



PSCI498 - Economics, Politics, and Law of International Trade
Lecture Notes

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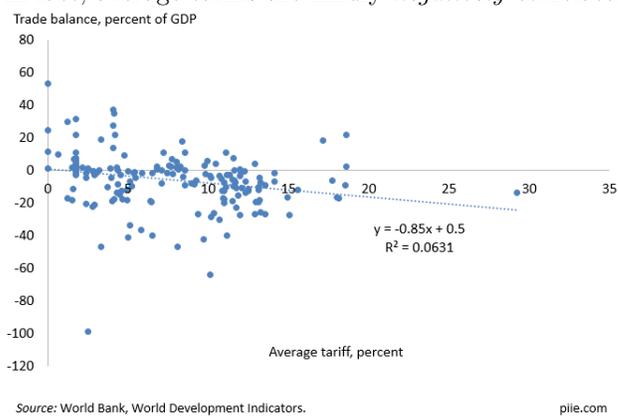
1 Preliminaries

1.1 Macroeconomics/Trade Deficits

- $GDP = Y = C + I + G + NX$
- C is consumption, I is investment, G is gov't expenditure, NX is net exports.
- Capital Account = $(C + I + G) - Y$
- Current Account = NX
- $C + I + G - C - I - G - NX + NX = 0$
- Thus: capital account + current account must sum to zero
- How do tariffs change this? One might think that increasing price of imports versus exports will increase net exports.
- But! With zero capital account, imports are purchased with exports. Thus, a tariff on imports indirectly penalizes exports.¹
- Think about it this way: if you operate a shop, and buy stuff with the things you sell, and then someone comes in and starts charging you 10% on the things you buy, so that your purchase prices increase by 10%.
- In this case, without an external lender, you are still buying as much as you sell. But you're getting less items for what you sell.
- Internationally, it's a bit more complicated because you have the ability to buy domestic products instead. The shop analogy to this would be: make it yourself.
- Maybe you make more things yourself to consume (we'll talk about comparative advantage in a bit) instead of making stuff to sell. This reduces external purchases *and* external sales.
- Without some change in lending activity, the *balance* stays the same.
- Internationally, what usually happens is *currency appreciation*. An import tariff increases the cost of foreign goods, but this usually accompanies, say, dollar appreciation, which decreases the attractiveness to foreign buyers of domestic goods.
- Irwin (2007) estimates that tariffs in late 1800s, for instance, provided a 15% implicit subsidy to import-competitors, but a 11% implicit tax on exports.
- What drives deficits/surpluses? The general understanding: differences in investment opportunities.
- If rates of return are higher domestically than in most foreign countries... you get capital inflows. If this is *primary* then goods adjust after the fact.

¹See Lerner Symmetry Theorem.

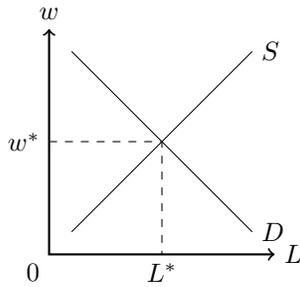
- In fact, average tariffs are mildly *negatively* correlated with trade balance.



- Even Smoot-Hawley tariffs of 1930 led to reduction in trade volume, but not significant increase in deficits.
- Gov't borrowing can also impact deficits by increasing demand for foreign capital, but not necessarily.
- $S^P = Y - T - C$, $S^G = T - G$
- S^P is private savings, S^G is government savings, T is taxes.
- In open economy: $S^P + S^G = I + NX$
- $S^P - NX = I + (G - T)$
- $NX = S^P - I - (G - T)$
- Ceteris paribus: More private savings? Lower trade deficits. More investment? Higher trade deficits. Higher government borrowing? Higher trade deficits.
- However, none of this is ceteris paribus: these variables are all jointly determined.
- Should we care about deficits? Unclear. If inflows are being well spent, then capital inflows can be beneficial.
- US position as reserve currency gives privileged borrowing position, allowing easy borrowing for infrastructure spending, other investments, etc.
- Most of this beyond the scope of this class, which is not focused on macroeconomics (trade is largely the domain of microeconomics).
- Main conclusion: (1) trade deficits are not a “scorecard” (2) most policies that seem like they might reduce deficits do not clearly do that.
- This has been a problem in recent negotiations: deficits have been brought up *constantly* but it is entirely non-obvious what changes to trade agreements could even have the “desired” effect.
- This is often missed in popular journalism which has done a decent job addressing why trade deficits *should not* be a primary goal of trade renegotiations, but have not always made it clear the difficulties in doing so even if everyone agreed on that as a goal.

1.2 Markets!

- Quick review of supply and demand. Focus on labor markets.



- Why do economists think workers are paid the marginal product of their labor? What does that mean?
 - Marginal product vs.
 - *Average* product.
- Differences between average and marginal product ensure that producers (e.g. firms) extract “producer surplus”.
- Producer surplus = profits + *fixed costs*
- Minimum wage question. What are the possible trade-offs of an increase in minimum wage?
 - Wage gains, captured by those working at the price floor who end up making more.
 - Job losses? Under what conditions? Elasticity of labor demand?
 - Short versus long term effects?
- Why might labor markets differ from other markets?
 - One possibility: people respond differently to different wage rates. Turnover, motivation, etc. Price paid may impact the unit in question.
- **Question:** how do productivity changes in practice lead to increases in wages? How well do they track across countries?

$$\underbrace{\frac{w}{h}}_{\text{hourly wage}} = \underbrace{\frac{w}{Y}}_{\text{labor share of income}} \times \underbrace{\frac{Y}{h}}_{\text{productivity}}$$

- w is total amount of income paid to labor, Y is total output/income, h is total hours worked.
- However: this accounts for *average* wages. And changes in labor share can matter.
- In context of US: recent work by folks like Jared Bernstein (former chief econ advisor to Biden) suggests declining labor share not a significant driver of median wage lagging productivity; inequality is more significant.
- Important here is to distinguish *median* wages from *average* wages. Increased inequality leads to higher divergence between the two.

2 Comparative Advantage

2.1 Introduction

- **Opportunity costs:** the cost of something being what is given up to obtain it.
- Q: Do you value your time appropriately if you think of it in terms of opportunity costs?
- What about schooling? Or, *heaven forbid*, grad school? There is a *direct cost* and then an *opportunity cost*.
- Comparative advantage is about a country (or someone) having lower opportunity costs in production of something versus another thing.
- What does this mean concretely? I can produce pretty good cocktails.
- Why don't I do that? Because I believe that the cost of time spent producing cocktails in forgone research/teaching is higher than it is for other people.
- This needs to be distinguished from absolute advantage, which is the more colloquial understanding of being better at something.
- So when I help put together Ikea furniture, I'm usually relegated to simple stuff like tightening screws, which I'm also worse at, but less worse at.

2.2 Production Possibility Frontier (PPF)

- Consider two goods: iPhones and shoes.
- Unit labor cost of iPhone: c_P
- Unit labor cost of shoe: c_S
- Quantity of iPhones: Q_P
- Quantity of shoes: Q_S
- Total labor: L
- Budget: $c_P Q_P + c_S Q_S \leq L$
- Set equal and rearrange to get:

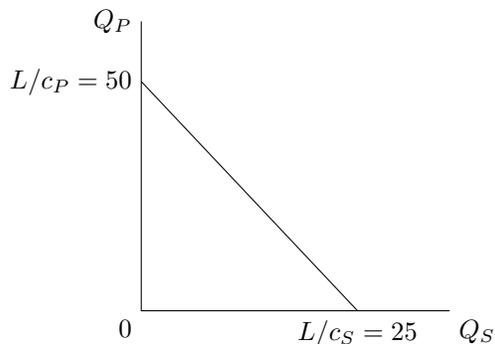
$$Q_P = \underbrace{L/c_P}_{\text{Intercept}} - \underbrace{\frac{c_S}{c_P}}_{\text{slope/relative price}} Q_S$$

- Opportunity cost of an extra shoe is $\frac{c_S}{c_P}$ iPhones.²
- In a domestic equilibrium, it must be the case that $\frac{P_S}{P_P} = \frac{c_S}{c_P}$
- Why? Because otherwise, workers will all only produce one good or the other.

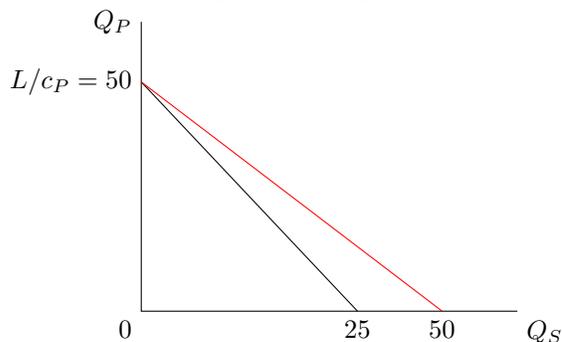
²If you've taken a calculus course, note that $\frac{\partial Q_P}{\partial Q_S} = -\frac{c_S}{c_P}$

2.3 Equilibrium with Trade

- Now two countries that produce iPhones and shoes.
- Call them “Home” and “Foreign”, which is often convention. Note Foreign values with ‘.
- $c_P = 1, c_S = 2$
- $c'_P = 6, c'_S = 3$
- $c_S/c_P = 2, c'_S/c'_P = 1/2$.
- Home has comparative advantage in iPhones, Foreign has advantage in shoes.
- $L = 50, L' = 120$
- How are prices w/ trade determined? By demand conditions in world market.
- Home PPF: $Q_P = 50 - 2Q_S$ w/o trade.

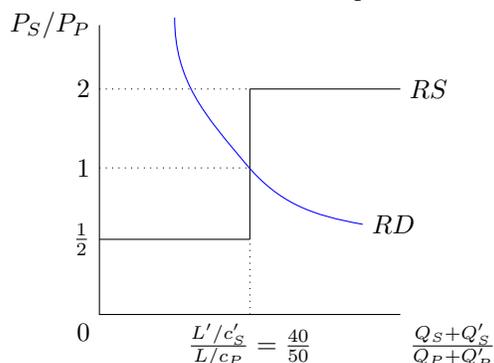


- To induce specialization, $P_S/P_P \in [1/2, 2]$
- Assume $P_S/P_P = 1$
- Consumption possibilities now different than production possibilities:
- New Home CPF: $Q_P = 50 - 1Q_S$



- Can consume more than before, unless Home consists of shoeless iPhone addicts.
- Wages if $P_S = \$12$ (assuming specialization)? \$12 per labor unit for Home, \$4 per labor unit for Foreign, because productivity is lower in Foreign.

- How do we determine relative prices? In the following fashion.



- Above depicts relative supply and demand curves.
- Relative demand (RD) tracks the *aggregate* (i.e. across both countries) demand for the two products as a function of *relative* prices. As shoes become less expensive relative to phones (going down the y axis), intuitively, people buy more shoes relative to phones (we move further right on the x axis).
- Key to understanding the relative demand curve is realizing that this could reflect a variety of different distributions across the two countries. For instance, if one country is relatively poor and demands few iPhones (say only 5 at a given price), while the other country is wealthy and really likes iPhones (demanding 45 at a given price), then the demand curve would still reflect that 50 iPhones in total were being demanded at that price.
- Relative demand curves are generated by *consumer preferences*. So, if people in either country increased their interest in iPhones without changing their interest in shoes, then in aggregate, more phones would be demanded at any given $\frac{P_S}{P_P}$.
- Relative supply (RS) tracks the *aggregate* (i.e. across both countries) supply (amount produced) of the two products as a function of *relative* prices. A key insight here is that there is a fairly wide range of relative prices at which the relative quantity supplied stays the same (this is the flat vertical part at $\frac{40}{50}$). This is because for prices within this range, each country is better off specializing in the product they have a comparative advantage in, since the world exchange price is better than the domestic marginal rate of substitution.
- The horizontally flat parts of the RS curve are where one country specializes and the other produces both goods. So for instance, the flat part left of $\frac{40}{50}$ has Home producing only iPhones, while Foreign produces both iPhones and shoes.
- We would end up in this flat part of the curve if relative demand, as determined by consumer preferences, were such that more iPhones were demanded than Home could produce even with specialization. In this case, Foreign has to produce iPhones even though they are not especially good at it, because it's the only way to make enough iPhones to satisfy demand.
- The relative price is determined in the usual way, by the point where relative supply equals relative demand.
- Let's consider a numerical example illustrating impact of demand. Note that with specialization, there are 50 iPhones and 40 shoes.
- Consider if demand conditions have led to the following consumption patterns.
Home: 20 iPhones, 15 shoes
Foreign: 30 iPhones, 25 shoes

- This implies Home is trading 30 iPhones for 15 shoes, so $\frac{P_S}{P_P} = 2$.
- This could be an equilibrium: see above range of prices. And this is one where the “terms-of-trade” favor Foreign, since the good they have a comparative advantage in (shoes) is relatively expensive compared to iPhones.
- A shift to:
Home: 20 iPhones, 30 shoes
Foreign: 30 iPhones, 10 shoes
- Implies $\frac{P_S}{P_P} = 1$. This improves terms of trade for Home, which can be seen by the fact that they get to consume more shoes without giving up any iPhones.
- The aggregate production efficiency is the same though!
- Note as well that the *aggregate relative demand* implied by these different allocations can also be generated with different allocations.
- Consider for instance: Home: 30 iPhones, 20 shoes
Foreign: 20 iPhones, 20 shoes.
- This also implies $\frac{P_S}{P_P} = 1$.
- These changes would come from underlying characteristics of the consumers of Home and Foreign. How much they value iPhones versus shoes.
- However, because of the nature of the global market with trade and specialization, many shifts in demand lead to changes in distribution of resources between Home and Foreign, rather than a change in the amount produced.
- This is the terms of trade: how valuable are one country’s exports relative to imports.
- Manipulating the terms-of-trade, which may be possible via tariffs for countries that are “large” relative to world markets, can lead to gains for the country that improves their terms-of-trade. However, these gains would be zero-sum, hurting trading partners.

2.4 “Infant Industry” arguments

- What makes comparative advantage? Education, natural conditions (e.g. climate), legal institutions, capital accumulation, political institutions, managerial competence, electrification, infrastructure, R&D clusters, etc.
- As Helpman notes: relative costs of production are not handed down from on high. They are determined in *general equilibrium*.
- Leads to a question: can comparative advantage in a particular industry be “built” via protection?
- A country might have a long term ability to be competitive in production of something, even if currently they are not.
- “Dynamic learning effects” (Melitz 2005).
- Concerns:
 - Why can’t capital markets handle this? Certainly in developed countries, profitability of firms can be decades down the road (see CRISPR) but still receive investment based on projections.
 - Will governments do a better job than random chance?

- * Can a government actually identify which industries are likely to become competitive in the future? (information)
 - * Even if a government *can* theoretically intervene advantageously; will it? We must also address the incentives that governments face when they actually implement policy. (politics part 1)
 - * In Latin America, manufacturing substitutes developed during the depression and WWII that became a powerful organized political interest. Will governments be able to remove tariffs from industries that have become powerful under tariff protection? (politics part 2)
- Market failure justifications for infant-industry arguments:
 - Imperfect capital markets. If markets are incomplete, then worthy long-term investments might not receive capital, leaving space for governments to profitably intervene. (first-best solution here is still to fix capital markets)
 - Positive externalities from pioneering firms? They bear costs to establish an industry, but don't reap benefits. This is especially widely discussed with reference to *external learning economies*.
 - External learning economies should be distinguished from *internal* learning economies. “Internal” means within the firm; so if, for instance, Airbus becomes better at producing aircraft over time, but Boeing does not benefit from Airbus getting better at producing aircraft, then the learning process is *internal*.
 - In contrast, *external* learning economies involve other firms benefiting from learning in one firm. So, for instance, a firm trains workers in software engineering, and those workers go on to work for other tech firms in the area, those other firms are benefiting from these external learning economies.
 - In order for this to justify protection it must happen *within a country*. If learning happens across borders, infant industry protection is not helping.
 - Tends to lead to industry clusters: Hollywood, Silicon Valley, etc. are examples.
 - This leads to the “Mill-Bastable” test for infant industry protection when credit markets work.
 1. Mill: Are there external learning economies?
 2. Bastable: Do the cumulative net benefits exceed the cumulative net costs?
 - If these two conditions hold (which can be difficult to determine), a theoretical justification exists for infant industry protection, though this doesn't get around the political issues.
 - In practice, many cases of infant industry protection have not led the targeted industries to develop as hoped; other characteristics of the country prevented a comparative advantage from developing.
 - Examples: Brazil tried to build comparative advantage in microcomputers, but never became competitive. India protected heavy machinery, but only became competitive in less capital intensive products like light textiles.
 - Even when it “works”, in the sense that the industry becomes competitive, it's difficult to know the counterfactual: what would have happened if there weren't tariffs?
 - “Post hoc ergo propter hoc”. Irwin (2006) on tinplate industry in the late 1800s in USA suggests that tariff protection in 1890 was not necessary for eventual competitive of tinplate - it accelerated the industry's competitiveness by about 10 years, but the costs outweighed the benefits.
 - Also worth noting: subsidies dominate tariffs as a means of implementing infant industry protection/industrial policy. Quotas also usually dominate (Melitz 2005).

