 units of Good 2 because Country B can only produce 15 units. The red dashed lines show its new outcome after trading. As mentioned, it is less obvious that Country A is better off after trading than before trading because they do not have more of both goods. It is certainly possible that Country A is better off by trading but it is also possible it is not.

How then can we guarantee that Country A is better off after trading? Perhaps the terms of trade are not quite right – we could alter the terms of trade so that Country A has a more favorable trade agreement. But we could also look at Country A's internal (domestic) exchange rate. Country A has 33 units of Good 1 and 7 units of Good 2 after trade; it had 20 units of Good 1 and 10 units of Good 2 in autarky. Suppose Country A wants 11 units of Good 2, so it needs to produce 4 units of Good 2 on its own. Country A must give up producing 2 units of Good 1 for each unit of Good 2 it wants, so it must forgo 8 units of Good 1. That would lead to 25 units of Good 1 and 11 units of Good 2. Figure 5 is the same as Figure 4, except now the new outcome is shown by the dashed magenta lines. Note that the combination is not on the trading possibilities curve – again, that is a potential curve assuming enough units are able to be traded. At the new outcome of 25 units of Good 1 and 11 units of Good 2 it is clear that Country A is better off under exchange than in autarky because it has more of both goods.

If Country A chooses that level of Goods 1 and 2, it will have produced 32 units of Good 1 (remember it traded 7 units to Country B) and 4 units of Good 2. Country B would have produced 15 units of Good 2 (and traded 7 units to Country A). So Country B ends up specializing in Good 2 and Country A ends up producing a lot of Good 1 and a small amount of Good 2. Overall, in our autarky economies total production was 25 units of Good 1 and 17.5 units of Good 2. When we allow for exchange countries are able to specialize (or primarily produce one good). Total production in the exchange economy increases to 32 units of Good 1 and 19 units of Good 2, illustrating the expansion possibilities if exchange is allowed.
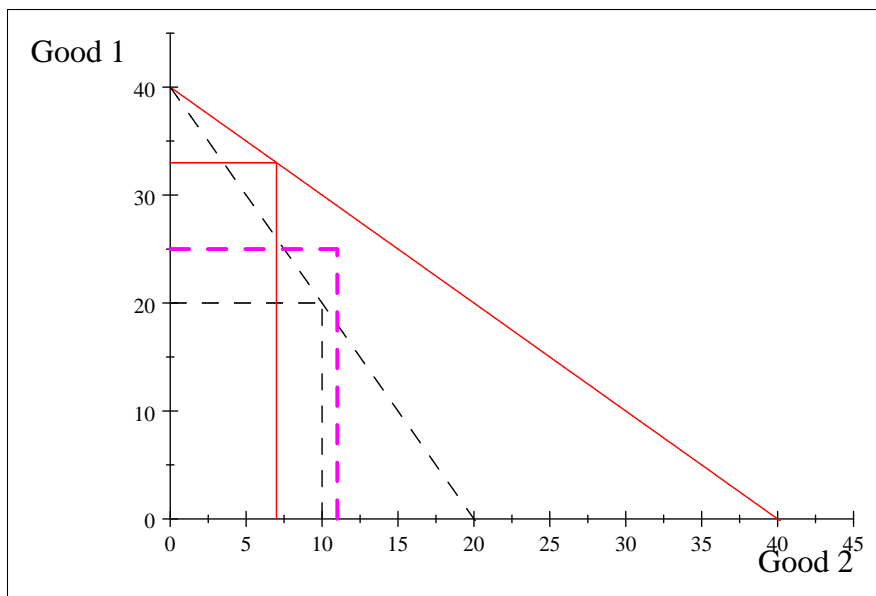
Figure 5: Country A's original production possibilities curve and choice of production (black dashed lines) and trading possibilities curve and outcome after trading (red solid lines) assuming it specializes in Good 1. The dashed magenta lines show a combination of Goods 1 and 2 that Country A could achieve if it chose to produce positive amounts of both goods.

