

# CM11: TRADE AND PROTECTION (4/13/21)

## MOST, BUT NOT ALL, OF WHAT YOU SHOULD KNOW

1. Since WW2, which has expanded most, world trade or world output?
2. Why is it incorrect to devote all of our attention on the US trade deficit with China?
3. What is the major factor that determines the US trade deficit?
4. What are the major reasons that countries engage in international trade?
5. If a country has a comparative advantage in the production of X relative to the rest of the world what must be true of the country's price of X relative to the world price?
6. Is there any difference between trade amongst the states and trade with foreign countries?
7. What are the major trade barriers?
8. What is the role of the WTO in world trade?
9. What does the term "unfair" competition mean in practice?
10. If country A has lower wages than country B does that mean that country A has a cost advantage relative to country B?
11. Why is it not useful to frame trade issues in terms of "our workers against their workers"?
12. Will a tariff or quota designed to maintain employment in industry A mean that employment in the US will remain constant after all of the effects of the protection are taken account of?
13. Can we use the infant industry argument to justify protection of US firms?
14. What happens to consumer and producer surplus when trade is opened up or restricted?
15. Quotas are like tariffs but are their economic consequences identical?
16. What are the effects of exports on consumer and producer surplus?

17. What is a customs union? How does a customs union differ from free trade?

## 1. US AND WORLD TRADE. (You are **not** expected to remember the numbers.)

Here is an excellent link to everything you want to know about trade. It has excellent data through 2014. I need to up date the links and add more recent data.

<https://ourworldindata.org/trade-and-globalization>

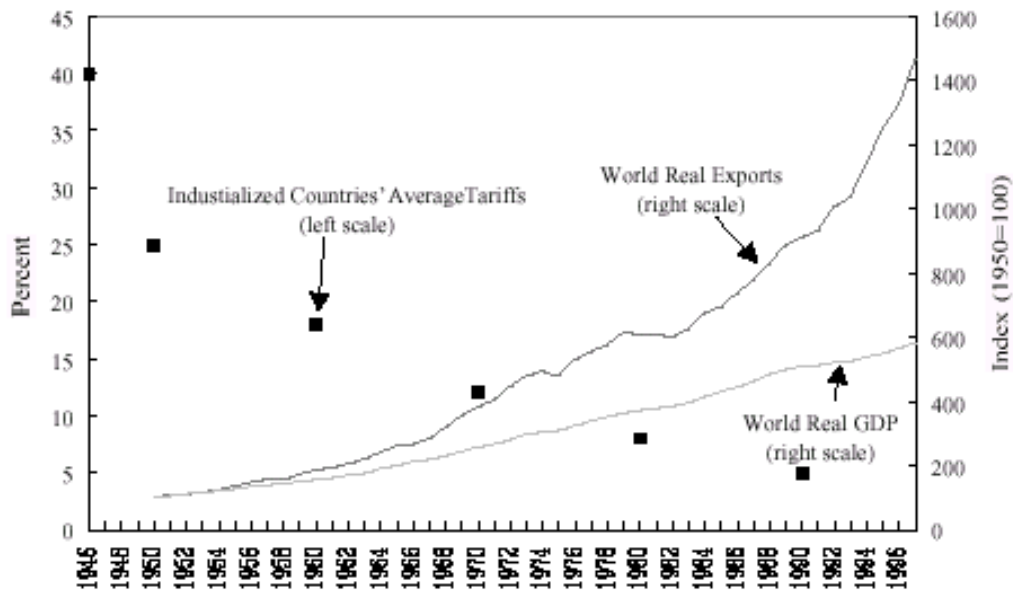
This link has a nice historical perspective.

<https://www.weforum.org/agenda/2019/01/how-globalization-4-0-fits-into-the-history-of-globalization/>

1. Since WW2 there has been rapid growth in world trade, far outstripping the growth in real world GDP. This was the most recent period of “globalization”. Note the fall in tariffs during this period.

<https://www.visualcapitalist.com/5-hidden-ways-globalization-changing/>

However, world trade and GDP grew at approximately the same pace over the last decade.



2. In 2018 China accounted for about 12.9% of world exports, the US 8.6%, Germany 8.1% Japan 3.8%. The US is the world's leading exporter of services and in this area China trails far behind most developed countries. Although in

2020 the US is more trade dependent than in the 1960s trade is still a relatively small part of our GDP, especially compared with many European countries. In 2017 US trade as a percentage of GDP was about 26.6, China's was about 37.8%, Sweden's 86.4%.

<https://web.archive.org/web/20201216193141/https://ourworldindata.org/grapher/trade-openness>

The US exports: services (30%), capital goods (29%), industrial supplies (19%), consumer goods (11%), automobiles (7.5%), and food (4.5%).

The US imports: industrial supplies (small machines used in factories) (27%), consumer goods (23%), capital goods (19%), services (16%), automobiles (12%), and food (3.5%).

<https://howmuch.net/articles/us-exports-imports-trade-balance>

<https://www.visualcapitalist.com/closest-trade-relationship-usa-canada/>

<https://www.visualcapitalist.com/mapped-worlds-largest-exporters-in-2018/>

<https://www.visualcapitalist.com/map-worlds-biggest-importers/>

<http://conversableeconomist.blogspot.com/2019/04/snapshots-of-trade-imbances-us-in.html>

<https://research.stlouisfed.org/publications/economic-synopses/2019/02/08/a-closer-look-at-chinas-supposed-misappropriation-of-u-s-intellectual-property>

3. Oil imports have been a major source of the US trade deficit. Most of the oil we import comes from Canada and Mexico not from the Middle East. However, oil is a very homogeneous product and if supply is cut off anywhere in the world, then that will impact oil and gasoline prices worldwide. You should notice that the US has recently become a net exporter of petroleum products, but not of crude oil. If the "fracking" revolution continues then the US trade deficit will become smaller and countries like Russia that are very dependent on energy exports will face a difficult adjustment period. In 2020 world oil prices plunged as a result of increases in supply and a reduction in demand for oil. The Russians would like to push down the price of oil to drive out American "frackers" who are the marginal producers (have the highest cost per barrel).