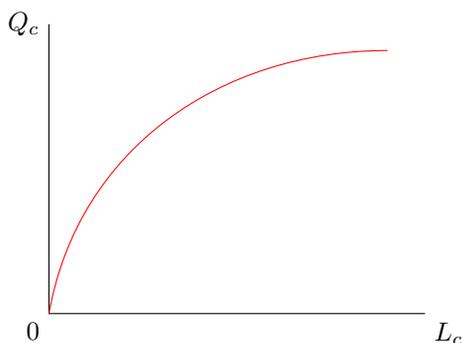
2.5 The Purpose of Trade *Theory* or Models

- What is the purpose of a trade theory/model?
 1. Identify theoretical relationships.
 2. Predict patterns of trade flows.
- (2) may tell us something about the applicability of (1), e.g. under what conditions it applies, scope limitations, extent of trade characterized by it, etc.
- Oftentimes we may find that (1) is *incomplete* or *insufficient* to explain something.
- This does not imply that (1) is *useless*.
- Empirical work has shown that much of trade does not seem to be rooted in comparative advantage: intraindustry trade seems to make up about 50% of non-primary goods trade.
- But comparative advantage is still labeled by many economists as a primary “true but nontrivial” fact to come out of the discipline.

3 Distributional Effects

3.1 Specific Factors Model

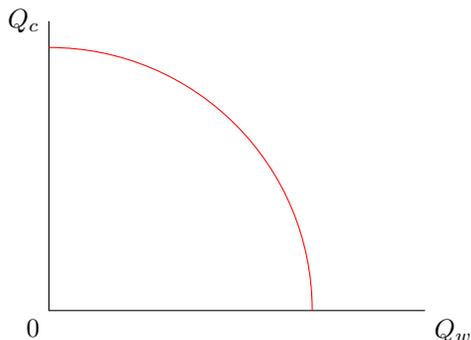
- In Ricardian model, only one factor of production: labor.
- When countries benefit, necessarily everyone benefits, because the only thing to which benefits accrue is labor.
- In the real world, trade produces benefits in terms of aggregate income, but those benefits are not evenly shared, and some people may lose depending on the factors they possess.
- A simple place to start with this analysis is called the specific factors model; or as it is sometimes described, Ricardo-Viner.
- In this model, there are two countries as before, but there are now additional factors that are “specific” to a particular sector, which we will call capital and “terrain”³ by convention.
- This factor *cannot move* between sectors. Hence “specific”.
- In practice, factors are usually only specific for some period of time. Workers can eventually be retrained. Capital investment can be redirected. Land can be repurposed.
- Thus, this can be considered a great model for understanding short term effects of trade policy. However, the length of the “short term” can vary substantially.
- Keynes’ famous phrase: “In the long run, we’re all dead.”
- Have two goods: cloth and wine.
- $Q_c = Q_c(L_c, K)$
- $Q_w = Q_w(L_w, T)$
- K and T can’t be reallocated. But $L = L_c + L_w$ can be allocated differently across production of the two commodities.
- With fixed K and T , Q_c and Q_w experience *diminishing returns* in labor.
- In math terms, the functions are *concave*. $\frac{\partial^2 Q_c}{\partial L_c^2} < 0$



- The marginal product of labor in cloth (MPL_C) is the slope of this curve, or $\frac{\partial Q_C}{\partial L_c}$
- PPF’s are constructed by considering all the possible allocations of labor across the two production processes.

³Terrain is how we say land when we want the variable to be T so it doesn’t get confused with L for labor.

- Because *both* are concave in L_c and L_w , this produces a production possibilities frontier in which there is curvature, because early units of labor produce a lot of the commodity.



- How do we determine how much labor is allocated to each sector? Recall that in a competitive labor market which is in equilibrium, marginal product of labor will equal the wage.
- Since labor can move between industries in this case, this implies that:

$$wage = MPL_c \times P_c = MPL_w \times P_w$$

- If P_c and P_w are given, this means that labor will be allocated between the two industries so that the above equation holds.
- Note that if, for instance, P_c increases, then MPL_c must go down to keep the equation equal.
- For this to happen, more labor must move into the cloth industry, which will reduce MPL_c by diminishing returns of labor.
- *Without getting too into the weeds here* (there is plenty to learn here if you want to be more precise), the key insight is that capital owners benefit from having more workers in their industry (cloth), while land owners benefit from having more workers in their industry (wine). So if changes in price lead to movement in labor, one specific factor gains and the other loses.
- Loosely, this is because a higher capital to labor (K/L) or terrain to labor (T/L) ratio is going to benefit the specific factor (capital or labor) by increasing its productivity. E.g. two people (labor) cooking in a kitchen (capital) can make more use of the kitchen than one person working in a kitchen.
- With international trade: domestic relative prices move in the direction of “world” relative prices. So if, say, cloth is more expensive internationally than domestically, the price of cloth will rise once trade begins.
- This increase in the price of cloth would lead, as suggested, to more labor being allocated to the cloth industry, which would benefit capital and hurt “terrain”.
- Furthermore, consumers now want more wine relative to cloth, since wine is relatively cheaper. So more cloth is produced, and more wine is consumed. *This implies exporting cloth and importing wine.*
- To summarize we have the following from an increase in P_c/P_w resulting from open trade:
 1. Capital benefits (specific factor to cloth).
 2. Land loses (specific factor to wine).
 3. Impact on labor (mobile factor) is ambiguous in this model.
- Thus we have the core result of the “Ricardo-Viner” model: distributional effects across industry, with export industries benefiting.

- This also accounts for descriptive trends such as steel producers benefiting from steel tariffs, etc.
- In these models though, it is worth noting that the returns to the mobile factor are the *same across industries*. It may go up or down with trade, but it will not differ across sectors.
- While we have characterized labor as the mobile factor, in practice labor is often to some degree fixed! This is why, for instance, steel workers might lose with steel liberalization.
- However, the *overall* benefits still exceed the costs, in the sense that you could “buy off the losers” and have some amount leftover.
- Compensation does exist in some forms: Trade Adjustment Assistance (TAA), active labor market programs in Europe, etc.
- However, in general, there is nothing to suggest that trade will necessarily benefit everyone, *or even most people*.
- If all of the land is owned by one person, and the world price of wine is higher than the domestic price... this implies benefits accruing to one person!

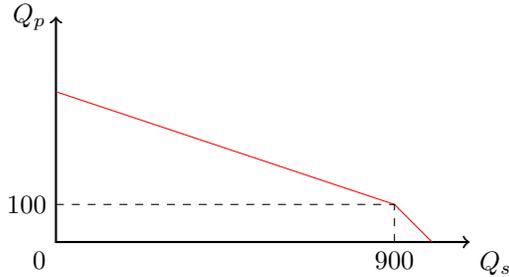
3.2 Understanding The China Shock

- The “China Shock”, as outlined by Autor, Dorn, and Hanson, was arguably the highest impact empirical trade paper of recent years.
- Demonstrates that the “short term” employment effects are not so short, and are geographically concentrated.
- “Rising imports cause higher unemployment, lower labor force participation, and reduced wages in local labor markets that house import-competing manufacturing industries. In our main specification, import competition explains one-quarter of the contemporaneous aggregate decline in US manufacturing employment.”
- This also happens to some extent in developing world, where labor (esp. unskilled labor) might be expected to benefit.
- Illustrates a Ricardo-Viner world, in some sense, where labor is often not so mobile.
- Moreso that Heckscher-Ohlin world, where all factors are mobile.
- Key considerations:
 1. Shock was enormous and unprecedented, and unlikely to be replicated.
 2. Reversals could entail a similar shock! Economy has readjusted, including new, complex supply chains.
 3. Overall aggregate gains - Caliendo et al. (working paper) estimate 0.2% increase in GDP, but 16% decline in manufacturing employment.
 4. Nonetheless, key regions and industries suffered significant losses.
- Perhaps the Ricardo-Viner model should receive greater emphasis in our understanding of trade’s impact?
- But also: most shocks aren’t like the China shock, which had the largest country (by population) in the world becoming deeply integrated in the world economy almost all at once while growing rapidly.

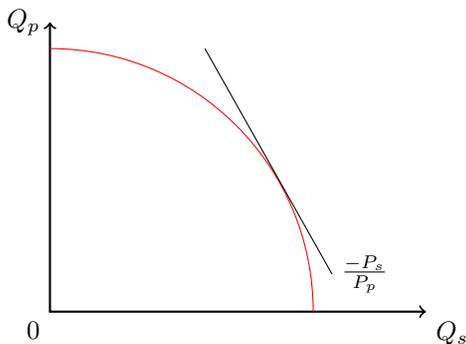
3.3 Heckscher-Ohlin: Non-specific factors

- In this model, we move to a world with two countries, two factors of production, and two goods. It is sometimes described as a 2x2x2 model.
- Known as Heckscher-Ohlin theory, or “factor proportions” theory.
- Resources in this model are the *only* source of comparative advantage.
- Will discuss “labor” versus “capital” abundance, but this model can also be applied to skilled versus unskilled labor, land, and more.
- Two production functions for iPhones and shoes.
 1. $Q_p(K_p, L_p)$
 2. $Q_s(K_s, L_s)$
- Two constraints:
 1. $K_p + K_s \leq K$
 2. $L_p + L_s \leq L$
- When we move to the two country setup, the production functions or “technologies” will be the same across countries. This is a key difference from the Ricardian model.
- Consider a numerical example, where unit factor requirements are fixed: you must use the exact same ratio of capital to labor no matter what.
- $c_{sk} = 1, c_{sl} = 3, c_{pk} = 3, c_{pl} = 3$
- Formally, this would give us:
 1. $Q_p(K_p, L_p) = \min \left\{ \frac{K_p}{3}, \frac{L_p}{3} \right\}$
 2. $Q_s(K_s, L_s) = \min \left\{ K_s, \frac{L_s}{3} \right\}$
- Now say that $L = 3000$ and $K = 1200$
 1. If all resources allocated to phones: 400 phones.
 2. If all resources allocated to shoes: 1000 shoes.
- In either case, some factor is not being used.
- In (1), all capital is used, but 1800 units of labor are wasted.
- In (2), all labor is used, but 200 units of capital are wasted.
- “Marginal rate of substitution” thus changes depending on how much you produce of both.
- We can figure out the point where all resources are used by solving two inequalities for equality, namely:
 1. $c_{sk}Q_s + c_{pk}Q_p \leq K$
 2. $c_{sl}Q_p + c_{pl}Q_p \leq L$
- So in this case:
 1. $1Q_s + 3Q_p = 1200$
 2. $3Q_s + 3Q_P = 3000$

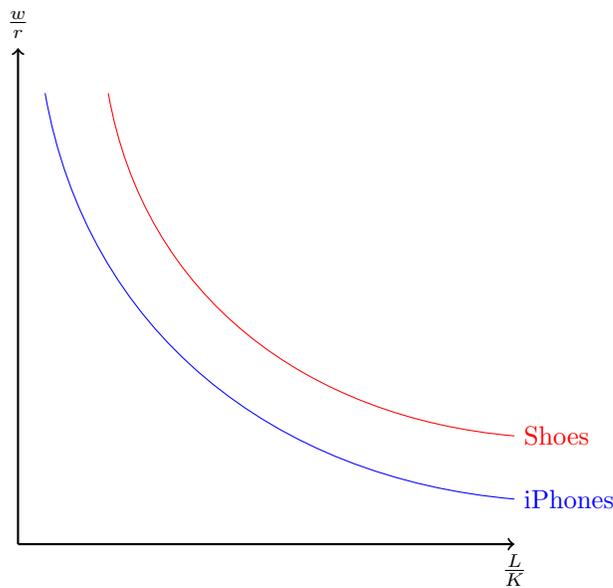
- Solving gives: $Q_p = 100$, $Q_s = 900$
- Kinked PPF as a consequence, with different marginal rates of substitution.



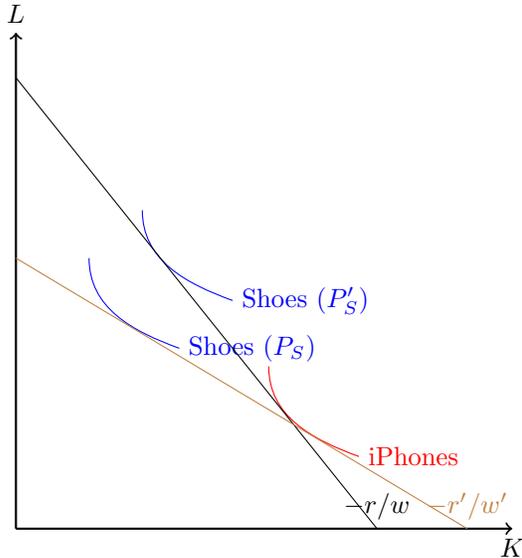
- 3 shoes for each phone when capital is not being fully allocated, 1 shoe for every phone when labor is not being fully allocated.
- To see how this follows, consider if we start from a point where all factors are being allocated to iPhones. Since there is excess labor, we don't need to take any labor from iPhone production to produce shoes; we only need to take capital.
- However, shoes require much less capital to produce than iPhones. So reducing iPhone production by one means we get three extra units of capital, which in combination with all the extra labor means *three extra shoes*.
- After $(Q_P, Q_S) = (100, 900)$ however, we need to take both labor and capital away from iPhone production to produce shoes.
- So, producing an extra shoe means you need to take 3 labor units away from iPhones but only 1 capital unit. This reduces iPhones production by one, so we get a marginal rate of substitution of one phone for one shoe.
- This also leads to excess capital which goes unused.
- In practice: we tend not to assume strictly fixed proportions, but suggest that the value of each factor is diminishing, and certain products benefit from a higher intensity of one factor over the other.
- Example: at McDonald's, you can substitute some capital (kiosks) for labor (employees). But you still need more labor relative to capital than, say, an auto plant manufacturer.
- Furthermore, the more capital you try to substitute for labor, the harder it gets. Very difficult to have an entirely automated fast food restaurant.
- The consequence of all this is a curved PPF:



- The optimal mix of labor and capital in the production of each good depends on the price of each factor (e.g. wages and capital rental rates).
- “Isovalue lines”, which have slope $\frac{-P_s}{P_p}$, determine what is actually produced.
- These lines are all the good combinations that result in the same value of production.
- Intuition of these lines: slope is determined by relative prices, because if one is to keep value constant, adding another shoe must mean a reduction in the number of iPhones.
- How much must iPhones be reduced to keep the amount constant? Depends on price ratio. If shoes are twice as expensive, then two times as many iPhones must be given up. This would lead to a slope of $\frac{-2}{1}$.
- What does factor intensity mean, in a world in which factors can be substituted for each other?
- More capital for iPhones for every w/r (w is wage here, r is capital rental rate)



- This determines the link between relative costs of different factors of production and their relative usage in the production processes of each factor.
- Meanwhile, relative prices of goods are linked to wages. If the price of a labor intensive good increases, the ratio of the wage to rental rate will increase.
- This is a one to one relationship if the country produces both goods, because it is in this case that competition between industries insures that marginal revenue equals marginal cost for factors in each industry.