North-South Model In our discussion of price controls there were papers that mentioned a North-South model of international trade. In this model, one country (the North) is assumed to be a developed country and another country (the South) is assumed to be a developing country. While we will not discuss specifics of the model I want to bring it to your attention as it is a popular model in the economics literature.[5]

3 Trade Barriers

The expansion in total production is the reason economists favor free trade among countries[6] – if there are trade restrictions then those restrictions will prohibit countries from being able to take full advantage of specialization. However, there are reasons for which countries might enact trade barriers. One popular reason is to protect a particular industry from foreign competition. Burtless (1995) provides a discussion about the relationship between international trade and earnings inequality, which looks at how protectionism of this type might be enacted to reduce earnings inequality in the domestic country. Another reason is to ensure that the country has some domestic production of a good. In our terms of trade example, Country B produces no domestic units of Good 1 and must rely on trading with its partner. It may be that Good 1 is a key input to other production and Country B does not want to solely rely on the international market for its production. A third reason is that the government may want to raise revenue from international producers. A fourth is that the government may want to ensure a particular quality level of the good.

We will discuss two types of restrictions – tariffs and quotas – and a third general class of other trade barriers and their effect on the domestic economy. As with other analysis in the course, we are considering a partial equilibrium analysis of the particular market in question. If a country places a tariff on steel, we are analyzing the effects in that market. There may be effects in other markets that increase or reduce the burden of the policy on the domestic economy.

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[5] Dr. Hwan Lin in the Department of Economics uses the North-South model in his work. For instance, he has used it to examine patent protection and subsidies.

[6] Technically, it is not just countries for which economists favor free trade but any productive economic agent – states, municipalities, individuals, etc.
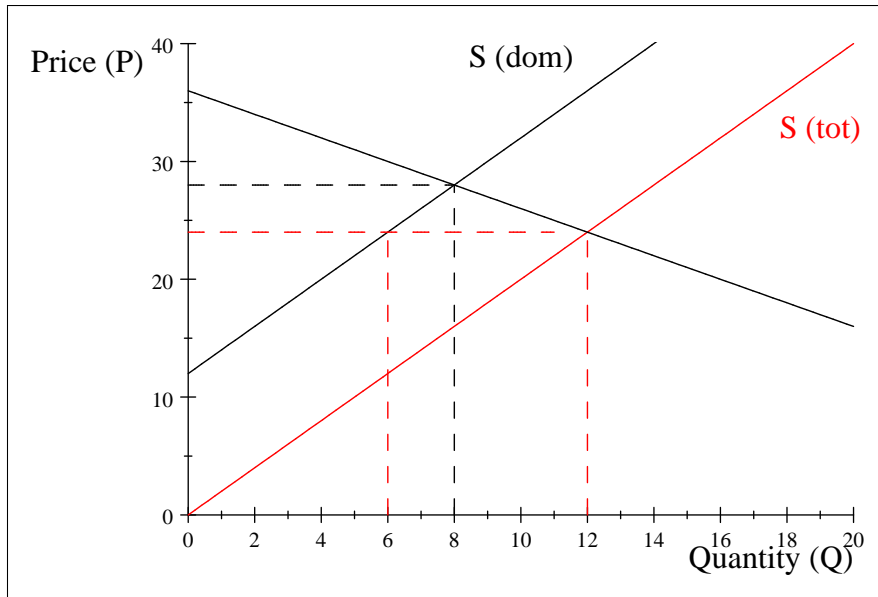
Figure 6: Supply and demand conditions for the domestic country. Domestic production given by S (dom) and global production given by S (tot).

3.1 Tariffs

A tariff is, quite simply, a tax imposed on a foreign supplier of the good. A revenue tariff is designed to raise some revenue for the domestic government by taxing foreign suppliers. Generally the domestic country is not producing the good and the tariffs are not high.[7] A protective tariff is meant to protect domestic producers from foreign competition, with the additional benefit of raising revenue for the domestic government. While general equilibrium effects of the two types of tariffs may differ, the partial equilibrium analysis is the same. Figure 6 shows the domestic supply in black given by S (dom) and the global supply in red given by S (tot). If the country is in autarky it will produce 8 units and the price will be $28. If the domestic country opens up to foreign trade and has no trade barriers then it will consume 12 units at a price $24. Note that the price of $24 is the price on the global market, so any domestic suppliers must supply units at this price. The domestic producers supply 6 units when price is $24 and the international market supplies another 6 units to the domestic country.