<http://www.bbc.com/news/uk-14432401>

4. Economists talk about the "Dutch Disease", which refers to the fact that natural resource "windfalls", such as the discovery of oil and natural gas in the North Sea, may have harmful long-term effects on an economy. The Norwegians carefully invested the proceeds from their North Sea energy boom and diversified their industry. The Dutch spent most of it on social services, which are

a form of consumption rather than a capital investment. When the natural resource revenues start to dry up the consumption expenditures cannot be maintained but the capital investments will continue to generate an income stream forever.

## 2. WHY DO WE TRADE?

1) *Trade increases the range of goods and services we have access to:* pineapples from Hawaii for pickled herrings from Norway. The US has to import uranium from Canada and some special ores used in high tech devices (“rare earths”) from China. Much international trade involves trading different versions of the same good or service; this is one reason that the US both exports cars to Canada and imports cars, but different models, from Canada. Cars cross the Canadian and Mexican borders several times during their manufacture and end up being finished in the US (at the end of the supply chain) and are treated as if they were constructed in America. (You don’t make cars you put them together.)

2) *Economies of scale.* Sometimes large-scale production, using large plants and long assembly lines, is less costly than producing the same volume of output from a number of smaller plants. If this is the case then economists say that the industry experiences economies of scale. Automobile production and the production of B-17s and other military aircraft during WW2 are examples of products where scale economies are important. What economists call “minimum efficient scale” probably requires that a firm produces about 250,000 cars per year before it gets its unit costs to competitive levels in the world market, which means large scale production. (The production techniques initiated by Japanese car manufacturers have reduced the

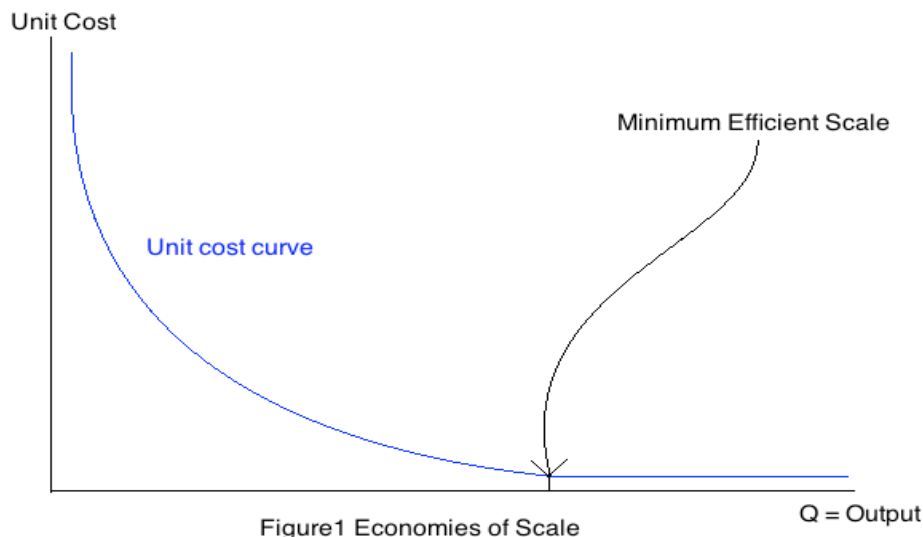


Figure1 Economies of Scale

efficient scale.)

Volvo produces lot of trucks. To get unit costs down to competitive levels it needs to have a plant with a capacity far in excess of what the Swedish market can absorb and so Volvo exports much of what it produces. It runs its plant for nine months of the year and then shuts down and the workers go to their second jobs.

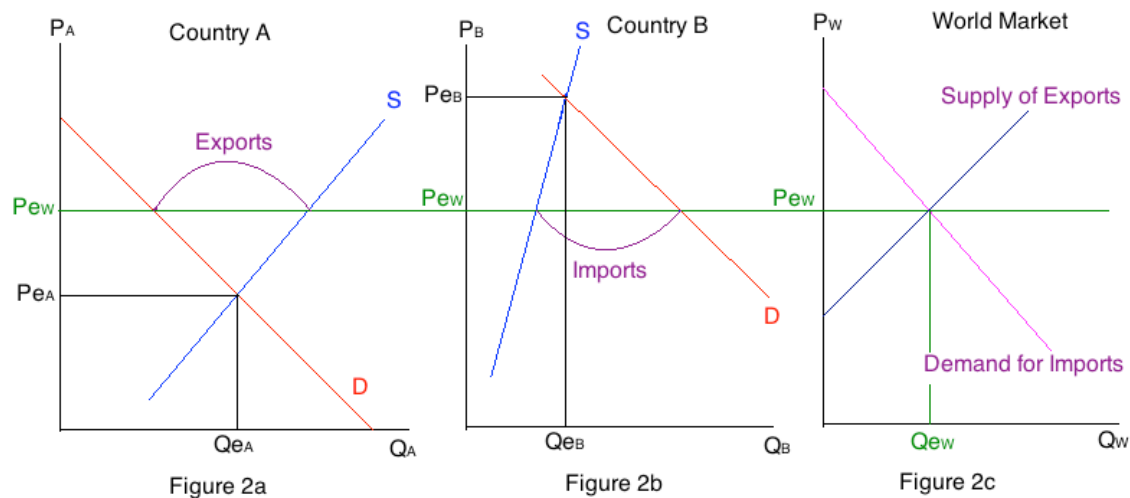
3) Economists emphasize *comparative advantage and the division of labor* as sources of the gains from trade. (Review CM10). In CM11 we will say that a country, for example the US, has a comparative advantage in the production of commercial airliners if its domestic equilibrium price is *lower* than the *world* price. A country such as the US does *not* have a comparative advantage in the production of t-shirts if its domestic equilibrium price is *greater* than the *world* price.

In Figure 2 below we show how the world price is determined in a very simple two-country model. Country A, America, has a comparative advantage in the production of IT services and country B, Brazil, has a comparative advantage in the production of t-shirts.<sup>1</sup> The world price of IT services and t-shirts are determined by the world demand and supply of, t-shirts (A+B).