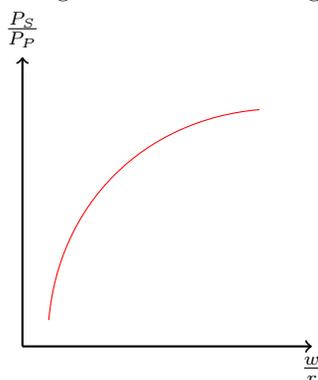


- Above graph indicates a decrease in the price of shoes relative to iPhones (from P_S to P'_S).
- The curves are the relative combinations of capital and labor that produce \$1 worth of each good (unit isoquants). So for each good, this entails quantities of, for instance: $Q_p = \frac{1}{P_p}$
- As the price of shoes declines, more shoes are needed to produce \$1 of output, hence the shift up of the curve.
- $-r/w$ must, however, be tangent to both curves if production is happening in both industries. Otherwise, the marginal product of one factor of production would not be in line with its marginal cost.
- A numerical example may help clarify this: consider if for \$1 of shoes, it took 3 units of labor and 1 unit of capital, while for \$1 of iPhones it took 1 unit of labor and 3 units of capital.
- This assumes that each industry is choosing the L and K to use in production optimally, given the relative substitutability of each in the production process.
- In this case, it has to be the case that at given w and r , both goods cost exactly \$1 to make, in order to ensure marginal benefit equals marginal cost. So:

$$\begin{aligned}
 3w + 1r &= 1 \\
 1w + 3r &= 1 \\
 \Leftrightarrow r &= w = \frac{1}{4} \\
 \Leftrightarrow -\frac{r}{w} &= -\frac{1}{1}
 \end{aligned}$$

- So w and r have to satisfy both factor allocations. Meanwhile, the fact that the isoquants are tangent to $-r/w$ ensures that \$1 of value is being produced in the cheapest possible way in both industries.
- Thus, the wage rate declines as the labor intensive good becomes less expensive.
- Equivalently: the price of the labor intensive good increases as the wage increases.

- This generates the following curve:



- These two relationships:
 1. Between P_s/P_p and w/r
 2. Between w/r and L/K in each industry.

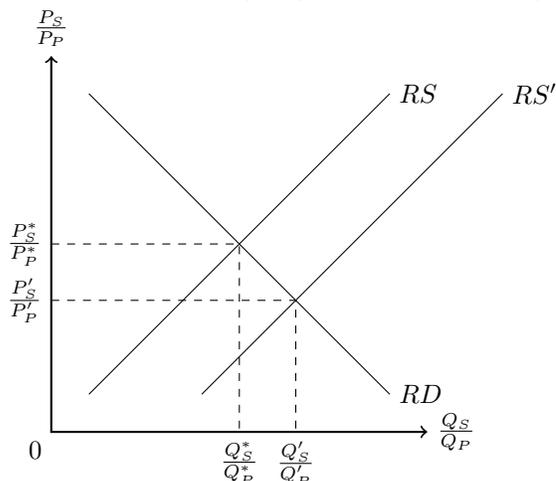
Are essential to understanding the impact of trade flows on factor prices.

- **One key result:** An increase in labor increases ability to produce both goods, but has a larger impact on the good that is relatively intensive in labor.
- To see this: given a P_S/P_P , we have a unique w/r , which determines a unique L/K in each industry.
- If aggregate L/K goes up, then the only way to keep these ratios the same in each industry is to increase production in the labor intensive good and reduce it in the capital intensive good (assuming fixed P_S/P_P). (*Rybczynski theorem*)
- A numerical example may help. Consider if we have the unit factor costs from before, with the kinked PPF (3 capital and 3 labor for iPhones and 1 capital and 3 labor for shoes). If we were producing 100 iPhones and 900 shoes, we would be using all of our capital and labor, with $L = 3000$ and $K = 1200$.
- Well what if capital increases to 2400? Well now iPhone production has to increase to absorb the extra capital, given that it is the capital intensive good.
- The equations we need to solve change to:

$$\begin{aligned} 3Q_s + 3Q_p &= 3000 \\ 1Q_s + 3Q_p &= 2400 \end{aligned}$$

- Which if we solve these, we get $Q_p = 700$ and $Q_s = 300$
- Note that the ability to produce has increased, because we have more labor! There has been a shift outward in the production possibilities frontier. But because of the *bias* in the shift towards the labor intensive good, we actually have a decrease in the overall production of shoes accompanied by a dramatic increase in the production of iPhones.
- These results also lead to the following: countries export the good which is intensive in the factor they are relatively abundant in. (*Heckscher-Ohlin Theorem*)
- To see this: note that international trade leads to a convergence in relative prices.
- If prices are different, consumers will just buy the good from the cheaper country.

- For a given country, if they are labor abundant, they will produce a higher amount of shoes for every possible P_S/P_P . This follows from Rybczynski; an increase in L/K led to a disproportionate increase in shoe production holding P_S/P_P fixed.
- This determines a relative supply (RS) curve. Movement in L/K shifts relative supply.
- If each country has identical relative demand (RD), reflecting identical consumer preferences, then this implies a direct relationship between labor/capital abundance and relative prices.
- Specifically: higher L/K (i.e. labor abundance) means *lower* P_S/P_P , and a higher Q_S/Q_P .



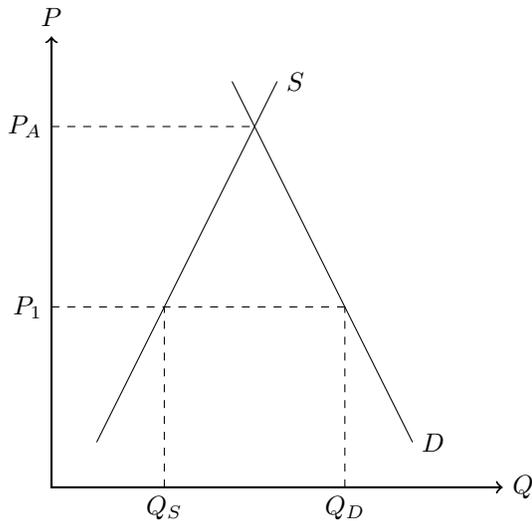
- In this example, relative price of iPhones rises, since shoes are easier to produce with the given factors.
- If international P_S/P_P is higher than domestic, under the assumptions of the model so far, it must be that what's driving this is a lower L/K in Foreign relative to Home. In other words, Foreign must be capital abundant.
- Trade will thus lead P_S/P_P to increase in Home (and decrease in Foreign). For a given RS this implies: more production of shoes, commensurately higher allocation of factors to shoes.
- Home then exports shoes, as they are producing more of them, but the higher price of shoes actually makes them want to consume less of them!
- Furthermore, for Home, since P_S/P_P goes up, w/r also goes up (from earlier results).
- Thus we have: **abundant factors gain and scarce factors lose.** (*Stolper-Samuelson Theorem*)
- **Another way of thinking of this:** by exporting, say, goods intensive in labor, and importing, say, goods intensive in capital, countries engage in a “virtual” trade in production factors.
- As an example: when the US exports an aircraft, which is very capital intensive, that aircraft has a “factor content” which is more capital than labor. If the US then imports clothing in exchange, with is more labor intensive, this represents a virtual trade of capital for labor.
- Thus, by comparing foreign L/K to domestic L/K , you can determine impact on each country of international trade.
- If L/K is higher in China than in the US (China is labor abundant, and the US is capital abundant), then P_S/P_P will be higher in the US than in China, and trade will lead to reductions in wages in the US and increases in wages in China.

- The effects on the economy are *identical* in this model to more of the scarce factor entering the country.
- In the case of the US, for instance, trade with low-skilled labor abundant developing countries would be thought to have identical effects to low-skilled labor immigration.
- Indeed, the model predicts *factor price equalization* if both countries produce both goods, since relative prices converge completely in the standard model.
- Consider the intuition: for a given price, if labor and capital are going to be employed in producing a good, competition will dictate that the price it sells at will equal the marginal cost of producing it. (See earlier figure)
- If each country is producing both goods, then the marginal cost has to be equal to marginal revenue in both industries.
- It also stands to reason that this must be the case *across countries*. An iPhone produced in Home and Foreign must cost exactly P_p to make. And since both countries are producing both goods, with the same production technologies, and the prices are the same across countries, the w/r lines have to be tangent to the same isoquant curves, and thus equal.
- The only way this all works out is if L/K ratios are the same in both countries in the respective industry.
- Put more simply, recall again that we have established two one-to-one relationships given earlier assumptions:
 1. Between $\frac{P_s}{P_p}$ and $\frac{w}{r}$
 2. Between $\frac{w}{r}$ and $\frac{L}{K}$ in each industry.
- Because the production technologies are the same, (2) must be the same across countries.
- Because both countries are producing both goods, (1) must be the same across countries.
- Thus, since prices converge to be equal, wages will be the same, and labor/capital ratios in each industry must be the same.
- This doesn't quite happen due to:
 1. Differences in technology. This is key, since some countries seem more productive at everything.
 2. Limits where one country specializes entirely in one good, producing zero of the other.
 3. Lack of complete convergence in price of goods.
- If immigration and trade are substitutes: why do we treat them so differently in our politics?
- That's a subject for later!

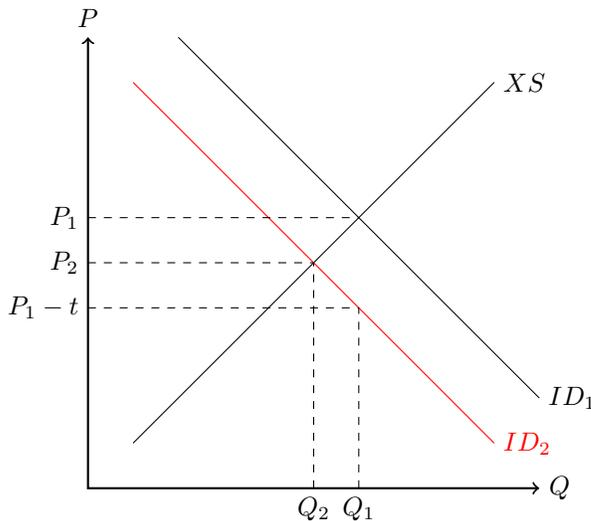
3.4 Tariff Incidence: Who Pays for a Tariff?

- According to President Trump, a tariff on Mexico is paid by Mexicans.
- According to much of the news media/Democrats/pro-trade Republicans, tariffs are paid by American consumers.
- Who's right? *Neither, exactly.*
- The question of *tariff incidence* is part of the broader study of *tax incidence*. In other words, who bears the costs and benefits of a given tax, either domestic or international.

- Once again: without getting too into the weeds of this, we can introduce two new curves: import demand and export supply.
- These are determined by characteristics of each country's market.

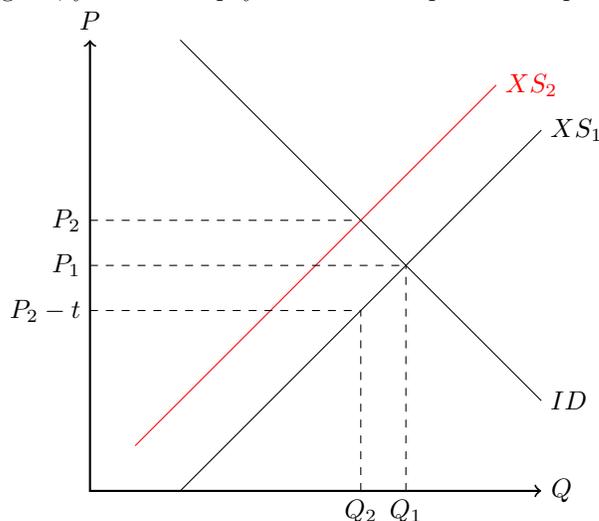


- In the example above, at P_A import demand is zero, while at P_1 import demand is $Q_D - Q_S$.
- This follows intuitively: if more quantity is demanded than is supplied domestically at a given price, it must be imported.
- If $Q_D - Q_S < 0$ this implies a net quantity exported, and could form the basis of an export supply curve.
- From these domestic markets, in which consumer preferences and producer production functions establish demand and supply curves, we can generate the aforementioned import demand and export supply curves.



- The above diagram illustrates a shift in import demand with the imposition of a tariff. Whereas initially at price P_1 a given quantity Q_1 would have been demanded, now Q_1 will only be demanded if $P = P_1 - t$, so that the price facing potential importers is $P_1 - t + t = P_1$.

- However, the new equilibrium is instead P_2 , because both imports and exports are *elastic*.
- The price purchasers face is now $P_2 + t$, which is clearly less than $P_1 + t$. So the price doesn't increase by the entire value of the tariff, because exporters adjust prices in the face of the tariff.
- Thus the incidence of a tariff between countries is determined by import demand and export supply elasticities.
- Within a country: whether this cost to a country will be borne by consumers or producers depends on demand and supply curves.
- The above analysis assumes that the importers pay the tariff directly: if you want to purchase the good, you have to pay some amount per unit to purchase it. What if you made the exporters pay?



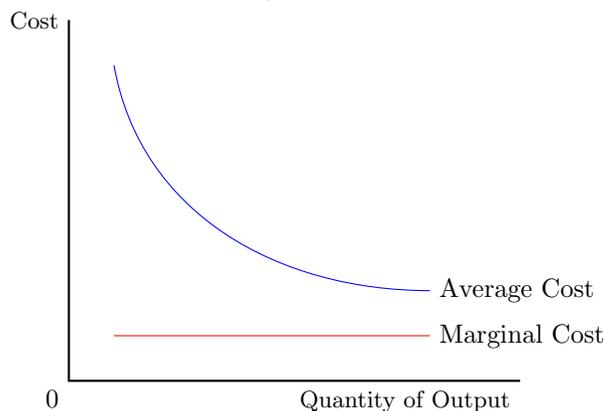
- Note that the analysis is essentially the same! Equilibrium prices are P_2 . Prices facing the consumer increase by less than the entirety of the tariff.
- As before, the incidence is shared between countries.
- This is one example of how taxes don't necessarily "stick to" where you put them.
- A surprising amount of tax analysis is based on "*flypaper incidence*". This is the assumption that taxes are borne by whom they are directly imposed on (the term is one used by economists to make fun of people who believe this).
- Fundamentally, a tariff or other tax produces a *wedge* between prices which, no matter where you put it, has fundamentally the same effect.
- What determines incidence across countries? *Elasticities* are key.
- Elasticities are how sensitive the quantity demanded or supplied is to changes in price. Graphically, these are the slopes of the demand/supply curves.
- For instance: perfectly inelastic import demand would imply that the same quantity is demanded regardless of the price. This would be graphically represented as a straight vertical line.
- Perfectly *elastic* import demand, on the other hand, would be when a country will import any amount at a given price, but no amount at a price above that.

- As an example: say Canada imports avocados only from Mexico, and a tariff is imposed by Canada on Mexican avocados. But Canadians love avocados and can only buy them from Mexico (they can't grow them), so they buy exactly the same amount.
- In this case, Canadian consumers ultimately pay the cost: import demand is equal to demand, because there is no scientific way to grow a Canadian avocado. Prices increase by the exact amount of the tariff. There is no distortionary loss in this case though, since consumer decisions are the same. This case entails a transfer from consumers to the Government equal to the tariff revenue collected.
- As import demand elasticity increases, more market decisions are distorted by the tariff. If Canadians will buy fewer avocados at higher prices, then Mexican exporters will reduce prices to get them to keep buying after imposition of a tariff (assuming Mexican export supply is somewhat *inelastic*). Burden of the tariff becomes shared more between countries, and more between producers/consumers. However, distortionary losses from the tariff increases.
- Similarly, with perfectly inelastic export supply, Mexican producers would bear *all* of the burden, since they would be forced to lower prices by the full amount of the tariff in order to continue to export the same amount. However, this case also entails no distortionary loss: instead, a transfer occurs from Mexican producers to the US government (this is the Trump administration's ideal scenario).
- Contrastingly, perfectly elastic export supply would mean that *none* of the burden would be absorbed by Mexican producers, because they would not lower prices in the face of the tariff; the prices facing consumers/importers would instead rise by the full amount of the tariff.
- *Key Insight:* Fundamentally, economic efficiency losses from tariffs/taxes are generated by distorting economic incentives. If incentives are less sensitive to changes (low elasticities), the distortions will be less, and thus the efficiency losses will be less.
- However, these elasticities also determine incidence, so things can get complicated fast. Especially since higher elasticity tends to mean that the burden of tariffs has more difficulty "sticking" to you.