Now suppose that a tariff of $6 per unit is introduced. Figure 7 shows how the total world supply curve shifts to the left. After the tariff, the price in the domestic country is $26 and it consumes 10 units. Domestic supply is 7 units and international supply is 3 units. The domestic country also generates $18 in revenue. Figure 8shows the revenue collected by the domestic country from the foreign suppliers.

3.2 Quotas

A quota is simply a restriction on how much of a good can be imported from another country. Returning to our example with Country A and Country B, recall that Country A produced 32 units of Good 1 and 4 units of Good 2 and Country B produced 15 units of Good 2. The equilibrium allocations after trade were that Country A had 25 units of Good 1 and 11 units of Good 2, while Country B had 7 units of Good 1 and 8 units of Good 2. In the exchange market, Country A traded 7 units of Good 1 to Country B for 7 units of Good 2.

Suppose that Country A decides that it will only accept a maximum of 4 units of Good 2 from Country B. Assuming that this decision does not affect the terms of trade and that both countries will still trade at

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[7]The U.S. produces relatively few bananas domestically, so any tariffs on bananas are not meant to protect domestic banana growers.
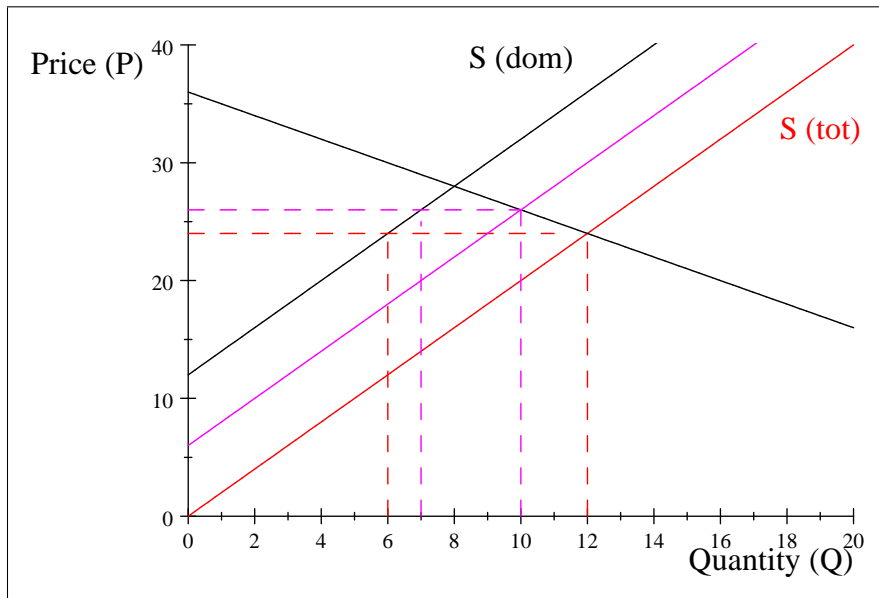
Figure 7: Supply and demand conditions for the domestic country. Domestic production given by S (dom) and global production given by S (tot). The supply curve after the tariff is given by the magenta line.
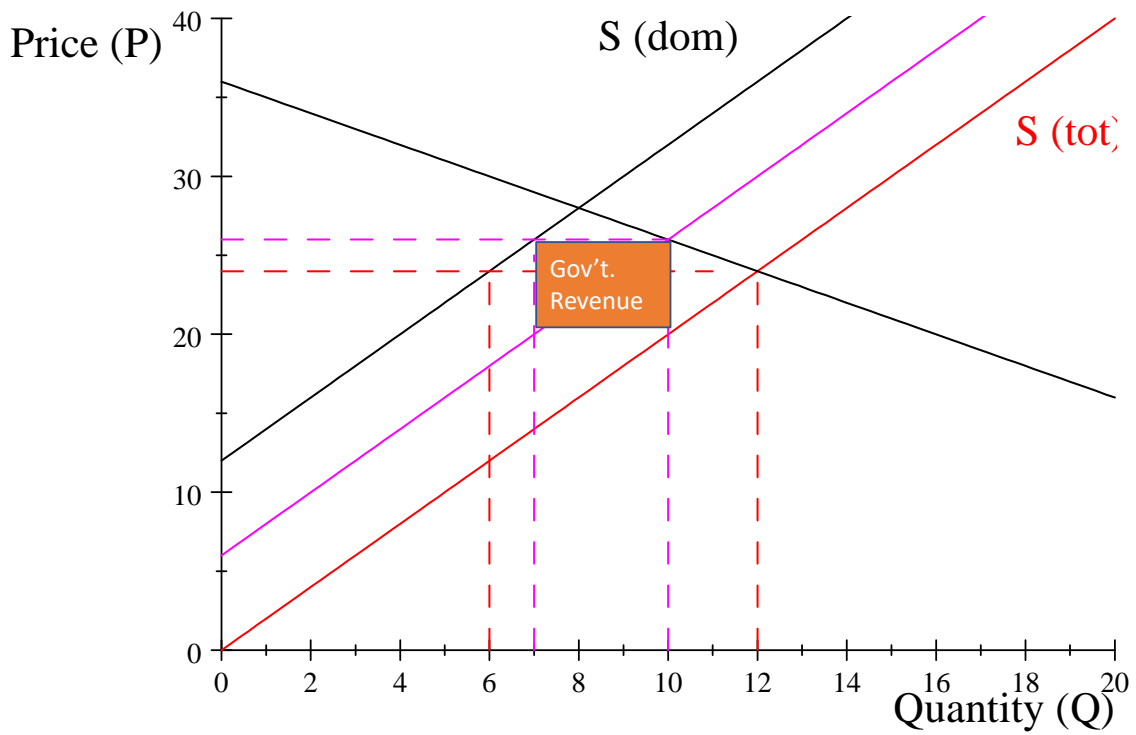