America has a *comparative advantage* in the production of IT services and so  $P^e_A$  in Figure 2a is *below* the world price  $P^e_w$ . At the world price American firms will want to export IT services to the rest of the world (Brazil!) because at the world price domestic demand in America is less than the profit maximizing output of American firms (there is excess supply at  $P^e_w$ ). In part b of the diagram we see that Brazil, which has the comparative advantage in producing t-shirts, has a domestic price of IT services that is above the world price and therefore Brazil does not have a comparative advantage in IT services. Therefore, Brazil wants to import IT services at the world price from the rest of the world (America!) to meet the excess demand for IT services. In part c of the diagram we see that the world exports (supply) of IT services are just equal to the world imports (demand for) of IT services. Of course, this is leaving out the markets for t-shirts. But in this simple economy, where there is no money and no foreign exchange market to worry about, t-shirts are traded for IT services and vice versa and it can be demonstrated that everything works out neatly with the prices of IT services and t-shirts adjusting until both markets clear.

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<sup>1</sup> In Figure 2 I am only showing the supply and demand for IT services. Showing how both markets work is more complicated but you should be able to see the basic idea from this simple case.



### 3. THE RHETORIC OF PROTECTION.

1. The US constitution prohibits interference with inter-state commerce; there is free trade between the 50 US states.<sup>2</sup> This allows re-organization of production so that goods and services get produced where their marginal costs are comparatively lowest: Washington produces airliners and imports cars from Ohio and sells apples to New York and buys oranges from Florida. State boundaries are political artifacts just like international boundaries. British Columbia in Canada is to the north of Washington and Oregon is to the south of us, in one case there is a national boundary and in the other a state boundary, but economic efficiency is not about political boundaries. (It is a historical accident that we do not live in Greater Columbia.) But when it comes to international trade with foreigners the mutual gains from trade are sometimes forgotten.

2. It is often claimed that we need to protect American workers (our workers) from unfair competition by their workers (any foreign workers who can produce goods and services at a lower cost than we Americans can). Arguments like this allow politicians to buy votes by enacting laws that protect US special interests (who bribe the politicians with campaign contributions) from foreign competition. However, as we have seen economists since Adam Smith have argued that *voluntary trades must be mutually, but not necessarily equally, beneficial to both parties to the trade.*

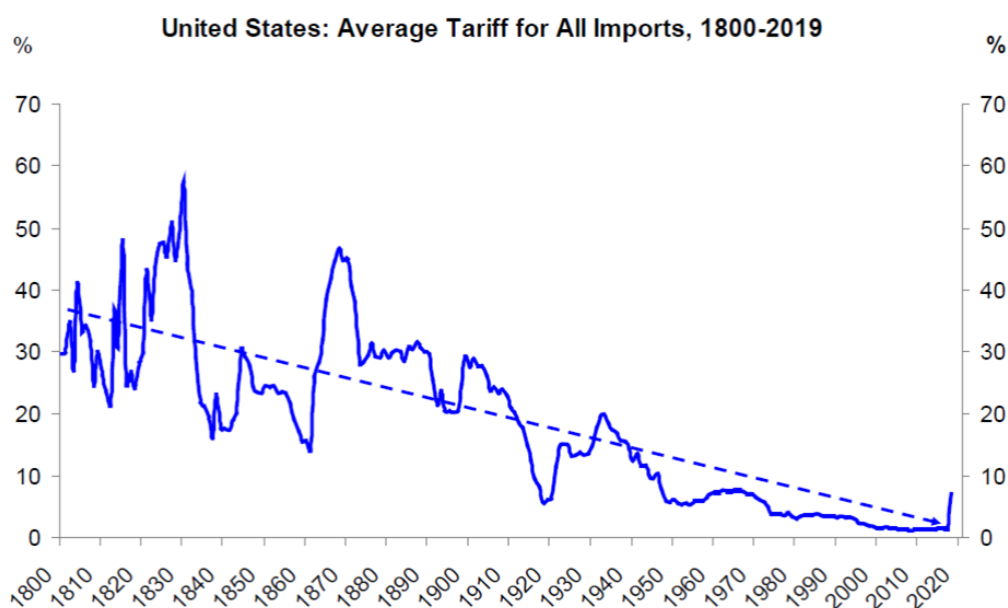
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<sup>2</sup> The European Union is, among other things, a 27-member customs union. A customs union has no trade barriers between members, at least in principle, and common trade barriers against non-members. This means that there is essentially free trade amongst its members, but not with non-members. USMCA, the re-vamped NAFTA, is also a customs union. Customs unions cause trade diversion (see below).

3. Economists think of protection as barriers to trade. There are four major types of *barriers to trade*:

1) *Tariffs* are **taxes** on *imported* goods, which make them more expensive and less competitive compared to the same goods and services produced in the US. A tariff is a tax! In general Americans do not like taxes and so it is interesting that so many of us are in favor of tariffs – taxes that we voluntarily impose on ourselves. The President is incorrect when he claims that we do not pay the taxes. An American buys \$100 of goods from China. The cost in China is \$100 whether there is a tax/tariff or not. If a 25% tariff is levied on the goods then the *importing* company has to pay \$25 to the government – the President is correct that the tax/tariff revenue increases the Federal government’s revenues, but he has not cut other taxes to reduce the tax burden. The American importer

### Reversing the globalization trend which has been in place since 1800



Source: USITC, Historical Statistics of the United States, Justin Weidner, DB Global Research

now has 25% less revenue before. We would expect the firm would pass on at least some of the extra cost to firms using the good as an input (steel in cars) or to consumers (washing machines). How much of the tax/tariff can be passed on depends on the slopes (really elasticities) of demand and supply – see our discussion of tax incidence CM8.) Note that tariffs are a regressive form of taxation, they impact low income groups more than high income groups – they

impact the Sleemans more than the Gateses

<http://conversableeconomist.blogspot.com/2019/04/washing-machine-tariffs-who-paid-who.html>

2) Quotas are *limits on the number of units of the good* that may be imported.

In the 1980s Japanese car manufacturers agreed to "voluntary" quotas; they limited the number of cars they would sell in US. US carmakers did not adjust to the post 1973/1974 oil shocks reality that car drivers would want more fuel efficient cars if gasoline became relatively more expensive, this meant that there would be an increase in demand for smaller and lighter cars and a decrease in demand for the traditional US car, which was big, heavy, and guzzled gas. Instead US carmakers took advantage of the reduced imports, the reduced supply of Japanese cars, to raise US auto prices by about \$2,600 in 2019 dollars.

Because there was a voluntary limit to the number of cars that the Japanese could sell in the US the Japanese started to move into the more lucrative middle and upper price range car markets and started to compete with US automakers in areas where the US makers had traditionally dominated the market. The failure of the US auto industry to take the opportunity to revamp their business plan is typical of how protection often lowers the long run competitiveness of the protected industry.