4 Economies of Scale

4.1 New Trade Theory

- Earlier in the course, we discussed *external* economies of scale in reference to the infant industry argument.
- These, especially those generated over time (dynamically) as a result of learning, formed an important part of the “Mill-Bastable” test for whether government industrial policy could be justified in an environment with functioning credit markets.
- More broadly, external economies of scale were an important factor explaining industrial clusters, etc. like Silicon Valley.
- We now move to discussing *internal* economies of scale, which operate within a firm.
- These occur when the average cost of producing a good is falling with the scale of production.
- These are also produced generically in any case where a firm incurs fixed costs to produce, but marginal costs remain constant (or decline, or simply don’t increase fast enough).



- The logic of this is straightforward: the fixed cost is being “averaged” over a larger quantity the more is produced.

$$\text{Average cost} = \frac{\text{fixed costs} + \text{variable costs}}{\text{quantity}}$$

- While in *perfectly competitive* markets (which we’ve generally assumed up until now) price equals marginal cost, if there are economies of scale, the marginal cost is by definition lower than the average cost.
- This implies that if $P = MC$, all firms will be making *negative* profits, which clearly can’t be a sustainable equilibrium.
- Instead, we end up in a world of *imperfect competition*, where firms exert some degree of *market power*.
- In this section on “New Trade Theory” we will still treat firms as identical, but will consider markets with the following feature:
 - Consumers care about product *variety* not just product price. Thus, firms can charge different prices without losing all of their market share to the lowest cost firm.

- If firms can charge different prices without losing all of their market share, then it creates a trade off for a firm when deciding whether to increase production between: (1) an increased amount of units sold; (2) a decreased amount of revenue per unit of the good.
- Analogously, framed in terms of prices, a firm faces a trade off when considering a price increase between: (1) a decreased amount of units sold; (2) an increased amount of revenue per unit sold.
- Here, we will do a bit of math. Sorry.
- Consider a demand curve where:

$$Q_D = A - bP$$

- Where A is a constant (the intercept where $P = 0$) and b is the rate of change in quantity demanded with an increase in price.
- This demand curve is a straight line; it assumes that the reduction in the quantity demanded is linear.
- If the relationship was non-linear, we would expect a different relationship.
- A *profit function* for a firm consists of two components: revenue and costs.
- Revenue: amount of product sold times the price it sold at.
- Costs: fixed costs and variable costs.

$$\pi(p) = \underbrace{pq(p)}_{\text{revenue}} - \underbrace{c(q)}_{\text{variable costs}} - \underbrace{X}_{\text{fixed costs}}$$

- Which if both the demand curve and the variable cost curves are *linear* we have:

$$\pi(p) = \underbrace{p \times (A - bP)}_{\text{revenue}} - \underbrace{c \times (A - bP)}_{\text{variable costs}} - \underbrace{X}_{\text{fixed costs}}$$

- Linearity of the cost curve means *constant marginal costs*. Linearity of the demand curve is as above.
- What should a profit maximizing firm do in these circumstances?
- In choosing a price, they trade off the impact of the increase in price on revenue with the impact on variable costs.
- A price increase could also have an ambiguous effect on revenue, for the reasons discussed above.
- Formally we have:

$$\frac{\partial \pi(p)}{\partial p} = \underbrace{A - 2bP}_{\text{marginal revenue}} + \underbrace{cb}_{\text{marginal cost}}$$

- If you've taken calculus, you'll know that we can maximize profits by finding the point where the above expression equals zero. This is a first-order condition.
- Thus, solving we get:

$$p = \frac{A + cb}{2b}$$

- I have phrased this in terms of prices, but we could also state the problem in terms of quantities produced.

- Consider the original demand curve. We can rearrange to solve for p in terms of q , in the sense that a firm knows that by producing a particular quantity they are generating a particular price assuming they want to sell everything.

- We would get: $P = \frac{(A-q)}{b}$

- Rewriting the profit function we get:

$$\pi(q) = \underbrace{\left(\frac{A-q}{b}\right)q}_{\text{revenue}} - \underbrace{cq}_{\text{variable costs}} - \underbrace{X}_{\text{fixed costs}}$$

- Which generates the following first order condition:

$$\frac{\partial\pi(q)}{\partial q} = \underbrace{\frac{A}{b} - \frac{2q}{b}}_{\text{marginal revenue}} - \underbrace{c}_{\text{marginal cost}} = 0$$

- Which solves for:

$$q = \frac{A}{2} - \frac{cb}{2}$$

- Which for fun, you can see is fundamentally the same solution as obtained before:

$$\begin{aligned} Q_D = A - bP &= A - b\left(\frac{A+cb}{2b}\right) = A - \frac{A}{2} - \frac{cb}{2} \\ &= \frac{A}{2} - \frac{cb}{2} \end{aligned}$$

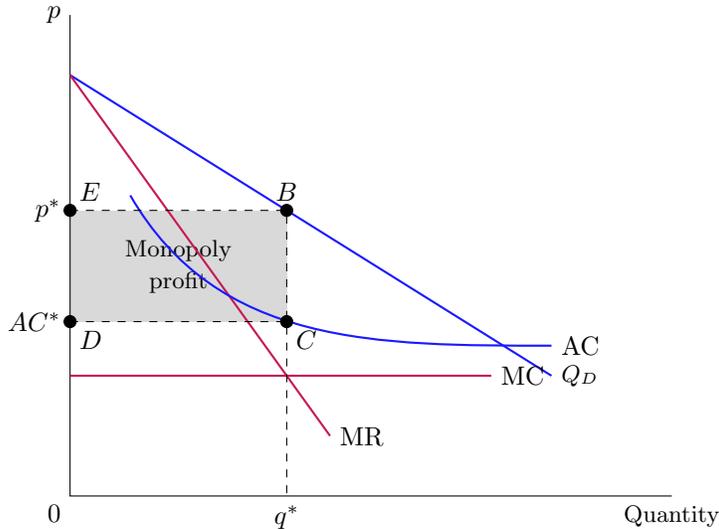
- Which makes sense, since the decision process hasn't really changed, just the way we've framed it.
- The classic way of addressing the monopolist's decision in introductory microeconomics is to note that they produce the quantity at which marginal revenue equals marginal cost.
- As can be seen from the expression above: this relationship shows up in the first order condition, in that we have:

$$MR = \frac{A}{b} - \frac{2q}{b}, MC = c$$

- And the point where they're equal is the optimal q^* .
- The firm obtains positive profits when p is greater than the average cost, since profits are then:

$$pq - AC \times q = (p - AC)q$$

- The graphical representation of all this, which may be familiar, is:



- However, there are fairly few sectors which are dominated by true monopolies.
- Instead, we will consider markets that exhibit *monopolistic competition*, in which, as noted earlier, firms can differentiate their products sufficiently that price differences do not lead to them losing all of their customers.
- However, it is still the case in this market that the price other firms charge will have some impact on a firm's ability to attract customers. Coke and Pepsi are differentiated in a way that Coke can increase in price without everyone immediately switching to Pepsi, but if Coke is twice as much as Pepsi more people are going to choose Pepsi.
- In these models, we abstract away from a complicated situation in which firms *explicitly* consider the impact of their decisions on other firms (which would imply interdependence of price setting, requiring the use of mathematical tools like *game theory*) and take the prices charged by other firms as fixed/exogenous.
- By doing so, we can use essentially the same model as we did for monopolies, with a slight adjustment to the demand curve that takes into account the fact that charging prices that exceed the industry average will lead to a reduction in market share.

$$Q_D = A \left(\frac{1}{n} - b(P - \bar{P}) \right)$$

- Above is one example of such an equation, in which there is a market size A , and if price equals average price ($P = \bar{P}$), then the firm gets exactly a proportional share of the market.
- Price above (below) average lead to market shares below (above) proportional.
- Thus, like before a firm will have to consider the trade-off entailed in increasing prices of more value per unit sold versus fewer units sold, but this demand curve directly connects the decision to the prices charged by other firms.
- b captures, to some extent, consumers' love of variety. If b is high, consumers quickly substitute other varieties when the price goes up, suggesting preferences for variety are weak. If b is low, then consumers are loyal to a brand even as the price goes up, suggesting a stronger preference for particular varieties.

- We assume that all the firms in the industry face the same demand curve, and have the same other features (cost curves, whatnot). We look to find a *symmetric equilibrium*.
- The key to characterizing the equilibrium is to determine the optimal n and \bar{P} .
- For determining n , we can think about entry and exit decisions of firms. If profits are positive, more firms will want to enter; if profits are negative, firms will leave/go out of business.
- The equilibrium is thus achieved when $\bar{P} = AC$, since this is where zero-profits are earned.
- This is the **zero-profit condition**.
- Next, we need to determine the relationship between n and each of these (\bar{P} and AC).
- Ultimately, by identifying three relationships to solve for three variables (n , \bar{P} , AC) we will be able to determine an equilibrium.
- From linear algebra: three equations in three unknowns!
- If everyone's price is the same: $P = \bar{P}$ and thus $Q_D = \frac{A}{n}$. Since Q_D is thus declining in n (increasing the denominator lowers Q_D ⁴), and we know that AC is declining with quantity produced (from economies of scale), we know that **AC is increasing in the number of firms**.
- What about prices? Well, intuitively, more firms means more competition, which is likely to drive down prices. We can derive this formally the same way we did before with monopolies.

$$\begin{aligned}\pi(P) &= Pq - cq - X \\ &= (P - c) \left(A \left(\frac{1}{n} - b(P - \bar{P}) \right) \right) - X\end{aligned}$$

Which leads to the following first-order condition:

$$\begin{aligned}\frac{\partial \pi(P)}{\partial P} &= (P - c)(-Ab) + A \left(\frac{1}{n} - b(P - \bar{P}) \right) = 0 \\ \Leftrightarrow -Pab + cAb + \frac{A}{n} - AbP + Ab\bar{P} &= 0 \\ \Leftrightarrow Pab + Pab &= cAb + \frac{A}{n} + Ab\bar{P} \\ \Leftrightarrow 2P &= c + \bar{P} + \frac{A}{nAb} \\ \Leftrightarrow p^* &= \frac{c}{2} + \frac{\bar{P}}{2} + \frac{1}{2nb}\end{aligned}$$

If we now impose the restriction that all prices are symmetric, so $P = \bar{P}$, we can rewrite the above as

$$\Leftrightarrow p^* = c + \frac{1}{nb}$$

- Which if we now wanted to figure out how prices changed with the number of firms, we get:

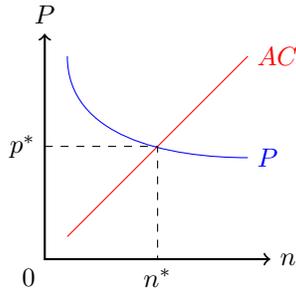
$$\frac{\partial p^*}{\partial n} = \frac{-1}{bn^2} < 0$$

- Now Jason, you say. I know you said there would be math. *But this is too much math.*

⁴Formally, $\frac{\partial Q_D}{\partial n} = -\frac{A}{n^2} < 0$

- If you feel this way, the important thing to take away from all this is that **P is decreasing in the number of firms**.
- Thus we have the following:
 1. Prices (P) are decreasing in the number of firms (more firms drives down the price due to competition).
 2. Average costs (AC) are increasing in the number of firms (more firms means less quantity per firm, which prevents firms from going further down their average cost curves).
 3. $P = AC$ in equilibrium, because this is the point where there are zero-profits, and thus firms do not have an incentive to enter or exit.

- So graphically, we have:



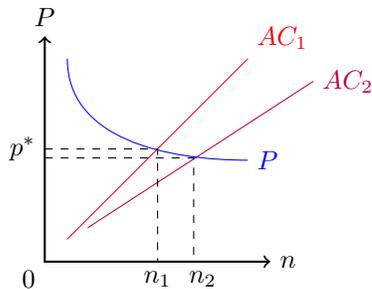
- If you want a more mathematical treatment note that

$$AC = \frac{cq + X}{q} = \frac{c\frac{A}{n} + X}{\frac{A}{n}} = \frac{cA + nX}{A} = c + \frac{nX}{A}$$

So if $P = AC$, we have:

$$\begin{aligned} P &= AC \\ c + \frac{1}{nb} &= c + \frac{nX}{A} \\ \Leftrightarrow \frac{A}{bX} &= n^2 \\ \Leftrightarrow n^* &= \sqrt{\frac{A}{bX}} \end{aligned}$$

- So how does international trade figure into this model? Trade expands the size of the market - A - and thus we can determine all the effects by assessing the impact of A on the equilibrium.
- Fundamentally, A does not directly affect the optimal price chosen directly, but it does mean that for every n the quantity produced is higher. So you can treat this as a shift in the average cost curve:



- This means: lower prices, larger number of firms. Consumers benefit from:
 1. Paying less for goods.
 2. More variety of goods (because each firm produces a unique variety).
- And that's pretty much it for New Trade Theory! Increased market size allows consumers access to a larger number of firms.
- The number of firms in each country may decline, but the total number of firms in both (now joined) markets will be higher than the number of firms in either country in autarky.

4.2 New New Trade Theory: Firms and Trade

- In the previous section, we assumed that all firms were identical, looking for symmetric equilibria.
- However, it is clear from the real world/data that firms are *not* identical. Some firms perform better than others.
- In fact, in the USA, only about 5% of firms export. Even within export industries, many firms will only produce for domestic markets.
- Expansion of trade leads large, more productive firms to export and grow, while small, less productive firms contract and exit.
- Trefler (2004) found that half of the productivity gains from US-Canada FTA (pre-NAFTA) were from poor performing firms being competed out.
- The standard way of modeling differences in firms is by allowing their marginal costs to producing to vary.
- So, for instance, a more productive than average firm would have lower costs of producing each unit, e.g. would have $c_1 < c_{avg}$.
- From before, before imposing symmetry across firms, we obtained the following function for price:

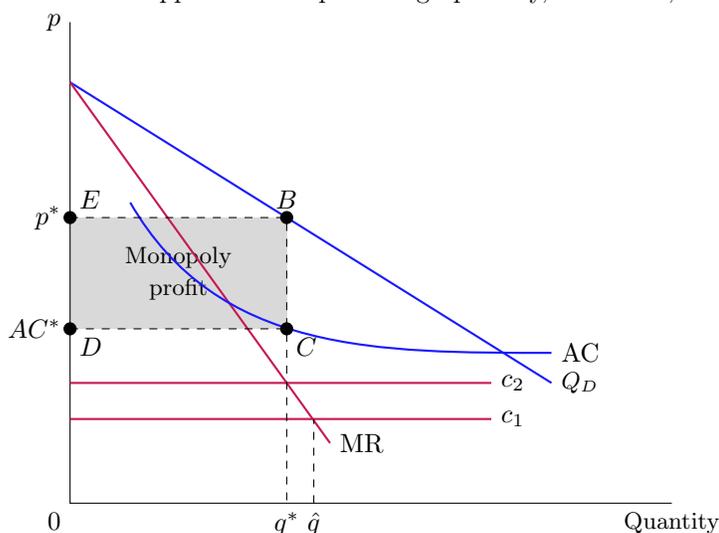
$$p^* = \frac{c}{2} + \frac{\bar{P}}{2} + \frac{1}{2nb}$$

- From this, we can see that the price charged by each firm will go up if their costs are higher. What will happen to their profits? Well, with some fancy math we won't get into, we can get an expression for how profits change with c .

$$\frac{\partial \pi}{\partial c} = -q^* = -A \left(\frac{1}{n} - b(p^* - \bar{p}) \right)$$

- The important thing to keep in mind from this is that this is negative, so profits are declining in c .