Figure 8: Revenue collected from foreign suppliers by the domestic country.

	Autarky		Free Trade		Quota	
	Country A	Country B	Country A	Country B	Country A	Country B
Good 1 Prod.	20	5	32	0	26	2
Good 2 Prod.	10	7.5	4	15	7	12
Good 1 Traded	0	0	−7	7	−4	4
Good 2 Traded	0	0	7	−7	4	−4
Good 1 Cons.	20	5	25	7	22	6
Good 2 Cons.	10	7.5	11	8	11	8

Table 1: Production, Trade, and Consumption for Country A and Country B in autarky, free trade, and quota economies.

a 1 : 1 exchange rate. Start with the global economy that specializes, so Country A produces 40 units of Good 1 and Country B produces 15 units of Good 2. The 4 units of each good are traded for each other, so now Country A has 36 units of Good 1 and 4 units of Good 2, while Country B has 4 units of Good 1 and 11 units of Good 2.

We have already seen that Country A can (and did) domestically exchange production of Good 1 for Good 2 at a 2 : 1 domestic exchange rate. If 11 units of Good 2 is the intended level, then Country A will need to produce 7 units domestically. It would have to give up 14 units of Good 1 to produce these 7 units of Good 2, so ultimately Country A ends up with 22 units of Good 1 and 11 units of Good 2. While better than the autarky economy in which it produced 20 units of Good 1 and 10 units of Good 2, Country A has given up some production of Good 1 due to its import quota.

Country B can work through a similar process. It now has 4 units of Good 1 and 11 units of Good 2. If it wants only 8 units of Good 2, it can "exchange" 3 units of Good 2 in its domestic production. Those 3 units of Good 2 can produce 2 units of Good 1 on its domestic market. Ultimately Country B ends up producing 2 units of Good 1 and 12 units of Good 2, and exchanges 4 units of Good 2 for 4 units of Good 1. Again, this outcome is better than the autarky result in which Country B had 5 units of Good 1 and 7.5 units of Good 2, but worse than the economy without the import quota of Country A. Table 1 summarizes these results.