3) What are called *non-tariff barriers to trade*: licenses, safety standards, bureaucratic "red tape", and some types of "environmental" regulations. The requirement that tuna sold in the US must have been caught with expensive "dolphin friendly" fishing nets made it difficult for Mexican fishermen to compete with US producers. The EU refuses to allow the US to export beef to EU members because of the hormones that are injected into US cattle, although there is no good scientific evidence that these hormones are harmful to humans. Genetically modified crops are also kept out of the EU. If we are in a trade dispute with Canada either or both countries may have customs officials inspect every truck that crosses the border, rather than less than one in a hundred. The Brits are beginning to feel the impact of these sorts of barriers now that they have exited the EU, the UK's largest trade partner for the previous 50 years.

4) *Subsidies*: The research and development (R&D) costs of the Boeing 737 are partly subsidized by the military aircraft and other products that the US government buys from Boeing. Airbus had to pay \$4 billion dollars in fines for bribing airliners to buy its Airbus. The Biden administration has come to an agreement with the EU to temporarily ignore the tariffs that the WTO allowed the US to levy on the EU (because the EU subsidized Airbus) and the EU has



temporarily rescinded the Tariffs that the WTO allowed them to levy in US goods because the US subsidized Boeing! American and European farmers receive subsidies that lower their costs of production and therefore allow them to lower the prices of the agricultural products, making them more competitive in world markets. Our subsidies make it difficult for Mexican corn growers to compete with US producers.

3. The World Trade Organization (the WTO, which used to be called GATT) is an international arbitration body whose rules we and other members have agreed to accept when resolving trade disputes. The WTO has prevented many potentially damaging "trade wars". The previous president used the "national defense" loophole in the WTO regulations to restrict trade with the "enemies at our gates" – Canada and Mexico (two countries who are known for their immense defense budgets and their threats to invade the US).

#### 4. THE ECONOMIC ILLOGIC OF PROTECTION.

1. US firm A is more efficient than firm B at producing cars and A also has relatively lower costs of production – it has an absolute advantage relative to B. If US firm A offers to sell you exactly the same car for less than B offers, then you will probably buy from A. Is A "unfairly" competitive because it has lower costs? We hunt for bargains, why would we stop at our national borders?

Pre-COVID Canadians came in droves to shop at Costco<sup>3</sup> – was Costco competing "unfairly" with Canadian retailers? Clearly Costco is competing with the Canadian firms, but why is this competition "unfair"? If we are offered X at a lower price by country E then we will buy from E and not from B or C or D (or from our own producer A). Why would we buy at a higher price than we have to?

*If country E subsidizes the production of X and is able to sell us X at lower prices than countries B, C and D can, and at a lower price than our own producer A, then why would we turn down this gift? (We could compensate the American producers and their workers if we felt that the gain was substantial).*

2. You may believe that it is patriotic to "buy American". But protection imposes your patriotic preferences, which I may not share, on me. I know Chuck and Dee Robinson well and sometimes buy books from Village Books but I also buy from Barnes and Noble and Amazon. Why should I have to pay higher prices for my books just because Village Books is a local firm when all I am interested in is

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<sup>3</sup> Even after the fall in the Canadian exchange rate raised the cost of American goods.

getting my books as cheaply as possible?<sup>4</sup> (The Robinsons sold Village Books in 2016.)

<https://www.bellinghamherald.com/news/local/news-columns-blogs/dean-kahn/article83127342.html>)

## 5. "UNFAIR" COMPETITION FROM LOW WAGE COUNTRIES.

1. The claim that competition is "unfair" is usually based on the fact that country A has lower wages than country B. Most non-economists confuse wages with costs. However, **costs involve both wages per hour and also productivity per hour**.  $MC = W/MP_L$  where  $W$  is the hourly wage and  $MP_L$  is the production of the marginal worker per hour (The technical term for  $MP_L$  is the Marginal Product of labor, the increase in output when one more unit of labor is employed.)

Say a Vietnamese worker earns \$1 per hour and an American worker \$50 per hour. The Vietnamese worker produces 10 plastic ducks per hour and the American worker, using a lot of expensive (physical) *capital* equipment and embodying a lot of expensive *human capital*, produces 1000 plastic ducks per hour. The American worker is paid 50 times as much as the Vietnamese worker but produces 100 times as many plastic ducks per hour. The American worker produces a plastic duck for 5c, which is half the cost of the Vietnamese plastic duck, 10c. Is the American worker guilty of unfair competition because she has access to more capital? Low wages are associated with low productivity, which results from less access to capital equipment and inadequate investment in *human capital (education and training)*. The only way a Vietnamese worker can compete with an American worker is by accepting a lower wage. If trade makes Vietnam better off, then Vietnamese wages will rise as their productivity rises – and the safety and environmental regulations that are in place are more likely to be enforced.

2. Of course, if you are a low wage and low productivity worker in the US, someone who has very little human capital, then you may have problems competing with the Vietnamese worker. Say the Vietnamese worker makes \$1 per hour and produces 10 plastic ducks per hour. The low skilled American worker is paid \$5 per hour and produces 40 plastic ducks per hour. The American worker is five times as expensive as the Vietnamese worker but is only four times as productive. The cost of each American plastic duck is now 12.5c and the cost of the Vietnamese plastic duck is 10c so we buy our plastic ducks from the Vietnam.

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<sup>4</sup> I may want to support local retailers if I value the quality of the community in which I live.

3. In fact *we do most of our trade with other industrialized countries and relatively little with LDCs* because they do not produce things that we want except for agricultural products, raw materials, and cheap manufactured items. **The benefits from the division of labor are greatest when countries are alike in what they produce, because then reorganization of production is likely to yield large returns**, but developed and underdeveloped countries have such different economic systems and produce such different products that there is little scope for reorganization of production: we produce airliners and let Vietnam produce straw hats for us and there is little gain via reorganization of production. But if we produce airliners and let Canada produce cars for us then we can reorganize production as if Canada and the US were a single country (where America is like Washington State and produces airliners and Canada is like Michigan and produces cars).

Much of the manufactured goods that we import from LDCs and China are low value-added products like plastic toys – *the US has better uses for its scarce labor and capital than producing these sorts of products*. (China adds only about 10% to the goods that it imports to use to produce goods for re-export, the US adds about 80% to re-exports.)