- We can also approach this question graphically, as follows, for $c_1 < c_2$:



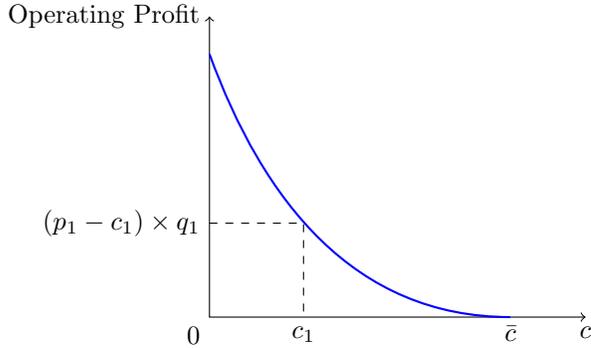
- The key thing to observe here is that with a given change in marginal costs, the reduction in price charged is less than the reduction in marginal costs.
- This is because the marginal revenue curve is steeper than the demand curve.
- Consider that $\Delta q = \hat{q} - q^*$ in this case. The change in c associated with this Δq is based on the slope of the marginal revenue curve, i.e. is:

$$\Delta c = \text{Slope of MR} \times \Delta q$$

- Meanwhile, the change in price associated with this change in quantity is determined by the demand curve:

$$\Delta p = \text{Slope of Demand Curve} \times \Delta q$$

- So clearly, since the marginal revenue curve is steep, the price declines by *less* than the marginal cost does.
- This leads to a higher markup over marginal costs, plus a higher quantity sold.
- More profit per unit, plus further down the average cost curve.
- To more clearly consider exit and entrance decisions across firms, we can consider a situation where fixed costs are “sunk” in the short run, and focus only on “operating profits”.
- “Fallacy of sunk costs”?
- If operating profits are positive and actual profits are negative, a firm would have preferred not to enter the market, but now that they’re in the market it makes sense to “keep the lights on”.

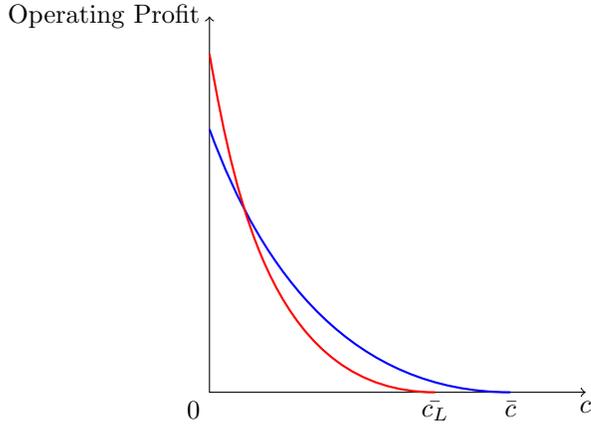


- These show “operating profits” as a function of marginal cost. Profits would be these values minus the fixed costs.
- Firms with lower marginal costs:
 1. Sell at lower price, but with higher markup over marginal cost.
 2. Produce more.
 3. Earn higher profits.
- We get firm exit when $(p - c) \times q < 0$
- In the case of the graph, we can see that this happens when $c > \bar{c}$.
- Clearly if a firm knew it would be at a position where $(p_i - c_u)q_i < X$, they would choose not to enter the market.
- However, things become trickier if there is ex ante *uncertainty* about these costs. In this case, firms enter if their *expected value* of entering is positive.⁵
- So for instance, if at $c_1 = 5$ they earned \$10 profits, but at $c_2 = 10$ they lost \$5, and the fixed cost was \$2, they would enter when there was a 50% chance of each because:

$$0.5(10) + 0.5(-5) = 2.5 > 2$$

- Before, we had the zero-profit condition: now we have the zero *expected* profit condition.
- In this world, however, some firms will earn positive profits, and some firms will lose money.
- When the market opens up, increased competition means that demand curves become more sensitive to deviations from average price. Firms lose a larger amount of market share if they increase their prices.
- This shift in the demand curve naturally benefits those firms that were already charging lower prices - the largest, most productive firms - while harming the firms who were smaller and less productive. This is summarize in a shift in the operating profits curve:

⁵To throw more math at you, if there is some kind of distribution of costs $c \sim f(c)$ on $(-\infty, \infty)$, then a firm enters the market if $\mathbb{E}[\pi] = \int_{-\infty}^{\infty} (p^* - c)q^* f(c) dc - F > 0$



- Now, as you can see, profits for firms charging lower prices (high productivity firms) go up, while smaller, less productive, higher-price firms lose profits and may be forced to exit.
- Indeed, since *expected*/average profits still have to be equal to zero, it is easy to see that if profits go down for the least productive firms, they must go up for the highest productivity firms.
- In this case, the firms that are forced to exit in the face of trade are those with c in the range $[\bar{c}_L, \bar{c}]$

4.2.1 Incorporating Trade Costs/Frictions

- Up until now we've assumed that open trade can simply be modeled as an increase in market size.
- What if there are "border costs"? More expensive to ship from, say, Toronto to Detroit than Toronto to Windsor.
- 5% of firms export, including approximately 18% of manufacturing firms.
- Trade costs reduces the extensive margin (number of firms exporting) and the intensive margin (amount of exports that even exporting firms produce).

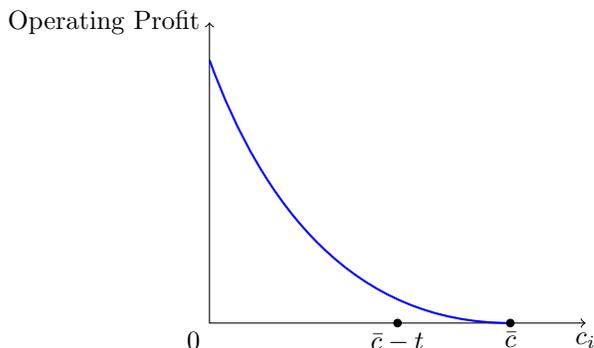
TABLE 8-3 Proportion of U.S. Firms Reporting Export Sales by Industry, 2002	
Printing	5%
Furniture	7%
Apparel	8%
Wood Products	8%
Fabricated Metals	14%
Petroleum and Coal	18%
Transportation Equipment	28%
Machinery	33%
Chemicals	36%
Computer and Electronics	38%
Electrical Equipment and Appliances	38%

Source: A. B. Bernard, J. B. Jensen, S. J. Redding, and P. K. Schott, "Firms in International Trade," *Journal of Economic Perspectives* 21 (Summer 2007), pp. 105–130.

↑From Krugman, Obstfeld, and Melitz textbook.

- To incorporate these costs into the model, we assume that each firm pays some additional marginal cost t for each unit exported.
- Return to a setting where there is both a Home and Foreign market.

- You can probably imagine what this will look like: a firm that behaves like a c_1 firm in the Home market will behave like a $c_1 + t$ firm in the Foreign market.
- Consider that we initially modeled a \bar{c} below which firms would have to exit the market, since they would be making negative profits. For Foreign, if we have \bar{c}' , the threshold for exporting firms in Home now becomes $\bar{c}' - t$, so that they can be profitable in Foreign markets despite the trade costs.
- This creates a range of firms that can produce *only for domestic markets*, namely those with $c_i \in [\bar{c}' - t, \bar{c}]$
- If the Foreign market is identical to the Home market, such that $\bar{c} = \bar{c}'$, this range is $[\bar{c} - t, \bar{c}]$



- So in this case, firms with c_i in $[0, \bar{c} - t]$ produce for both domestic and export markets, firms with c_i in $[\bar{c} - t, \bar{c}]$ produce only for domestic markets, and firms with $c_i > \bar{c}$ exit the market.
- The empirical evidence suggests that this middle range, $[\bar{c} - t, \bar{c}]$, actually makes up the vast majority of firms in most industries.
- Meanwhile, only the largest, most productive firms export, i.e. those with $c_i < \bar{c} - t$.
- The effects on the overall economy are still fairly similar to before, since market size is still increasing. But the market size increase is less than what would occur if there were no trade costs.
- Incidentally, this also provides a useful way of thinking about tariffs! Since an import tariff also imposes a per-unit additional cost for a firm of exporting to that market.
- Thus, reducing tariffs:
 1. Benefits the largest firms, who expand and export more, making higher profits.
 2. Hurts smaller, domestic-only firms, who may be forced to exit the market.

4.2.2 Multinational Firms

- Can we use this model to think about multinational firms? Why would firms locate parts of their production process abroad?
- One example would be to avoid trade costs; so “horizontal” FDI. Horizontal means: replicate production process abroad.
- The straightforward way to think of this is: there’s an additional fixed cost F' to setting up abroad. So it makes sense to do this if avoiding the trade costs is worth this fixed cost.

$$F' < q' * t$$

- An example: Coca-Cola tends to have subsidiaries abroad, because liquid is *very heavy*, so the costs of transporting are very high.
- Vertical FDI involves having different parts of the production process located in different countries based on comparative advantage.
- So, for instance, labor intensive car parts get shipped to Canada/US for assembly in capital intensive factories.
- It makes sense to locate production facilities in higher comparative advantage areas if, again, the fixed costs are low enough to justify it.
- So for small parts of the production process, it may not be worth the effort. You can either pay trade costs or build it domestically.
- When it is cost effective to have production located abroad, the question here becomes: set up a subsidiary of the firm, or simply import these parts from other firms as part of a supply chain?
- The answer to this question depends on an number of factors: intellectual property, bargaining with other firms, coordination problems, etc. However, 40% of trade is intra-firm.
- Broadly though, the key trade-off of fixed costs versus lower production costs carries over to offshoring (outsourcing plus vertical FDI) as well. So that's the key insight to take from this model.

5 Distributional Conflict and Trade Politics

5.1 Collective Action and Trade

- This wasn't in the assigned readings, but Mancur Olson on The Logic of Collective Action can tell us a lot about trade.
- Trade protection often (but not always) produces concentrated benefits and dispersed costs.
- Sugar protection produces costs of about \$826,000 per job saved in the industry.⁶
- These costs are, to some extent, widely dispersed amongst consumers, costing about \$7 per consumer each year.
- To what extent do consumers have an interest in organizing over this? If there are fixed costs to organizing/lobbying, these costs might exceed the potential benefits.
- Another way of thinking about it: very few of the benefits of a change in trade policy are internalized by each consumer. Many of the benefits are externalities.
- Broadly, a collective action problem develops when each person can take an action at some cost c , but the benefits are spread over everyone.
- So, if the added value of an action is A , then the decision hinges on whether:

$$\frac{A}{N} > c$$

- Which will often *not* be the case even if $A > c$, suggesting the overall benefit is higher than the cost.
- All of this is to say that political economists generally believe that trade protection can be favored politically because the concentrated costs lead to better incentives to organize and lobby against a policy.
- **However:** it is worth noting that it isn't always the case that trade protection's benefits are concentrated and the costs are dispersed.
- One example is the impact of reciprocal trade protection - if for instance another country retaliates with its own protection in response to a tariff increase - on concentrated exporters.
- However, even more salient is sometimes the effect on downstream industries. Steel and automobile manufacturers being the most salient recent example.
- Even in the sugar example, which is literally used as a textbook example of this,⁷ there are some significant concentrated costs on firms/industries that use sugar as an input.
- Hostess, the maker of twinkies, lobbied heavily against sugar tariffs, suffered significant financial losses because of the increased cost of sugar due to protection, and ended up having to move to Mexico to avoid sugar costs.
- This framework provides a useful way of understanding, however, why certain kinds of "consumer" interests seem to be represented in trade politics (e.g. auto manufacturers) seem to be represented in trade politics, while others (e.g. you, a person who buys a bag of sugar) are not as obviously.

⁶Irwin 2009, Free Trade Under Fire

⁷See Krugman, Obstfeld, and Melitz p. 232

5.2 Median Voter Theorem

- Median voter theorem is a simple model in which politicians decide where to locate on a political spectrum.
- Voters vote for whomever is closer to them ideologically.
- With two candidates running for election who care only about being elected, the equilibrium of this game is to choose policies located at the median.
- Broadly, the model predicts that politics will have a centralizing impact on policies, with parties pursuing policies similar on many dimensions, and with those policies being targeted to the median.
- Equilibrium arises because if the two candidates locate anywhere else besides the median, at least one has an incentive to move, because they can get more votes.
- Consider for instance if the left-right spectrum has voters equally distributed from $[0, 1]$ and candidate A locates at 0.25 and candidate B locates at 0.75. Each candidate is getting 50% of the vote, but now candidate B can move to 0.26 and get all the votes from $[0.26, 1]$ (i.e. 75% of the vote). So those positions can't be an equilibrium, because someone has an incentive to change their action.⁸
- If, instead, they both locate at the *median*, which in this case is 0.5, neither can do any better by changing their position.
- Things get more complicated when elections entail multiple contests. The median voter in Maine is different than the median voter in Oklahoma.
- It's why Maine senators care a lot about the TPP.
- Moreover, the median voter in a primary contest is different than the median voter in a general election.
- PR systems also generate different incentives. Multiple parties that form coalitions instead of winner-take-all contests between two candidates.
- In this sense, **institutions matter**. Majoritarian versus PR. State-level contests (senate) versus national.
- Some argue that PR systems are more capturable by interest groups, because parties don't need to appeal to as broad a coalition of people.
- US politics looks less and less like a median voter contest. Which may in part be because "party identification" has become such a significant component of how people define their interests such that defining "ideal points" on a spectrum for voters independent of this can be challenging.
- Witness, for instance, how Republican voters stated policy preferences on a number of things changed quite substantially when Donald Trump became president.
- Primary challenges, as noted, also create complications.
- Nonetheless, the model can provide a good first approximation for how the distribution of material effects can impact politics.
- When we have significant divergence from the predictions of a median voter model, we can ask ourselves why this happens.

⁸Formally, this is a Nash Equilibrium of the game.

5.3 Rogowski - Political Cleavages and Changing Exposure to Trade

- Broadly, this paper applies insights from the Heckscher-Ohlin model/Stolper-Samuelson model to talk about trade politics.
- Stolper-Samuelson suggests that open trade with other countries will benefit (locally) the relatively abundant factor and harm the relatively scarce factor.
- This occurs because trade leads to price convergence, with the price of the good that is intensive in the abundant factor increasing with open trade.
- Rogowski authors, and examines cases, that suggest that the broader cleavages over trade politics can be understood through this lens.
- So, political conflict over trade would be expected to be on factor lines. Capital versus labor. Skilled versus unskilled labor. Etc.
- In some ways, these factors can map to classes, e.g. labor versus capitalists.
- Is this what trade politics actually looks like? In what countries? Under what conditions?
- We might see some evidence of this in the European approach to capitalism, in which labor tends to be fairly heavily organized, and wages and labor markets are regulated through grander bargains.
- Political cleavages are perhaps less fractionalized along industry lines, and as a consequence the politics is a bit more broad-based.
- In many European countries, trade is quite liberal and not a significant source of controversy.
- Broader, active-labor market programs can be thought of as a response to some of the pressures that would be generated by trade (as well as other disruptive forces, such as automation) in a way that targets labor more broadly, instead of trying to target specific sectors.
- This approach seems to have been broadly effective!
- Can this have implications for ability to compensate the losers from trade? How to make trade more stable?
- Note that this paper also assumes that material effects -who wins and who loses from trade - map directly to political preferences.
- Is this completely true? Is it partly true? Under what conditions might we expect these material effects to shape a political conversation about trade?

5.4 Hiscox - Class Versus Industry Cleavages

- This paper builds off of Rogowski, continuing to look at the material effects of trade.
- However, it now considers a specific-factors/Ricardo-Viner model, in which the effects happen along industry instead of factor lines.
- Empirical work prior to Hiscox had mostly focused on class-based parties and peak associations, broadly as a proxy for interest groups aligned on factor lines.
- **The core point of the article is that which model to use is conditional on factor mobility.**
 1. When factors are mobile, SS/HO and factor cleavages are the right way to think about the material effects of trade.

2. When factors are immobile, a RV or specific factors model will better approximate the material cleavages on trade.
 - Thus, we're required to think about under what conditions factors will be mobile.
 - One obvious implication: if factors are immobile in the short run, but mobile in the long run, then industry cleavages are more important for short-run trade policy (e.g. antidumping, etc.) whereas factor cleavages might be more important for long-run policies (founding the WTO, etc.).
 - Moreover, factor mobility may be *endogenous* to other factors in the economy. Remember the active labor market programs? These are not only means of compensating losers from the risks/negative effects of trade, but can also be conceptualized as a means of making labor markets more fluid/mobile.
 - If policies impact factor mobility, then they can also change where the political cleavages arise.
 - Perhaps active labor market programs in Europe are, themselves, one equilibrium of several? Policies make factors more mobile, which makes cleavages along factor lines, which helps sustain the policies.
 - On the flipside, China shock suggests a RV model for the material effects, and other papers by the others have examined the implications of the shock for politics, suggesting that communities hurt by international exposure tended to be more likely to vote Republican, etc.
 - This may also be impacted by geographic features: US is very large, which can make it more difficult for labor to be mobile.