3.2.1 Effect on Equilibrium Price and Quantity

We have assumed that the terms of trade remain the same for ease of exposition; however, as with a tariff we can also use supply and demand analysis to examine how the market price and quantity might be affected. While we will not work through potential feedback effects to the terms of trade, it is important to recognize that an import quota could affect prices. Figure 9 shows the domestic supply and demand conditions for the market, which are assumed to be the same as those for the tariff market in Figure 6 and lead to an autarky price and quantity of 8 units and $28. The total supply from the domestic market plus the quota is also included. Note that the domestic country has decided to limit imports of this good to 3 units, leading to a domestic price of $26 and a total production of 10 units.

The quota was specifically chosen so that the resulting equilibrium price and quantity in the domestic country would be the same whether the quota was implemented or the tariff was imposed. There is a literature that discusses the equivalence, or lack thereof, of imposing quotas or tariffs. That literature is discussed below. Do note that when a quota is used the government does not generate any revenue.

3.3   Other Trade Practices

Historically tariffs and quotas have been the primary methods of controlling imports, but they are not the only methods. Voluntary export restrictions are an agreement between countries to voluntarily limit the volume of trade in certain goods. The country that is restricting imports then agrees to not use tariffs. The threat of tariffs should act as a credible commitment device to ensure that the exporting country does not exceed the stated amount of exports. Import licensing can also be used by countries as a barrier to entry.
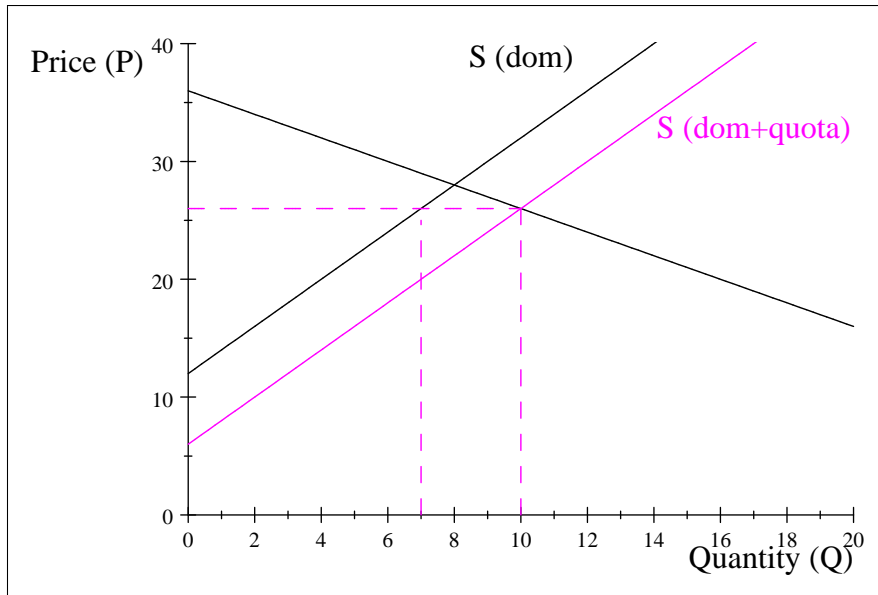
Figure 9: Supply and demand conditions for the domestic country. Domestic production given by S (dom) and total production is given by S (dom+quota).

A most favored nation clause guarantees that the country granted most favored nation will always have the best terms of trade; if another country receives better terms of trade, then the most favored nation clause requires that the original country be granted the same or better terms. This practice is similar to stores offering price matching guarantees to its customers, though one can show that price matching guarantees can be used to keep prices high. Many countries also have antidumping laws, which prohibit foreign firms from "dumping" lower priced products in another country.[8] Dumping returns us to the idea of "just price" because antidumping laws are typically founded on the idea that foreign firms should not be selling their goods for less than fair market value.