Textiles are something that can be produced competitively in places like India and Pakistan. In your lifetime the cars you drive will probably be produced in China, and India, and Pakistan. (I predict India will be the world's second largest economy – using PPPs – by 2030.)

## 6. WHO GAINS AND WHO LOSES FROM PROTECTION?

1. The rhetoric of protection attempts to divert our attention from the real conflict of interest, *the conflict of interest between "our" workers and us – American consumers*. When George W. Bush Jr. first took office, he imposed 30% tariffs on steel imported from South Korea, Sweden and Japan on the grounds that those countries were "dumping" steel in the US. "Dumping" occurs when a country sells a product in a foreign market for less than its marginal cost of production.<sup>5</sup> The WTO ruled against the US and allowed the other countries to retaliate to the extent that they had been harmed by the tariffs. The tariffs were removed when the retaliation was targeted at states that Bush had won or lost with narrow margins. Note that Sweden, Japan, and South Korea are not low wage countries. You can remember how China retaliated

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<sup>5</sup> A profit maximizing firm may charge less to foreigners than it does to its home consumers because demand is more responsive to price in the foreign country than in the home market, but it would not sell profitably below its marginal cost of production.

when the last President imposed tariffs on their products.

2. Steel is a material that is used in the production and transportation and sale of almost every item that you buy. My shirt has a steel component because it was made and distributed by steel-using machines, trucks, container ships, railroad cars. (Re-read "I, Pencil"). An increase in the price of steel has tiny impacts on the prices of hundreds of thousands of goods and services that you purchase, each impact may be very small but their cumulative effect may be large: death by a thousand cuts or fire ants versus elephants.

<http://www.nytimes.com/2019/01/25/business/economy/how-tariffs-stained-the-washing-machine-market.html>

<https://www.nbcnews.com/business/consumer/trump-s-washing-machine-tariffs-are-costing-americans-almost-100-n999461>

## 7. THE EMPLOYMENT EFFECTS OF TRADE.

1. "What about the workers?" What about the workers indeed! I have never met an American steel worker nor do I expect to do so before I croak. Why should I sacrifice my welfare for some anonymous person who lives thousands of miles away in America, when I can increase my welfare by buying from some anonymous foreign worker who lives thousands of miles away in Sweden or Japan? You have every right to "buy American" if you wish to do so, but I do not appreciate legislation to force me to pay for your patriotism.

2. Are you even patriotic? Does lowering competition make America better off? The US is usually thought of as the land of free enterprise, therefore stifling competition seems not to be consistent with Americans' belief in competition and the benefits of free choices: "the American way".

3. Because steel is such a widely used product steel tariffs raise the prices of domestic producers of products with a significant steel component. This will usually cause the output – and employment – in the industries to contract as the higher prices choke back the quantity demanded. Other industries therefore lobbied against the steel tariffs.

4. Because retaliation against our exports is allowed under the WTO rules then *jobs will be lost in some exporting industries and jobs will also be lost in trades associated with the importation of steel.* (The port of New Orleans obtained 43% of its revenues from imported steel shipped through its harbor.)

I do not know of any empirical evidence but it is not obvious that there are more jobs saved in the steel industry than those lost in other US industries.

## 8. THE BOTTOM LINE: AMERICA FIRST OR AMERICA LAST?

*(1) Protection makes workers and executives and stock holders in the protected industry better off. (2) Protection makes workers, executives and stockholders worse off in industries that use the imported good as an input, and also the workers etc. in the companies that do the importing and in the firms that physically handle and distribute the imports. (3) Because the country subject to the tariff will retaliate against our exports, workers etc. will be worse off in our export industries. (4) Because taxes usually increase prices American consumers – 333 million of us – are worse off.*

Without doing careful empirical work we cannot say what the net effect is. But it is not obvious that the gains to say, the steel industry, a declining industry with employment around 150,000 in 2019, are sufficient to outweigh losses elsewhere.

## 9. FIGHTING HISTORY.

1. Protection is ultimately futile, an attempt to fight history. Unless the protected industry really takes the opportunity offered by temporary protection to re-organize itself and become more competitive, the *protection simply perpetuates the misuse of resources while it provides no incentives to take actions that might restore the lost comparative advantage.* In general, *competition is something that makes us more efficient and stimulates innovation.*

2. Almost everyone is averse to change. We like the way things were and do not like to have to adapt to new circumstances. This is a major source of political problems in the US where demographic change and changing international circumstances have caused many parts of the US to change drastically in the last thirty years.

3. John Stuart Mill argued that protection might be justified in what he called the "infant industry" case, where a country like China may decide to protect its new car industry from foreign competition until the industry has achieved a size and degree of sophistication that enables it to stand on its own two feet and compete with the "adults". Indeed, this is what the Japanese and South Koreans did after WW2, and the UK and the US did during the nineteenth century.

When David Ricardo illustrated his theory of comparative advantage, he argued that Portugal should specialize in producing wine and England in producing cloth. But it could be argued that such specialization caused Portugal to be a relatively poor agricultural country and England to develop its cloth trade and

move on to other types of valuable manufactured goods. In which case Portugal might have been better off, in the long run, if it had protected and developed its cloth industry.

The crucial issue is *by how much, and for how long, should protection be provided*; it is often difficult for the “child to grow up” and once an industry is protected then removing protection is often politically very difficult.

4. The infant industry argument clearly does not apply to situations such as the one in which we lose our comparative advantage in crude steel<sup>6</sup>, which is clearly not an infant industry in the US.

5. And, we know from the logic of comparative advantage, that if we lose our comparative advantage in steel then there **must** be at least one other industry in which we do have a comparative advantage. We need to move scarce resources out of steel and into that other industry where the resources are more valuable.

5. The so-called “strategic/defense” argument is often spurious. We protect the American shoe industry on the grounds that if there was a war with China then our forces would not have boots, but the American shoe industry produces ladies’ high heel shoes that are not likely to be useful in combat except to drive the stiletto heels into the skulls of our enemies. We protect the US shipping industry despite the fact that the military says that it does not need all of that “lift” capacity, and has not used much in the last 40 years. In WW2 Germany was short of many raw materials such as rubber and oil and so the Germans produced synthetic rubber and oil. The US bought up strategic materials from neutral countries which it did not need to stop the Axis from using them.