5.5 Kim and Osgood - Firms in Trade and Trade Politics

- Just as our understanding of trade economics has been reshaped by an understanding of how firms differ, so too should our understanding of trade politics.
- Instead of industries/sectors being united for/against trade depending on whether they are an area which a country has a comparative advantage, there are often divisions within these industries.
- Larger firms naturally will be more in favor of trade, as they will have the ability to grow, increase profits, etc.
- Smaller firms, even if they are in an industry which is competitive overall in international markets, may find themselves competed out in the face of greater international exposure.
- Osgood finds in other work that in hearings on trade agreements in the US, large, pro-trade firms make up almost all of the participants.
- This contrasts with an understanding of trade-politics which is fundamentally *biased* towards protection. Instead, if large, prominent firms have an advantage in lobbying, we might expect the opposite.
- Market structure thus also impacts our understanding of trade politics. Sectors with high firm heterogeneity may have more firms that can pay a fixed cost to lobby.⁹
- Similarly, Bombardini and Trebbi 2012 find that market structure impacts what firms lobby for; low heterogeneity leads to large industry-level associations lobbying for industry level protection, while high heterogeneity leads to more large firms “going it alone” and lobbying for product-specific benefits.

⁹Bombardini 2008 provides evidence for this

5.6 Lobbying and Trade (Grossman/Helpman and others)

- How should we think about lobbying's impact on international trade?
- Good to start by thinking: how does lobbying impact policy in general?
- Political scientists discuss three broad categories of lobbying.
 1. Buying policy. "Exchange" model (Grossman and Helpman 1994).
 2. Informational lobbying (Austen-Smith and Wright 1992)
 3. Legislative subsidy models (Hall and Deardorff 2006).
- The exchange model of Grossman and Helpman is the most prominent in trade politics.
- In it, different interest groups "bid" for their preferred policy to government.
- If interest group policies are in tension (e.g. steel versus automobile manufacturers) then they need to bid more than their competitors.
- Governments care about these lobbying contributions (which could be more than literal money, and could include any sort of costly action on behalf of a group), but also care about aggregate income/welfare.
- May care about the latter because strong performing economies increase chances of reelection, or because more money allows them to give money to their supporters, or for altruistic reasons.
- Thus, interest groups that want to "buy" protection will have to pay more when the welfare costs to protection is especially high.
- What makes welfare costs of a tariff higher? Well we talked about this earlier; one important component is *import demand elasticity*.
- Thus the model predicts that import demand elasticities and the existence of downstream lobby groups will be negatively correlated with protection.
- This holds up reasonably well in the data: Goldberg and Maggi 1999, Gawande and Bandyopadhyay 2000.
- The paper also talks a little bit about which groups have succeeded at organizing versus those that haven't, but doesn't really say anything about what accounts for this difference.
- The model also assumes that interest groups are at the industry level, but there's nothing really to prevent us from generalizing this to other cleavages on international trade.
- Informational lobbying has also started to be applied to trade (Brutger 2019 "Litigation for Sale", Davis 2019 "Screening for Losers").
- In these models, interest groups know something about a policy- e.g. how much they are hurt by or benefit from it, the aggregate benefits of the policy - which the government does not know.
- However, they have incentives to lie about it to get favorable policy.
- Costly lobbying becomes a way of signaling credibly this information. By incurring a cost, the interest groups can show they would only be willing to do it when it really matter.
- Education is often thought of as a costly signal! At Penn, it is very costly indeed...

- In trade, interests groups might have private information about, say: how much injury they face from competition, their long term business prospects, what practices competing firms internationally are engaging in, etc.
- If situations arise where they have an incentive to misrepresent this information - say, in order to obtain policy from the Government that benefits them - then a question will arise about how they can convey this credibly.
- My paper (Davis 2019 - Screening for Losers) argues that the institutional environment is one way in which this information can be credibly transferred.
- The legislative subsidy model also has some potential applications to trade.
- In this model, politicians have preferences about what they want to accomplish, but are constrained in terms of their resources in accomplishing them.
- Someone in congress might want to pass a trade bill, but has limited time and other resources to do research, organize coalitions behind it, etc.
- Lobbying in this case *relaxes the budget constraint* of this politician, without changing the politician's preferences.
- Brutger 2019 includes a bit of this in a sort of hybrid model that combines information and legislative subsidies in talking about how firms lobby states to pursue international arbitration.

5.7 Compensation and Trade

- As we learned from the economics of trade section of the course, opening up of trade creates *aggregate* benefits that increase the size of the “pie” to be distributed.
- This should enable the government to redistribute the gains to make everyone better off.
- If everyone can be made better off, why do we get protection instead of these redistributive bargains?
- Economists talk about the Coase theorem - that you should get an efficient outcome when property rights are established, transfers are costless, and there is no uncertainty.
- The *distribution* of outcomes in Coase theorem depends a lot on how initial property rights are allocated. But the *efficiency* of that outcome is *invariant* to the initial distribution of property rights under these conditions.
- A similar logic applies here, and has been widely applied to the study of war and conflict as well.
- So why don't we simply compensate the losers? We can think of a number of reasons.
 1. Commitment problems/time inconsistent preferences (Davis 2019, “Protection as a Commitment Problem”).
 2. Informational Problems (Fernandez and Rodrik 1991).
 3. Constraints to redistributing income domestically (Davis 2019, “Taxability and Trade Policy”).
- All of these reflect characteristics leading to bargaining breakdown.

5.8 Other “Economic” Theories of Trade Politics/Agreements

- Could trade policy simply be a result of trying to manipulate terms-of-trade benefits or to promote onshoring of economic activity?
- Bagwell and Staiger 1999 think trade negotiations are about keeping states from imposing tariffs for terms-of-trade reasons.
- Agreements transform the situation into a kind of “repeated prisoner’s dilemma” wherein cooperation can be sustained through the threat of mutual punishment.
- Ossa (2011) uses a similarly economic approach stemming from New Trade Theory to come to similar conclusions.
- Most political scientists are skeptical that this is really what’s driving trade policy, given that policy seems to be driven less by terms-of-trade manipulation and more as a response to organized groups demanding it.
- Nonetheless, perhaps these models can be useful for evaluating the broader, long-term patterns of institutions/policy, such as the development of the GATT/WTO.

6 Trade and Security

6.1 Brief Preliminaries - What Causes War?

- A discussion of how trade might impact war/security requires that we have some understanding of how/why conflict arises.
- In general, we can think of two types of causes of war:
 1. Rationalist
 2. Non-rationalist
- Rationalist causes require that states/other actors have goals that they are trying to achieve, and the outcome of this goal-oriented behavior ends up being conflict.
- A key insight of this literature is that it is *not* enough that a state prefers war to the status quo, since other bargains are possible. Instead, we need to figure out why these bargains breakdown and war is the outcome instead.
- This, in a way, is similar to the question of why we don't compensate the losers from trade.
- Several rationalist explanations for war are as follows:
 1. Information problems.
 2. Commitment problems.
 3. Indivisibility problems.
 4. Agency problems.
- Non-rationalist explanations for war can relate to any number of things, from the emotions/affect of leaders/voters, psychological biases and misperceptions, etc.
- These are harder to characterize, but possibly as important.

6.2 The Capitalist Peace - Gartzke

- A significant subset of the political science literature discusses the "democratic peace".
- This is the well-observed regularity that democracies tend not to go to war with each other.
- Which, it should be noted, is not the same as saying democracies tend to go to war less *in general*.
- Instead, it is a regularity at the *dyad* level, which suggests that democracy-democracy pairs go to war less, but doesn't say anything about democracy-non-democracy pairs.
- Numerous theories have been generated to explain the democratic peace regularity. Distinguishing between them is a task well outside the scope of this course.
- Gartzke, instead, argues that *capitalism* not *democracy* is the essential characteristic leading to peace.
- Which, it should be noted, that most democratic countries are broadly capitalist. So you would get the democratic peace regularity if this alternative theory were true.
- Why might this be the case?
 1. Historical impetus to territorial expansion tempered by rising importance of intellectual and financial capital, instead of land.

2. Substantial overlap in foreign policy goals of developed nations post-WWI limits scope and scale of conflict
 3. Rise of global capital markets creates new mechanism for competition and communication for states that might otherwise be forced to fight.
- Several of these suggest war will be likely as costs increase and benefits decrease. It is consistent with rationalist explanations for war that the likelihood of conflict will decline as the stakes decline.
 - However, there is also discussion of information, in the way that capital markets allow for credible information transfer.
 - The paper also produces some statistical work supporting the claim that capitalism not democracy is what matters. However, this work has been challenged by others, in a way that tends to suggest that democracy is still important.
 - Broadly, Gartzke's work suggests that economic integration can matter for likelihood of conflict, but goes beyond the simple "countries become more integrated as thus costs of conflict goes up" hypothesis.
 - That simple version of the hypothesis faces some contradictory evidence in WWI - prior to WWI, economic integration was quite extensive: merchandize exports reached 12% of world GDP pre-1914, and didn't recover to that level until the 1970s, only reaching 17% by the 1990s.
 - In the US, exports + imports as a percentage of GDP exceeded 20% around WWI, and then did not recover to that level until the mid-1990s.
 - Capital flows were quite significant pre-1914 as well. By some measures, they had yet to reach pre-1914 levels by 2000.
 - One feature of current era of economic integration that does seem unique, however, is the richness of cross-border supply chains.
 - Could a "supply chain" peace be in order?

6.3 Overview of Trade and Conflict - Mansfield and Pollins

- Mansfield and Pollins have a book that surveys the literature on trade and conflict.
- This article is the introduction to that book, and gives a quick overview.
- Argues (1) need more microfoundations to these arguments; (2) need to identify contingent nature of relationship.
- Distribution of gains may lead to conflict, even if aggregate gains generated.
- Under what conditions could trade protection be a means of enhancing security (e.g. by protecting supply chains/key industries)?
- If interest groups/firms/financial interests constrain states from going to war, how do they do this?¹⁰
- This is an example of "agency issues". Are the relevant actors in the decision "unbiased" in some sense?
- Signaling models? Does increased costs of interdependence allow information to be more credibly transferred between groups?

¹⁰Davis 2019 - War as an Internal Indivisibility Problem - discusses when domestic distributive politics can impact war onset.

- This connects to another particular cause of war: information problems. View conflict as arising due to uncertainty in crises situations.
- Could commitment problems arise from trade leading to conflict? Perhaps concerns about how trade has a disproportionate impact on another country's ability to wage conflict, which they could then use to to exploit/make further demands.
- Everyone would be better off if they *commit* to not exploiting their increase in power, but they may not be able to.
- Relationship between trade and conflict goes both ways; how does the possibility (or actuality) of conflict structure trading relationships, and how does more open trade affect the likelihood of conflict.
- Sanctions are another way in which economic interests in trade are directly subordinated to security interests.
- "Conceptualization" and "measurement" of interdependence. Worth taking a moment to consider that these are separate stages that are important, and it is possible to get either wrong.
- Conceptualization: what do we mean when we say interdependence?
- Measurement: how do we map from that "concept" to a particular "measure" in the real world?
- Case study: poverty. How should it be conceptualized? How should it be measured?

7 Trade and Public Opinion

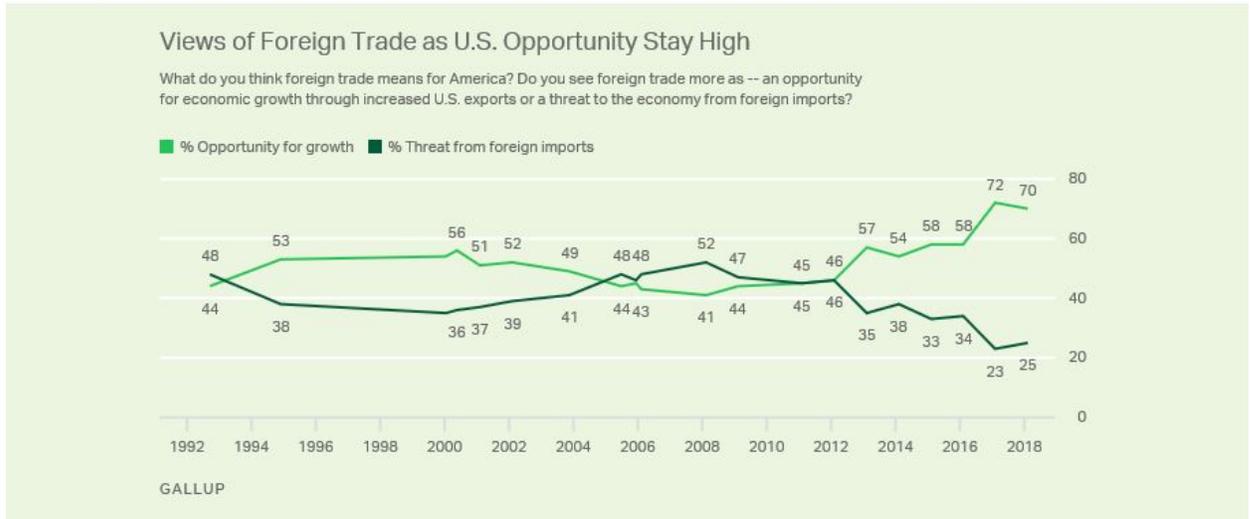
7.1 Mansfield and Mutz

- Find survey evidence that trade preferences result from perceptions of the effect on aggregate outcomes rather than on distributional effects
- Say that effect of education is about out-groups.
- Find little evidence for HO or RV models, once you control for ethnocentrism, isolationism, etc.
- Overall, interpret this as example of in-group out-group view of trade
- Do perceptions about distributional effects affect stated beliefs about aggregate effects? How many people are going to say they want protectionism despite the fact that it's bad in aggregate terms on a survey?
- If aggregate outcomes are driving things, how do we understand the variation in trade beliefs? Is it variation in knowledge? Are beliefs systematically biased?
- Other work (Rho and Tomz) suggests in experiments that if you correct beliefs about trade by providing correct information, then preferences move towards what you'd expect from economic models.
- There are sensible reasons why we might expect trade beliefs to be biased too - the most salient events tend to be negative towards trade (job losses, factory closures, etc.).
- Psychology/behavioral economics tells us that salient events tend to get represented more heavily in belief formation - "availability heuristics".

7.2 Fordham and Kleinberg

- Claims of those like Mansfield and Mutz about trade preferences being sociotropic, etc are premature
 1. Using one attitude to predict another raises questions about direction of causation that cannot be answered with data at hand.
 2. Understanding of self interest employed in most studies of trade policy attitudes is unrealistically narrow. In reality, close relationship between individual economic interests and the interests of the groups in which individuals are embedded creates indirect pathways through which one's position in economy can shape individual trade policy preferences
- Fordham and Kleinberg use the same data from Mansfield and Mutz to statistically evaluate these claims.
- Show that reverse causation is equally plausible.
- Economic interests may have strong effect on trade preferences *via their effect on beliefs about trade's outcomes*.
- In other words: egocentric beliefs have a significant impact on sociotropic beliefs.
- **Question:** under what conditions would general attitudes towards trade affect economic policy?
- Most people probably aren't impacted much by trade compared to other things (esp. in USA when trade is still a small percentage of the economy). And yet, those groups that experience *concentrated* costs might still organize and act based on those interests.

- Broadly, attitudes towards trade have become more positive in the past few years!



- If interest group politics matters more for trade policy, then broader attitudes on trade may not be informative for what policy outcomes are likely to occur.
- Meanwhile, economic models may still be useful for understanding what kinds of interests are likely to clash over trade in the political arena.

7.3 Mutz - Status Threat

- This paper suggests that instead of economics/pocketbook effects driving vote choice, it was threats to status of groups that mattered.
- Status threat is the idea that being part of a dominant group relative to others is psychologically valuable, and thus policies that threaten to elevate other groups over yours are a subject of concern.
- Whites being told they will be a minority race, midwesterners being marginalized in favor of coastal cities, etc. Not so much about whether or not policies materially impact these groups, so much as it is about how they perceive the election of certain actors as promoting their status.
- Will coal make a dramatic resurgence? Maybe not, but coal miners' status may have been elevated.
- In this sense, the 2016 election was less about trade's material effects than about a collection of things leading dominant groups to be concerned about threats to their position in a hierarchy.
- Global status threat tends to be highly correlated, but is theoretically distinct - a concern that with greater interdependence, global supply chains, etc. the US status' is declining.
- This may be less about the US declining overall than it is about other countries growing and becoming more equal partners.
- Thus, if American "greatness" is defined relationally, it may not matter to certain people if the US has never been better/is trending up.
- Trade relates to this, in that it's not enough that both countries benefit: certain voters might want others to *lose* (this shows up in other work by Diana Mutz)
- Trade deals then need to be "won" so that American dominance can be reasserted, rather than so people can benefit materially.