There are also any number of trade agreements between countries that are designed to reduce barriers to trade. A major benefit for European countries of belonging to the European Union is the lack of restrictions on trade.[9] As was mentioned in the discussion of price controls, parallel import policies create a gray market of goods. Those goods are legitimate goods (they are not counterfeit), but the original producer has not chosen to export goods to that particular foreign country. A third party legally purchases the goods in one country and brings them to a foreign country. The legality of those transactions depends on a particular country's policies.

4   Equivalence of Trade Restrictions

The above examples have been chosen to show that tariffs and quotas have an equivalent relationship, at least in terms of prices paid and quantities consumed; whether the revenues flow to the domestic or foreign country depends on the policy. However, there is an existing literature that discusses the conditions under which this equivalence holds. Dixit (1984) provides a review of international trade policy for oligopolistic industries. Bhagwati and Panagariya (1996) provide a brief historical review of the theory of preferential trade agreements. The following discussion provide a brief documentation of the history of this equivalence literature. Of note is the movement from partial equilibrium models to general equilibrium models as later authors found that partial equilibrium models did not capture the full effect of the trade restriction.

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[8]https://www.wto.org/english/tratop_e/adp_e/adp_info_e.htm
https://www.trade.gov/us-antidumping-and-countervailing-duties
https://www.usitc.gov/press_room/usad.htm
[9]https://europa.eu/european-union/about-eu/what-the-eu-does-for-its-citizens_en

Bhagwati (1965) establishes that, under certain conditions a quota and a tariff are equivalent "in the sense that a tariff rate will produce an import level which if alternatively set as a quota will produce an identical discrepancy between foreign and domestic prices." Those conditions typically involve perfect competition, and once noncompetitive markets are introduced those results no longer hold.[10] Again, this example shows that theoretical modeling follows the process of creating a benchmark economy with strong assumptions and then relaxing those assumptions to determine how predictions change. Shibata (1968) examines the equivalence of tariffs and quotas under monopolistic foreign supply and shows that the equivalence does not break down in this case. Of interest to him are Voluntary Export Restrictions and he discusses how the bargaining among countries is rational. Bhagwati (1968) further develops the concept of equivalence to distinguish between different definitions of the concept.

Rodriguez (1974) uses game theoretic analysis to show that quotas and tariffs, even without monopolistic production, revenue effects, or uncertainty, lead to different outcomes. In this model, when countries retaliate optimally to quotas set by other countries international trade will tend towards zero, suggesting that tariffs are preferred to quotas. Fishelson and Flatters (1975) examine the equivalence of tariffs and quotas under uncertainty. When uncertainty is present, the general belief at the time was that tariffs are the preferred policy because they allow flexibility and responses to market forces. However, they show that either tariffs or quotas could be optimal depending upon the source of uncertainty and the supply and demand conditions. Takacs (1978) explicitly includes voluntary export restraints (VERs) along with tariffs and quotas in the equivalence analysis. She examines cases of domestic monopoly production, import monopoly, and export monopoly. She finds that the equivalence of quotas and VERs depend on a number of factors, but most importantly whether some potential exporters remain outside the agreements. Murray, Schmidt, and Walter (1983) comment on Takacs and show that equivalence between the two is possible under a broader set of conditions. Levinsohn (1989) examines equivalence of tariffs and quotas in oligopolistic markets open to direct foreign investment. His work shows that when firms might be multinational the tariff-quota comparison is simplified and the assumptions under which equivalence is maintained.