## 9. WINNERS AND LOSERS.

1. In the analysis of comparative advantage in CM10 we either looked at trade between two individuals or between two countries in which everyone was assumed to gain when trade was unrestricted. But in reality, ***some people gain and some people lose when trade barriers are removed.***<sup>7</sup>

An economist cannot say that free trade is an optimal policy if there are gainers and losers because that would entail making interpersonal value judgments. But the economist can try to analyze the likely effects of freeing trade and can often attach numbers to the various gains and losses. In 1994 Hufbauer and Elliott

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<sup>6</sup> The US has a comparative advantage in the production of many specialized steels produced in niche mills.

<sup>7</sup> Note that once it is imposed protection is Pareto optimal, removing protection must make those who gained from it worse off.

estimated the costs to consumers of various trade restrictions (some of which no longer apply). This is the source of my claim that steel tariffs that protected jobs in the steel industry cost consumers about \$750,000 per job saved. Steel workers do not make \$750,000 per year. It would be economically more efficient to pension them off on say \$100,000 a year (so long as they stay away from the steel industry) and let them do whatever they like – perhaps taking up a new job – until they retire at 67 years of age.

### The High Cost of Protection

How much does it cost to protect a job? An average of \$231,289, figured across just 20 of the many protected industries. Costs range from \$132,870 per job saved in the costume jewelry business to \$1,376,435 in the benzenoid chemical industry. Protectionism costs U.S. consumers nearly \$100 billion annually. It increases not just the cost of the protected items but downstream products as well. Protecting sugar raises candy and soft drink prices; protecting lumber raises home-building costs; protecting steel makes car prices higher; and so forth. Then there are the job losses in downstream industries. Workers in steel-using industries outnumber those in steel-producing industries by 57 to 1. And the protection doesn't even work. Subsidies to steel-producing industries since 1975 have exceeded \$23 billion; yet industry employment has declined by nearly two-thirds.

Protected industry	Number of jobs saved	Total Annual Costs	Cost per job saved
1 Benzenoid chemicals	216	\$ 297m	\$1,376,435
2 Luggage	226	\$290m	\$1,285,078
3 Softwood lumber	605	\$632m	\$1,044,271
4 Sugar	2,261	\$1,868m	\$826,104
5 Polyethylene resins	298	\$242m	\$812,928
6 Dairy products	2,378	\$1,630m	\$685,323
7 Frozen concentrated orange juice	609	\$387m	\$635,103
8 Ball bearings	146	\$88m	\$603,368

9 Maritime services	4,411	\$2,522m	\$571,668
10 Ceramic tiles	347	\$191m	\$551,367
11 Machine tools	1,556	\$746m	\$479,452
12 Ceramic articles	418	\$140m	\$335,876
13 Women's handbags	773	\$204m	\$263,535
14 Canned tuna	390	\$100m	\$257,640
15 Glassware	1,477	\$366m	\$247,889
16 Apparel and textiles	168,786	\$33,629m	\$199,241
17 Peanuts	397	\$74m	\$187,223
18 Rubber footwear	1,701	\$286m	\$168,312
19 Women's nonathletic footwear	3,702	\$518m	\$139,800
20 Costume jewelry	1,067	\$142m	\$132,870
<b>Total</b>	<b>191,764</b>	<b>\$44,352m</b>	<b>Average \$231,289</b>

Data for 1994 from Hufbauer and Elliott *Measuring the Costs of Protection in the US* (WA, DC, Institute for international Economics, 11-13)

Here are some recent estimates for washing machines.

[https://www.washingtonpost.com/us-policy/2019/04/23/trumps-washing-machine-tariffs-cost-us-consumers-every-job-created/?utm\\_term=.68ac9665c44f](https://www.washingtonpost.com/us-policy/2019/04/23/trumps-washing-machine-tariffs-cost-us-consumers-every-job-created/?utm_term=.68ac9665c44f)

<https://conversableeconomist.blogspot.com/2019/04/washing-machine-tariffs-who-paid-who.html>

And here are Hufbauer's estimates for the cost of protecting the US tire industry.

<https://www.piie.com/publications/policy-briefs/us-tire-tariffs-saving-few-jobs-high-cost>

2. When we remove tariff barriers then those of us who gain at the expense of the steel workers and owners of steel plants could, in principle, compensate those workers who cannot adapt. If the cost of the steel tariff per job saved in the steel industry is in the region of \$750,000 per year, then the government could increase aggregate welfare by pensioning off the steel workers rather than



imposing a steel tariff. Although such programs existed, they were relatively small and not much utilized. Then in 2011 Congress dismantled most of them. It is often difficult to determine whether a worker has lost her job because of foreign competition or because she and/or her employer were simply not competitive because they were inefficient.

3. The comparative advantage and division of labor arguments refer to *static* gains from trade and the empirical evidence is that the measured gains and losses are small relative to our GDP. This is primarily because the US is such a large country that it is able to apply CA and DOL domestically, our total trade (exports plus imports) is only about 23% of GDP.

The *dynamic* gains from trade that arise from making our producers compete on a level playing field with foreign competitors are more important but also much more difficult to measure. The diagrams in section 10 below refer to the static gains from trade.

4. *For every job ever lost through trade, economists estimate that ten to fifteen jobs have been lost through technological change.* Think of the impact of bar codes, and the effect of adding icons to computers in restaurants, and the impact of email and computing and the automation of household jobs. Costco has trained me to do my own check out, which means that Costco will employ fewer people at the check-out lines.<sup>8</sup> Historically technology has added more jobs than it destroyed and the same is probably true of trade.

## 10. ONCE MORE WITH DIAGRAMS.

1. A no trade policy is called *Autarky* – self-sufficiency, the policy adopted by the Soviet Union. China adopted *Autarky* in 1433 and did not trade significantly with the West for 300 years until Europeans – most notably the British during the “Opium Wars” – forced their way into Chinese markets in the nineteenth century.<sup>9</sup> In 1854 Commodore Perry forced the Japanese to open up their trade

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<sup>8</sup> The IT revolution may be different, because it creates new jobs only for people who have good IT skills. We need to send more young people to Community Colleges to learn basic computer skills and fewer to universities where they take economics courses or, even worse, business courses!