8 Economics and Politics of Migration

8.1 Labor Markets & Migration

- We discussed earlier: what, to a first approximation, are the effects of trade on jobs?
- Answer was: no obvious impact on jobs, where employment effects are determined by macroeconomic conditions.
- Instead, to the extent that certain groups should be concerned about trade, the channel through which they should be concerned is wages.
- What about immigration? How can we understand the labor market effects of a significant increase of workers entering into the United States?
- The answer, perhaps surprisingly, is that the standard models we use to understand labor markets do not predict much effect on number of jobs at all.
- This obviously contrasts starkly with much of the public conversation on immigration, so let's consider a few potential claims about immigration and their economic effects in turn.
 1. Fixed number of jobs - "the lump of labor fallacy"
 - This approach to thinking about jobs thinks of there as being a fixed amount of jobs that can be allocated, so if an immigrant takes one, then a local cannot take one.
 - This in many ways accords very well with what we observe, because at the *local* level it is obviously true: for any given job, if someone else takes it, you cannot also take it.
 - But on the broadest level, this obviously cannot make sense, since there are not a fixed number of tasks to complete after which there are no more to allocate.
 - It is possible that the next job taken may not be as productive as the first, but you can usually find *something* for someone to do.
 - This is especially true given that each additional person also creates *demand*.
 - In a simplified economy: someone comes in and becomes a candlestick maker. But if they specialize in this, they are creating additional demand for food production, manufactured goods, etc.
 - Empirically, in the US, there was a huge increase in labor market participation when women entered the workplace - vastly more than any proposal for immigration flows - that was well-absorbed without any of the kind of apocalyptic effects that lump of labor fallacists might have predicted.
 2. Impact of immigration on wages - Borjas' "the labor demand curve is downward sloping"
 - The claim here is one of simple supply and demand - more labor supply means lower prices.
 - For any given skill category of labor - e.g. unskilled labor - the models we've covered argue this is broadly true. Indeed, this is one of the core insights of the Heckscher-Ohlin model.
 - For **all** labor, this is true if the other factors - e.g. capital - stay fixed, so that the ratio of K/L decreases when L increases.
 - However, since this assumes a shift in relative proportions, it will not hold if other factors increase to match the increase in labor.
 - Lewis' example: a company hiring a worker will likely buy them a new computer, desk, etc. since they will be more productive with these capital investments.
 - In any event, there is little controversy surrounding the idea that skill/factor balanced migration should have little effect on relative wages/returns. What about unbalanced migration?

- This has become surprisingly controversial: Card (1990) did a study on the Mariel boatlift, in which the labor supply of Miami was suddenly increased by 55,000 workers, largely with low education. Found essentially no impact on local wages, even amongst unskilled workers.
 - Borjas paper challenges this empirical result, using a restricted sample (high school dropouts).
 - This paper was in turn challenged by a series of other papers.
 - Broadly, the empirical evidence seems to suggest that migrants tend to have the strongest impact on recent migrants’ income, rather than natives’ income. (Peri 2012)
 - This could be because of specialization in different kinds of tasks; in many ways, this reflects the conventional wisdom of “immigrants taking jobs natives don’t want”.
 - Giovanni Peri has written economic theory papers on task specialization that make this claim rigorously.
 - The evidence from the Mariel boatlift refers to a very extreme shock, and produces *at best* mixed evidence of a reduction in native wages.
 - However, you could accept that the labor influx reduced wages without it dramatically changing your assessment of immigration policy.
- On the other hand, much as with trade, migration could be expected to generate significant aggregate income increases.
 - Clemens talks of “trillion dollars bills on the sidewalk”, and provides many anecdotes of how productivity increases for individual workers have been dramatic after migrating from, say, Haiti to the USA.
 - Some of that value generated would, of course, go to the migrants themselves.
 - 59% of variation in income can be explained by where you live. (Branko Milanovic)
 - This raises interesting ethical questions: to what extent should the value to migrants be a consideration in determining migration policy?
 - Under what conditions do states have moral obligations to let migrants enter? Asylum claimants can gain access under international law. Refugees?
 - Remittances are also an important thing - swamps foreign aid flows by significant margins.
 - Some interesting work on this, which we won’t have a chance to talk about.
 - Possible critiques of more open immigration include:
 1. Strain on welfare systems.
 - Although with existing migratory flows, there is not a lot of evidence that migrants in general take more out the public coffers than they pay into it.
 - More evidence for this net effect in the US for low-skilled workers in the short term, but long-term implications are less clear, and the budgetary effects are relatively modest.
 - Worthwhile to note however that this is in the current equilibrium. Not clear what would happen if you had, say, open borders.
 2. Cultural/social impact.
 - This includes some recent work talking about “productive cultures”.
 - Some are concerned about social cohesion - Reihan Salam makes the claim that if immigrants do not get fully integrated, then even if the migrants themselves are better off and satisfied, their children might feel like an underclass in a way that would lead to poor social cohesion.
 - Some work (e.g. Alesina, Glaeser, Sacerdote 2001) suggests that support for higher welfare states is higher in more homogeneous societies.

3. Short term disruptions.
 - Large migratory flows may eventually be absorbed without increasing unemployment, etc. but in the short term there may be frictions of various sorts.
4. Limited benefits to native workers.
 - While there's pretty good evidence for the overall economic benefits of migration - and these benefits can be quite dramatic- a significant share of the benefits are captured by the migrants themselves.
 - This reflects the idea that incoming workers are paid their marginal product, to some extent.
 - Most empirical assessments of this sort predict some benefits are captured by natives, but the gains are relatively modest.
 - Certain kinds of work - e.g. high-skilled work - may have higher externality effects via innovation and whatnot.

8.2 Material Interests and the Politics of Immigration

- What did the HO model tell us about immigration? Well, largely that in terms of their economic effects, immigration and trade are substitutes.
- If this is the case, then the politics of trade and immigration will be inextricably linked.
- Indeed, freer trade might reduce demands for more open immigration! Consider that, for instance, trade with low-skill abundant countries has an economic impact identical to low-skilled immigration from that country, according to HO.
- If this is the case, the forces that support trade should also support low-skilled migration. But if they get one, they might not care as much about the other.
- For instance, firms that rely on low-skilled workers can also substitute FDI in low-skilled labor countries and then import their products.
- This has been extraordinarily evident in a number of industries, as with the footwear industry in the US, where 98% of domestic consumption is imported, but the firms are usually US based firms.
- As firms become multinational, with higher FDI, they demand low-skilled immigration less.
- Historically in the US, migration was completely free even as trade and capital mobility may have been more restricted (no real laws restricting migration until late 1800s, and only in 1900s did things real get going).

8.3 Immigration and Public Opinion

- Hainmueller and Hopkins review the research on immigration and public opinion.
- Two broad strands of this literature, which mirror the literature in trade: (1) economics/political economy; (2) political psychology.
- Find that personal economic circumstances are less impactful; instead, sociotropic *cultural* concerns dominate.
- Also, broadly, skilled immigration is preferred across the board, even by those whose wages might be thought to be threatened by skilled immigration (i.e. other skilled workers).
- Material interests can operate through:
 1. Labor market competition.

2. Taxation and spending decisions.

- We've discussed both of these before, in for instance discussing the HO model/Borjas/etc. and in discussing the fiscal impact of migrants.
- Notably, however, while the political economy studies tend to assume that the HO/factor proportions model defines self-interest, we have seen that there are open questions about whether or not the material effects of migration would be well predicted by this kind of model.
- These open questions are both:
 1. Empirical, following from Card (1990) and the responses to Borjas.
 2. Theoretical, in the sense that (1) we have models of skill complementarity (Peri); unlike with trade, where one country is necessarily relatively abundant in one factor producing distributive implications, there is the possibility of skill-balanced migration that would not produce notable cross-factor distributional effects.
- If a statistical model intended to uncover whether people vote based on their material self-interest does not specify the material self-interest correctly, then it can't possibly be used to assess the question of whether material interests matter. (Hainmueller and Hopkins discuss this in response to some of the early political economy work on this question)
- Similarly, the "fiscal burden" paper seems a bit weird, in assuming that increased fiscal costs imposed by migrants would be responded to with higher taxes - disproportionately felt by wealthier natives - rather than reductions in the welfare state - disproportionately felt by the poorest.
- This is especially hard to square given that the public debate on this is usually about the ability to sustain the welfare state in the face of high levels of immigration, and there exists evidence that more homogeneous societies tend to invest more in social programs.
- Hopkins and Hainmueller say this as well, noting that empirically in US states the correlation seemed to be on the spending side, not the taxation side.
- For the "sociopsychological" literature on this, you get a collection of things that do seem to matter, including:
 - Education is correlated with more support for immigration, which may or may not be about material effects.
 - Sociotropic beliefs about the effect on the US economy as a whole.
 - Ethnocentrism, stereotyping, attitudes towards outgroups.
 - Emotional cues/affect.
 - National or other social identities.

9 Trade Law

9.1 Trade Agreements in Context

- World Trade Organization (WTO) was founded in 1995, but the General Agreement on Tariffs and Trade (GATT) that forms a significant part of the legal basis underlying it was initially signed in 1947.
- Concurrently with GATT rounds a number of preferential trade agreements (PTAs) were signed by various countries.
- While initially, many hoped the WTO would become a single forum through which future trade would be negotiated, if anything the opposite has happened. There have been essentially no successful trade rounds since the WTO was founded. The Doha round stalled for decades.
- Meanwhile, the number of PTAs have expanded dramatically: between 1990 and 2010, the number went from 70 to 300.
- Why have trade agreements at all? The basis can be in political economy terms (facilitate cooperation in the face of political pressures to violate agreements, created shared understandings/norms, promote information sharing, etc.) or economic (work to avoid terms of trade externalities, promoting onshoring, etc.).
- Whether you find politics or economics more compelling as fundamental rationales may depend on what you think the sources of protectionist policies are. If you believe that, say, automobile tariffs are fundamentally about manipulating terms of trade externalities, then perhaps an economic model of the GATT is appropriate here...
- In any event, compliance with international trade law seems to be an equilibrium; most dispute decisions are abided by, and even the Trump administration has largely pursued protection via legal trade remedies, even if the legality of the specific tariffs may seem suspect and some of the tools used have essentially never been used before in this way (e.g. security-based tariffs).
- Given that a significant share of tariffs in effect were implemented under the rules set out by the GATT/WTO, and dispute settlement, trade remedies, etc. are a constant feature of how trade is conducted, it becomes important to have an understanding of how these things work.
- Trade law appears to constrain and shape how governments pursue their goals, and it becomes difficult to understand the significance of various policy developments without understand the legal context.
- There are also some features of US law with respect to trade negotiations that are worth flagging:
 - The Reciprocal Trade Agreements Act (RTAA) of 1934. This provided the legal basis for Presidents to negotiate *reciprocal* rather than unilateral tariff reductions, and then that these agreements could be agreed upon via simple majority vote instead of supermajority. This was renewed in some form up until 1962.
 - With the Trade Act of 1962, Presidential authority was expanded to some extent for the purposes of negotiating the “Kennedy Round” of GATT trade negotiations, but with increased oversight by Congress.
 - Trade Promotion Authority (TPA) which mandates that agreements, negotiated by the President, would then be voted for on an up or down basis and not subject to amendment. Originally introduced in 1974 to facilitate the Tokyo Round of GATT negotiations, it has been renewed semi-regularly since.
- What changed with the advent of the WTO versus the GATT, which provides much of the legal basis for the WTO’s regulation of trade?

- The Dispute Settlement Understanding (DSU) and the Appellate Body.
 - The General Agreements on Trade in Services (GATS).
 - The Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement.
 - The Trade-Related Investment Measures agreement.
- Also, for reference, the rounds of GATT negotiations are:
 1. Geneva (1947).
 2. Annecy (1949).
 3. Torquay (1950-1951).
 4. Geneva II (1955-1956).
 5. Dillon (1960-1962).
 6. Kennedy (1962-1967).
 7. Tokyo (1973-1979).
 8. Uruguay (1986-1994).
 9. Doha (2001 - ??)
 - Rounds since Tokyo have begun to expand the agenda from simply goods trade to things like trade in services, regulatory standards, IP, non-tariff barriers, etc.
 - Over the course of all these rounds of negotiation, average tariff levels on goods fell from approximately 40% to approximately 5% today.

9.2 Rules Governing Commitments in the WTO

- A common concern voiced about these agreements - especially the WTO - is the degree to which they infringe on national sovereignty.
- Given this, it's worth discussing a little bit how commitments in the GATT/WTO work.
- Governance structure of WTO:
 - Ministerial Conference (meets every two years).
 - General Council (delegates from every member country).
 - Secretariat, headed by the Director-General.
 - Dispute Settlement Body (governed by the Dispute Settlement Understanding) including Appellate Body.
- The Ministerial Conference can vote on amendments to WTO agreements. Specific provisions require unanimous consent; all others require two-thirds majority.
- For changes made by a two-thirds majority, *they only bind on parties who voted for them*.
- The Ministerial Conference can decide, by 3/4 majority, to declare something so important that a member needs to accept it or leave the WTO, although this is (a) not automatic for anything with a 3/4 majority, it has to be explicitly chosen; (b) members can choose to waive the requirement for specific states.
- In practice, nearly all decisions have been made by consensus ruling.

- Some things, however, are *banned* by the WTO, in an attempt to make trade policy more transparent and manageable. This includes “quantitative restrictions” (quotas, VERs, etc.). Instead, the goal is to make tariffs the main trade policy.
- Beyond this - all tariff concessions are voluntary, though there is a stated goal to lower these over time.
- States can negotiate to change to withdraw concessions every three years, provided they work with other countries to make compensatory changes to their policies.
- Other considerations in the administration of tariff commitments include:
 - Valuation. If taxing at a percentage of the value, need to know how to determine that value.
 - Classification. What is a “like product”?
 - * This is the subject of many disputes.
 - * One approach is economic - cross-elasticity of demand.
 - * Another approach involves physical characteristics of the product.
 - * Many disputes turn on whether products are actually differentiated, or simply a matter of “disguised discrimination”. US-Mexico Dolphin safe Tuna case is an example.
 - Rules of origin. Will talk about this more when talking about PTAs.
 - Customs fees, administration.
 - Trade facilitation (subject of Doha round TFA 2013, which has been objected to by India).

9.3 Most-Favored Nation (MFN) Principle

- Article I of the GATT.
- Requires that all tariff commitments be extended to all other members of the WTO at equal levels.
- Why bother with MFN?
 1. Political: differential tariffs being charged across a host of countries engendered resentment, made negotiations more complicated, allowed more scope for political machinations, etc. Larger countries, which might otherwise wield disproportionate political influence, could be balanced by a multilateral coalition of smaller countries in this case as well.
 2. Economic: trade costs are higher when there is diversion to less-productive areas because of tariffs - in these cases, no government collects the revenue, but less efficient producers are utilized. MFN can help to reduce these costs: while tariffs still produce deadweight losses by distorting consumer decisions (e.g. consumers buy less of a good when faced with tariffs), the diversionary effect will not be active if the same tariff is charged to everyone.
- So the economic question is about whether trade is *diverted* or *promoted*.

9.4 PTAs and the GATT/WTO

- WTO formally prohibits PTAs, except in the case where:
 1. An agreement eliminates barriers on “substantially all trade” between parties.
 2. Customs duties must not be higher than the average that existed before the PTA.
- These rules allow for three types of PTAs:
 - Free trade areas, which eliminate trade between countries involved but allow each country to set their own tariffs with respect to other countries. (Note: in order to avoid some obvious problems, these require extensive “rules of origin”, which can be interesting and complicated.)