The earlier models are partial equilibrium analysis models. Melvin (1986) uses a simple general equilibrium model to show that tariffs and quotas are never equivalent if both countries use restrictive trade practices as the choice of trade restrictions in one country affect the decisions of other countries. He cautions against using partial equilibrium analysis to analyze general equilibrium questions. Neary (1988) provides a general equilibrium framework for analyzing quotas, tariffs, and voluntary export restrictions when capital is both internationally mobile and when it is not. When capital is internationally mobile, the welfare costs of tariff protections increases but the welfare costs of quantitative restrictions (quotas) is reduced. Quotas have an intermediate effect on welfare between that of tariffs and VERs. Anderson and Neary (1992) develop a general model for trade reform, with the goal of identifying welfare-improving piecemeal reform. Their concept of piecemeal reform involves potentially decreasing or increasing trade restrictions, whereas the prior literature focuses on reducing restrictions. They are able to address trade restrictions of multiple types that are present in policy and provide sufficient conditions for welfare-improving reforms. Dinopoulos and Kreinen (1989) compare import quotas and VERs in a general equilibrium framework with three countries. They note that while quotas are often levied on imports from all sources, a VER is discriminatory in that it is a bilateral agreement between two countries. They find that quotas lead to higher welfare than the VER for the country that imposes the restriction, which is consistent with the two-country model. They find that the welfare of the restricted country is indeterminate because there is substitution from the third country. The third country prefers the restricting country to use a VER rather than a quota.

Findlay and Wellisz (1986) and Kaempfer and Willett (1989) take a slightly different approach and examine the political economy aspects of tariffs and quotas. Findlay and Wellisz note that tariffs seem to be the preferred over quotas because (1) tariffs are more responsive to market forces, (2) tariffs allow foreign competition to better discipline domestic competition, (3) tariffs provide revenues for the domestic country, and (4) tariffs can be more easily adapted to allow for a uniform rate of effective protection (protection of domestic suppliers). Their goal is to determine why, given this presumption, quotas continue to be prevalent. One conclusion is that the government is not necessarily optimizing welfare or revenue, but is more an arbiter of different interest groups. Kaempfer and Willett seek to combine rent-seeking and public choice in analyzing the equivalence of tariffs versus quotas. Others had found that by providing policy makers with more efficient

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[10]Note that I do not actually have access to this article but am using other earlier articles that reference it.

(in terms of reducing welfare loss) methods of trade restrictions, economists may actually be increasing the amount of trade protection. However, they discuss that if the rents from each rent-seeker are small, such rent-seeking in the form of additional trade protections may not occur. They feel that quotas are used in a manner consistent with public choice and rent-seeking theory in circumstances where protection is high.

Finally, a few case studies are provided.[11] Anderson (1985) investigates the effect of quotas in the cheese industry. He uses a partial equilibrium econometric analysis but notes that in this particular industry there is justification for partial equilibrium analysis. He finds that the welfare loss from the quota system, relative to an efficient tariff that produces the same aggregate quantity of cheese imports, is substantial – over 15% of the base expenditures in the restricted categories of cheese. Chen, Chang, and McCarl (2011) examine the market for rice. They note that the World Trade Organization has been supporting tariffication over quotas as one of its reform measures,[12] which may be a direct reflection of the debate over the equivalence between tariffs and quotas.[13] As with Anderson, they develop an empirical model in which they replace an existing quota with a hypothetical tariff in order to determine the welfare effects of the quota relative to the tariff. While they find similar prices for tariffs and quotas, they note that welfare under tariffs are higher, though different segments of the country benefit from quotas or from tariffs. de Melo and Tarr (1990) estimate the welfare costs of quotas in the U.S. textiles, steel, and automobile industries. They find that removing the quantitative restrictions would reap substantial welfare gains as would implementing the efficient tariff instead of the existing quotas. Blonigen et al. (2013) note the lack of empirical attempts to verify the equivalence (or nonequivalence) of tariffs and quotas. The examine plant-level data from the U.S. steel industry, which has been subject to protection from multiple types of trade barriers. They find that binding quantitative restrictions increase market power while tariffs do not.

5 Review

We focused on partial equilibrium models to model trade. As can be seen from the discussion of literature on the equivalence of tariffs and quotas, a primary criticism is the use of partial equilibrium models to address general equilibrium questions. The literature discussed shows how movement from partial equilibrium analysis to general equilibrium analysis alters the predictions of the models. There is also evidence that the literature may have had a direct effect on the WTO's current policy of tariffication.

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[11]This list is certainly not exhaustive.

[12]https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm2_e.htm

[13]I am not an expert in this area, but it seems that the WTO's support for reforms is at least in part due to the findings in the academic literature.

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