<sup>9</sup> There is a famous letter from the Emperor Qianlong to George the third that basically explains that China is self-sufficient and does not need to trade with the West. The English wanted Chinese silk, tea, and porcelain and the East India Company, which was effectively a state independent of the British government, started smuggling opium to pay for Chinese goods. The Opium Wars were one of the most despicable acts in English history. China has one of the greatest world civilizations and there is much that we can learn from China.

with the West. Both China and Japan suffered from their refusal to trade with Western barbarians as they missed out on European advances in technology.

2. We begin in Figure 3 with a situation in which there is no trade. The market is in equilibrium at  $Q_e$  and  $P_e$  and the GFT (CS + PS) are maximized.

3. Figure 4 shows the situation when the economy is opened up to trade and domestic steel producers and workers have to compete with foreign steel producers and workers.

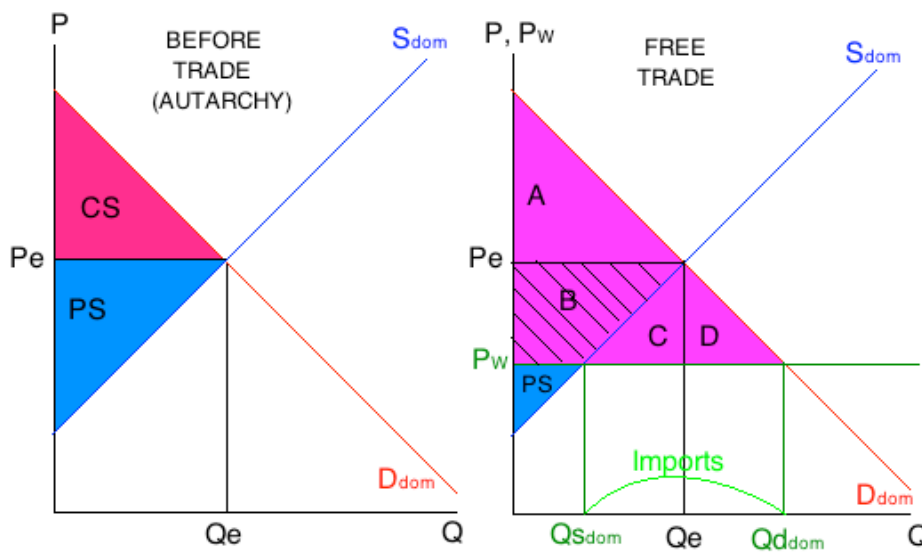


Figure 3

Figure 4

4. Assuming that the US does not have a comparative advantage in the production of steel it will face a world price ( $P_w$ ) that is lower than the domestic price ( $P_e$ ). Steel will be imported from lower cost producers in other countries and the domestic industry will contract from  $Q_e$  to  $Q_{s_{dom}}$  (the domestic supply – some domestic suppliers may be able to compete because, for example, they have low transportation costs or because they are located close to a major buyer of steel) or it could cease to exist entirely.

5. The quantity demanded of steel is bigger because the price has fallen and is now  $Q_{d_{dom}}$ . Imports will make up the difference between domestic production and the new quantity demanded of steel. Consumer surplus is now the large magenta colored triangle in Figure 4 (A+B+C+D). Part of the gain in consumer surplus is at the expense of the domestic industry (the cross hatched area, B). The triangular areas beneath the demand curve and above  $P_w$  (D) and below the

supply curve and above  $P_w$  (C) are pure gains to US consumers. Imports are  $Q_{dom}^d - Q_{dom}^s$ .

6. Employment in the US steel industry will fall, as will the profits of the steel mill owners. But new jobs (and profits) will be created in industries that use large quantities of steel in their production processes because the input costs of those industries will fall, causing their prices to fall and their output to increase, which will cause consumer surplus and producer surplus in these industries to rise. Employment will be generated by the import process that brings the steel to US ports and in the transportation of the steel to the US steel users. Employment in export industries will also increase if there are reciprocal tariff reductions by our trading partners. *Note that the US gains even if there is no reciprocal tariff reduction.*

7. In Figure 5 domestic steel producers and steel workers have successfully lobbied Congress and a tax/tariff,  $T$ , has been imposed on imported steel. Consumers now face a new price  $P_T = P_w + T$ .

Because the tax has caused the price of steel in the US to increase domestic quantity supplied,  $Q_s$ , increases from  $Q_{sd}$  to  $Q_{sT}$  and quantity demanded,  $Q_d$ , contracts to  $Q_{dT}$ .

Output and employment in the US steel industry are larger and there is a corresponding increase in producer surplus (the upper part of the blue triangle) at the expense of US consumers. Consumer surplus is now smaller by the loss of the trapezoidal area between  $P_T$  and  $P_w$ .

The green rectangle marked GOVT is revenue from the tariff (tax) on imports and is transferred from consumers to the government. An important issue is what does the government do with this revenue.

The areas of the two white triangles areas are simply lost (DWL), no one receives them and consumers lose them.

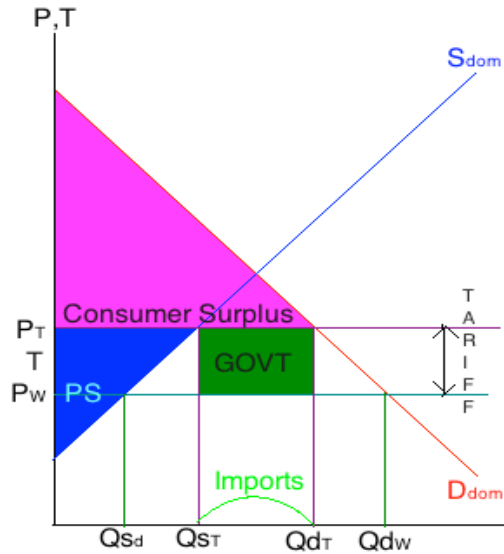


Figure 5

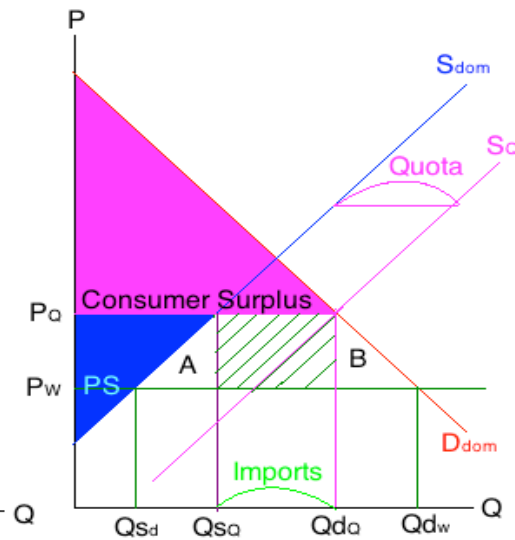


Figure 6

8. The static gains from trade associated with free trade are measured by the two white triangles, A and B. The loss to consumers is the total loss of consumer surplus between  $P_T$  and  $P_W$ . Because economists eschew value judgements about the relative worth of consumers, producers, and the government economists ignore the lost CS and concentrate on the DWL triangles.