- Customs unions, which involve all the free trade between countries of a free trade area, but also involve the countries negotiating a single tariff with other countries as a block. (Rules of origin don't matter here, because an imported good from China will have the same tariff regardless of what country it enters in)
- Common markets: customs union + free movement of people.
- **Brexit!** What are the variants? What do they illustrate about different kinds of PTAs?
 - No-deal Brexit/Hard Brexit (revert to MFN rates under the GATT). Status quo, and nobody wants it.
 - Free trade area, sort of Theresa May's deal (242 Yes, 391 No).
 - Customs union (273 Yes, 276 No).
 - New referendum, possibly stand-in for No Brexit (280 Yes, 292 No).
- Most of the options have complicated unresolved questions, especially with respect to the Irish border.
- In practice, what constitutes “substantially all trade” has never been clearly defined, and the WTO has not demonstrated much interest in enforcing these provisions.
- PTAs are a direct violation of MFN which have come to be more accepted, especially as WTO rounds have stalled, leaving little other means for expanding trade.
- Some examples of PTAs are: the EU, NAFTA, CAFTA, ASEAN, MERCOSUR.
- A popular question in political science and international trade law circles has been about whether or not these PTAs are “stumbling blocks” or “building blocks” towards greater multilateral trade cooperation.
- It is plausible, for instance, that by reducing the number of parties involved in multilateral negotiations (the EU negotiates as a singular entity, for instance, as a customs union/common market) that PTAs could make it easier to negotiate broader deals.
- There are also open questions about whether or not PTAs might help build support for trade amongst domestic groups.¹¹

9.5 National Treatment

- Article III of the GATT.
- This is the core provision of the WTO/GATT that governs provisions like health and safety regulations, environmental provisions, etc.
- The core idea is this: as a state, you have broad latitude to impose policies that you view as important for any number of reasons. However, if you do this you must do so in a *nondiscriminatory fashion*.
- Foreign firms must be given “no less favourable treatment” than national ones.
- Environmental regulations, for instance, cannot apply *only* to foreign firms. They must apply equally.
- An example of something that *does not* violate national treatment but for some reason has become controversial is a VAT.
- A VAT is a kind of sales tax that, like a tariff, would be applied to goods being imported into a country with a VAT.

¹¹Richard 1993 on Endogenous Protection and Trade Diversion is an interesting example of this

- However, consumers buying domestically-produced goods also have to pay the VAT! So it does not confer upon domestic producers an unfair advantage.
- In this way it is quite different from a tariff.
- Things get a little more confusing when it comes to VAT rebates for certain kinds of products (e.g. exports) but the above logic generally stays the same. Trump administration has complained the EU exports are VAT-free but US imports are subject to the VAT. But, in the domestic market all producers are subject to the VAT, and in the US all producers are not. So it's hard to see why this matters from a competitive standpoint.
- A new Trump admin argument is that because the US relies on income taxes which receive no rebate, there is implicitly some kind of extra cost to US domestic producers. But this is quite indirect: income tax would apply to workers hired and corporate tax earnings paid out as dividends, but not the products in a direct fashion.
- Also, plenty of European countries have high income taxes as well. So if the argument is that VAT allows an advantage by allowing them to reduce income taxes... well then the logical policy solution to that seems to be to have some kind of rebate for countries that charge higher income taxes?
- This seems basically impossible to implement, and quite arguably unjustifiable, given that so many things within a country change relative prices, and the general GATT approach is to only treat this as a subsidy in cases where things are **specific** (see GATT rules on subsidies).
- Anyways, national treatment requires that “like products” must be treated equally, after tariffs have been paid.
- Questions arise about what counts as a “like product”. Dolphin-Tuna case.
- Split-run periodicals is another interesting example. GATT panel ruled non-split run and split-run were like products.
- Chile-Taxes on Alcohol applied a cross-elasticity/consumer utility approach to like products, noting that certain products (e.g. butter v. margarine) can be clear substitutes despite significant physical differences.
- Similarly, Japan-Taxes on Alcohol concluded that shochu and vodka were like products.
- The goal here is avoid regulations that are in fact “disguised protectionism”.
- To this end, there are some relevant restrictions in the agreements about the kinds of policies that can be implemented to promote:
 - Health and Safety, governed by the “Application of Sanitary and Phytosanitary Measures” agreement (SPS agreement) and the Technical Barriers to Trade Agreement (TBT agreement)
 - Environment (governed by GATT Article XX and TBT)
- A important and famous case relating to SPS and National Treatment is the Beef-Hormones case with the EU.
- Here the standards technically satisfied national treatment (they applied to all firms equally) but in practice it was only the hormones used in beef from the US and Canada which it applied to.
- In this case, the WTO ruled against the EU because of a lack of scientific basis for health concerns from these particular hormones, as would be required under SPS.
- EU argued they were applying the “precautionary principle”. WTO rejected this application of this principle as overly broad.

- Indeed, while the standards for scientific evidence in this case are pretty lax, SPS suggests that states need to at least provide *some* evidence to make their case.
- The broader point here is that national treatment is intended to provide governments with the ability to implement regulatory standards for a variety of goals, so long as these are not applied in a discriminatory fashion.
- The subsequent agreements attempt to clarify the specifics a little better, to avoid this broad latitude being exploited in a way that would limit the agreement's overall ability to be effective.

9.6 Dispute Settlement

- Prior to the WTO, there was no formal process for resolving disputes, so panels were ad hoc.
- However by the mid-1950s, the panels started to look like what we currently have (5 members from non-dispute parties making rulings) but panel recommendations had to be adopted by consensus basis.
- WTO has DSU, Appellate body.
- Dispute Settlement Body rulings are adopted via “negative consensus”, meaning they hold unless everyone opposes them.
- This in effect makes them automatic, since the “winning” party will usually support the ruling.
- Now strict deadlines on panel rulings, to try to speed things up.
- There is a consultation period before a panel is formed (60 days) followed by the panel being formed and coming to a ruling, followed by an opportunity for an appeal to the Appellate Body. Once all of this is exhausted, the panel can make recommendations on concessions to be made by the losing party, and there is a period of time allowed for countries to implement these.
- PTAs sometimes have their own adjudication (e.g. NAFTA Chapter 19&20).
- Most of these, only states have *standing* to pursue disputes.
- ISDS is a controversial exception, in which investors can sue countries directly in the case of perceived violations.
- Does this matter?
- **Case: Philip Morris v. Uruguay**
 - Philip Morris sued Uruguay over measures designed to reduce smoking (such as requiring graphic warnings on packages).
 - They lost (this is a clear case of appropriate protections under health and safety exceptions).
 - However, there are questions about whether this can result in “regulatory chill”, where states are reluctant to pursue certain kinds of regulation for fear of being sued (legal costs might matter even if they are certain to win).
- Forum-shopping has become a possibility with a variety of dispute settlement procedures often being available for any given potential dispute.
- Busch (2007) describes this as about *precedent*. Whether a country wants to set a regional or multi-lateral precedent.
- But there are open theoretical and empirical questions about whether or not precedent exists in international trade law, and international law more broadly.

- **What is precedent?** Formal: stare decisis. International trade law: informal.
- US position on, say, zeroing cases (which we'll talk about when we talk about antidumping) is that past rulings should have no impact on future rulings.
- In practice: informal precedent does seem to exist empirically. Past rulings have an impact on future rulings.
- “Ensuring ‘security and predictability’ in the dispute settlement system, as contemplated in Article 3.2 of the DSU, implies that, absent cogent reasons, an adjudicatory body will resolve the same legal question in the same way in a subsequent case.” *Appellate Body Report, US-Final Anti-dumping Measures on Stainless Steel from Mexico, WT/DS344/AB/R, 30 Apr. 2008, para. 160.*
- However, there are some reasonable questions about whether cross-institutional precedent could occur when the process is informal. Could WTO rulings impact NAFTA panel rulings on similar subjects?
- “Several WTO decisions have now held that the use of zeroing is inconsistent with US obligations under the WTO Agreement. While not binding on American courts, these decisions serve as authoritative interpretations available to clarify the obligations of members under the Agreement. As such, they serve as useful tools in fashioning interpretations of domestic statutes which would not contravene the international obligations.” *Binational Panel Report, SSSS from Mexico, p. 11.*
- Compliance rate is high for WTO dispute rulings - approximately 88 percent (see Trebilock p. 25).
- Case breakdown: non-tariff barriers (52 percent), tariffs (21 percent), subsidies (16 percent), AD/CVDs (10 percent).
- Alternative case breakdown: general GATT provisions (379), antidumping (102), subsidies (99), agricultural measures (71).
- One concern is that the majority of disputes are filed by developed countries (e.g. US, Europe, Canada, Australia, Japan). Do developing countries have the capacity to file disputes?
- Another question is about the appropriate degree of “legalization” of the proceedings. Should panels be made more or less strong? Should implementation in domestic courts be automatic through adoption in domestic law of provisions that enshrine international commitments?
- Asylum laws are a good example of how this would work: international legal statutes defined a requirement for countries to assess asylum seekers, and this was enshrined in US law.
- Current US administration clearly leans to one side on this, arguing (for instance) that national security tariffs are unreviewable, and they have been blocking appointments to the Appellate Body (it is a seven member body that currently only has three members as a consequence).

9.7 Trade Remedies

9.7.1 Introduction

- Three types of regularly used trade remedies:
 1. Antidumping provisions.
 2. Safeguard provisions.
 3. Countervailing duties.
- To add to this, we can add in *national security tariffs*, which are permitted under GATT law but have historically been rarely used.

- Obviously these are important to discuss in light of the events of the last year or so.
- Each of these provisions tend to be implemented in different ways in different countries through various instantiations in domestic law.
- In the US, you have the USITC and Commerce Department largely responsible for antidumping and CVDs.
- Safeguard provisions require the explicit sign-off from the President.
- Security tariffs also require the sign-off from the President, but there is an interesting tension between the way this has been set up in US law versus the way it's governed in the GATT. Extremely recent rulings (e.g. with Russia and Ukraine a few days ago) are starting to illustrate the tension between these laws.

9.7.2 Antidumping

- Material injury (USITC).
- Dumping determination (Commerce).
- Causation.
- *Explicitly discriminatory*. Applies only to countries accused of dumping.
- Contrasts with safeguards (discussed next) that apply on a MFN basis. Although work by Chad Bown suggests that appropriately targeted antidumping provisions may have similar effects (tariffs on parties that wouldn't export anyway don't really matter).
- How is dumping determined? Through a lot of weird mysticism.
- "Zeroing" is a controversial practice in US law that has led to the US losing a lot of disputes.
- In determining the price in the "dumped" market, have to look at the various prices charged and compute an average. Figure out if difference between the home price and dumped price is positive (lower prices or dumping, which is "bad") or positive (higher prices, which is fine we guess?).
- The US practice treats any example where the home market price is less than the export price as *zero*. Instead of using it to compute an average.
- This, for obvious reasons, has been ruled in many panels to be an unreasonable way to calculate this.
- However, there is a broader question: Is dumping undesirable?
- Much of the economic theory suggests that you want higher terms of trade to do better. Selling at a lower price seems to suggest lower gains for the selling party.
 - New trade theory suggests that mark-ups will be *higher* when you have a low marginal cost. So net of transport costs, we would expect firms to charge lower mark-ups in export markets than domestic markets. This may trigger dumping determinations routinely.
 - The welfare effects of selling at lower prices in export markets are not at all clearly negative. The logic seems to be one of "predatory pricing" eliminating domestic competitors followed by increased prices afterward, but we don't ever really see that.
 - * In fact, early US law on this (in 1920s) involved *criminal provisions* on predatory pricing, and required proof of intent.
- Most commonly used trade remedy.
- Interesting recent case: Boeing C-series versus Bombardier in Canada. USITC threw it out saying no threat of material injury, because there was no competing jet.

9.7.3 Safeguard Provisions

- Serious injury (USITC).
- Sudden surge of imports.
- Causation.
- Applies to all countries equally. Though as mentioned earlier, this may not matter.
- These have been used less than antidumping provisions. The most recent examples were the washing machine tariffs and the solar panel tariffs..
- This requires explicit approval by the President even with an affirmative determination by the USITC. So in practice they have been used less, though the rate seems to be increasing.
- 2002 Bush Steel Tariffs are an example.
- A WTO panel ruled against these tariffs on the grounds that there wasn't a surge in imports.
- Bush vowed to keep tariffs, but then EU threatened tariffs on Florida oranges and Michigan automobiles.
- Tariffs were quickly removed afterwards.
- In general, the justification for safeguard measures, which are formally *not* about any unfair conduct has focused on an **efficient breach** rationale.
- Efficient breach, from the law and econ literature, suggests that in certain cases the benefits of violating an agreement can be higher than the costs to other parties. In this case, breach is "efficient" and should be allowed.
- However, incentives are unlikely to be well-aligned if you allow people to claim efficient breach whenever they want. So you either make them pay an amount approximately equal to the costs to other parties of violating an agreement, or have a mechanism that assesses based on criteria.
- In practice, the approach has been one of criteria in the WTO, as illustrated above.
- The costs could be economic or political.
- A big question in the literature is whether these safeguard measures make deeper commitments more politically saleable. Allow countries to make broader "concessions" while knowing they have a "safety valve" in the case of exigent circumstances.
- Also, while safeguards are the only measure that explicitly does not require unfair practices on the part of other parties for tariffs to be imposed, there is a reasonable literature suggesting that things like antidumping provisions are "de facto" safeguard measures due to relatively limited restrictions on determinations of dumping, and low rates of challenge of antidumping provisions.

9.7.4 Countervailing Duties and Subsidies

- Material injury (USITC).
- Prohibited or actionable subsidization (Commerce).
- Prohibited subsidies: subsidies that are designed to distort international trade, like export subsidies.
- Actionable subsidies: other subsidies that countries might implement to support industries, but have the effect of ascribing an advantage to domestic firms.

- This requires proof of “specificity”. It can’t just be that industries in general broadly benefit from the system.
- Types of specificity include:
 - Enterprise-specific.
 - Industry-specific.
 - Regional-specific.
- What constitutes a subsidy is a subject of considerable debate, and many trade disputes.
- US-Canada softwood lumber is based on whether or not rental rates on Crown land is a de facto subsidy.
- Whether or not China is a “market economy” is caught up in the fact that state owned enterprises, various other characteristics, make it hard to evaluate what is operating as a de facto subsidy.
- In addition to the standard case of subsidies harm domestic competitors, there is also the broader concern of subsidized exporters affect other competing exporters.
- For instance: if I’m a Mexican farmer exporting avocados to Canada, and the US subsidizes their Californian avocado production such that they can sell their avocados in Canada at a cheaper price, I may still be adversely affected by the this subsidization.
- This obviously can’t be “countervailed” since the importing country is not the affected party.
- Dispute Settlement in this case provides the only recourse. Can be justified under **serious prejudice** provision.

9.7.5 Security Tariffs

- Broadly self-judging in GATT law, but there are some categories that one is supposed to appeal to.
- US and Russian position is that these tariffs are “unreviewable”, in the sense that the WTO and Appellate body have no role in assessing whether or not they are justified.
- The most recent ruling (Russia-Ukraine) found the WTO rejecting this view, stating that Russia needed to demonstrate which category/justification the tariffs fell in.
- The categories are:
 - Fissionable materials.
 - Traffic in arms, ammunition, and implements of war and to such traffic in other goods and materials as is carried on directly or indirectly for the purpose of supplying a military establishment.
 - Taken in times of war or other emergency.
- However, once this category has been established, there is broad latitude for states to make arguments about why something is in their national security interest.
- Interestingly enough, the US domestic laws regarding security tariffs are *even broader*. They don’t require appeal to specific categories, and “security” is never clearly defined.
- As a consequence, Wilbur Ross’ report on the security threat of, say, steel and aluminum from Canada makes almost no attempt to justify this on “traditional” security grounds. Instead, it simply argues that “economic security” is also security, and thus protecting “vital” industries is justifiable.

- This provides essentially unlimited ability to use these tariffs, where the only thing that keeps the system from collapsing is past presidents exercising restraint and almost never using these.
- This does not appear to be happening anymore...
- However, the outcome of challenges to these laws via the WTO is uncertain. If the panel interprets the statutes similarly as in the Russia-Ukraine case, the US will need to claim the tariffs under one of the categories listed under GATT XXI, which they have explicitly not done in the Commerce department report.
- So they could theoretically lose if they decide not to! But that outcome may not be great either, given what you can imagine the Trump administration's response would be to being told by the WTO that it can't implement national security tariffs.