9. The impact on employment in the export sector and elsewhere in US industry are not shown in the diagram, but while employment will increase in the US steel industry there will be losses of employment in other US industries as outlined in 7 above.

## 11. QUOTAS.

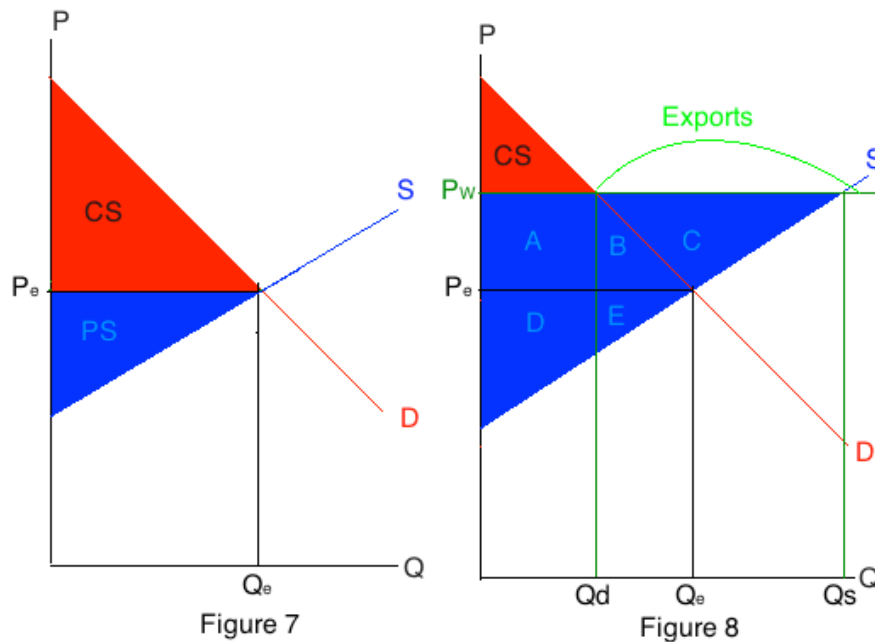
1. Figure 6 illustrates the case where a quota is set on imports – in my case so that imports are exactly the same as under the tariff. We have a new supply curve ( $S_Q$ ), which is the domestic supply plus the quota. You should be able to see that the only difference between the tariff and the quota is that in the tariff case the government gained revenue from the tariff, whereas in the quota case who gets the revenue (the cross hatched area) depends on how the quota is administered; it could go to the foreigners selling the imports to us or it could go to the government in “license” fees (in which case the quota is equivalent to a tariff), or it could go the firms importing the commodity.

## 12. THE ECONOMICS OF EXPORTS.

1. Textbooks seldom discuss the economics of exports because they are not

controversial; “clearly” increases exports are in our interest. Figure 7 shows the before trade (Autarchy) situation with the consumer surplus equal to the area of the red triangle and producer surplus equal to the area of the blue triangle.

2. In Figure 8 the economy has been opened up to unrestricted trade and the price, which is the world price, is now higher. Because the country is the low-cost producer of the good or service, it has a comparative advantage in the production in the good or service relative to other countries; suppliers can now export the excess supply to the rest of the world. Producers therefore gain and their producer surplus is the larger blue triangle. But the price has risen and so the consumer surplus area is smaller: the red triangle. The increase in producer surplus is mainly at the expense of consumers who lose  $A + B$  to producers. Once again, the issue is not that our workers gain at the expense of foreign workers, which they do, but that our workers gain at the expense of our consumers.



## 12. TRADE AGREEMENTS.

The USMCA (consisting of Canada, Mexico, and the US), which replaced NAFTA – which needed updating – and the European Common Market are examples of trade agreements, what economists call customs unions. They are a second best to free trade. What the trade agreement does is to allow the signatory countries

to have free trade amongst themselves, while setting common tariffs and trade rules against countries outside of the trade block. Economists would say that *customs unions cause trade diversion*, more trade within the members but at the expense of trade at large.

Say that the cost of X in terms of Y is given by: Australia 1, Canada 2.5, European Union (EU) 4, Mexico 1.5, UK 3, and US 2. Then Australia is the low-cost producer of X and all of the other countries will import X from Australia.

Now set up two customs unions: the European Market (consisting of the EU and the UK) with a common external tariff of 4, and USMCA with a common tariff of 3.

As far as members of the European Market are concerned the cost structure for X now looks like: Australia 5 (1+4), Canada 6.5 (2.5+4), EU 4 (4+0), Mexico 5.5 (1.5+4), UK 3 (3+0), US 6 (2+4). The UK is now the low-cost producer of X and the EU will buy X from the UK for 3Y. But both the EU and the UK are worse off compared to buying from Australia before the tariff.

As far as USMCA is concerned the cost structure for X now looks like this: Australia 4 (1+3), Canada 2.5 (2.5+0), EU 7 (4+3), Mexico 1.5 (1.5+0), UK 6 (3+3), and US 2 (2+0), and so the US and Canada buy X from Mexico. But both Canada and the US are worse off compared with buying from Australia before the common tariff.

Brexit: If the UK leaves the EU and abandons the 4 tariff, then the cost structure would look like: Australia 1, Canada 2.5, EU 4, Mexico 1.5, UK 3, US 2. The UK would then import X from Australia rather than exporting X to the EU. What happens depends on whether the UK keeps the existing tariff (4), chooses a lower tariff, or opts for free trade (a zero tariff). Of course, there are many other factors at play such as dismantling existing relations between firms.

(7,337)