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Lecture 20

The point here is risk aversion. How does the level of risk aversion show up in 19<sup>th</sup> C. farmer preferences? You can grow cash crops or food crops, but you can't eat cotton - and the bottom line is you don't want to starve. Who is likely to want to be self-sufficient in food crops? Poor guys, because they don't have any savings to use to buy food if cash crops fail.

You should understand how Wright's regression on p. 68 shows this. You should also understand the 2 risks of growing cotton: predictability of yield and price fluctuation.

Was the South self-sufficient in food? Was it just the small guys or big farms too? What's so good about corn? Be able to explain how corn is a very good fit for people growing cotton (you can leave it in the fields, no harvest labor spike, different plant/harvest timing). How does Gallman show self-sufficiency? Through corn? No - he takes census corn data and converts it to pork. You should understand the procedure he uses and know more or less his conclusions.

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Lecture 21

What does it mean if an industry has increasing returns to scale? Constant returns to scale? Fogel and Engerman thought there were special efficiencies built into gang labor: speed up, constant pace, and greater division of labor. Wright felt this was not the answer, and instead it was totally an issue of crop mix. In Wright's regression, IA is not significant and is small anyway, while CS is significant and has the right sign - so CS and not IA is what's important. Be able to do a computation like Wright, when he finds that going from 0.25 to 0.6 crop share in cotton produces about a 50 percent productivity increase.

In an industry where economies of scale exist, we would expect very large firms with the special efficiencies to dominate - so there should only be large firms above some minimum efficient scale in this industry. All others would either be driven out of the market (the big efficient guys price them out) or exist as very small local mom and pop stores. How does Wright use the spread of farm sizes to argue that there are no economies of scale?

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Lecture 22

The elasticity of supply by cotton farmers is inelastic after they plant, but elastic between seasons - why? What does land clearing and the planting/harvest windows have to do with this? Be able to draw the 3 diagrams and explain the timing and path of cotton acreage expansion. Note how P and Q change in these diagrams.

What is driving constant supply expansion? Constant demand increases from Britain. Wright sees unit elastic demand before the war, so increasing quantity sold should drive the price down and revenues should no change. But prices are stable at 11 cents a pound, so you know demand has to be increasing fast enough to absorb the new cotton at the same price. What happens in 1861-1865 and what does that do to cotton exports? After the war, the South expected to pick up right where it left off - why didn't that happen? Why did demand for durable cotton textiles dry up?

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Lecture 23

Why were there different incentives to mechanize agriculture before the Civil War in the North and South? In the South, no matter how many slaves you had, you equipped each one the same way - even big plantations used the same tools per worker as smaller farms with slaves. In the North, it's obvious farmers are using tools to expand acreage because the bigger a farm gets, the more tools per person. This is because in the North, you can expand acreage by adding more labor so you have to make each of your workers more productive.

What secondary benefits were there from mechanization? Think forwards and backwards linkages. If someone buys a steel plow, someone had to have the skills to make it. What kept Southerners from industrializing? You should be able to make a Fogel-Rutner argument for entrepreneurial ability and capital being sucked into cotton farming and away from industry. You should have some understanding of the political reasons Southerners didn't want slave labor in factories and why immigrants did not go to the South (think slave capital asset values).

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#### Lecture 24

You should understand how liquidity affects the market value of an asset - this explains a lot about why slaveowners were so zealous in their defense of slaveholding rights. This is important because Northerners primarily owned land that couldn't be sold outside the local area, but Southerners could move their slaves in a liquid market to other regions - the mobile nature of the asset allowed a larger market that spanned the entire South from East to West to emerge. So slaveholder interests across the South were united while Northern landowners were split East versus West.

What's the irony in the Constitutional concession not to ban slave imports? What did people in the 1790s think a ban on imports would do? What were slaveowners in 1830 probably thinking about when someone suggested they reopen the slave trade? They wouldn't like it because they would lose asset value in their current slaves (think about it - bring in more slaves means labor isn't as scarce anymore, so slaves already inside the US lose value). The other issue about slave value has to do with abolition - even if nobody was making a serious call for emancipation, why were slaveowners willing to commit tons of resources to hunting the occasional fugitive slave and create massive northern outrage? The net present value of an asset depends on future streams of income, so you had to give potential slave buyers faith that their investment would be protected. If slaves are emancipated, the slave they just bought becomes zero value to them.

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#### Lecture 25

What are the two ways in which emancipation affected Southern labor supply? Slaves could no longer be driven and often chose more leisure - so Southern labor supply fell... a lot. You should be able to explain generally how sharecropping works and why the South would use such an inefficient method of land tenure. Why do former plantation owners like this deal? Why do the freedmen take this deal? Also, why are shares used and not cash rents in most cases? Both the freedmen and former plantation owners have reasons for preferring shares to cash rents and you should know these.

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#### Lecture 26

The Southern financial system was set up to move huge shipments of cotton from large plantations to big British manufacturing firms. These involved a few really big banks and a factor system we talked about earlier - mainly transactions between elites who knew each other personally. In the North, you had lots of smaller banks because more people were making smaller shipments of stuff like grain and pork, so localized knowledge of who was trustworthy was important. Is the antebellum Southern financial network well equipped to work in the Reconstruction era of small freedmen sharecropper tenant farms? What problems did Southern banks face when trying to deal with these freedmen? Illiteracy, dispersed population, and the freedmen had no experience in financial matters so they probably didn't understand what the banks were trying to explain.

Banks are experts at knowing about who is trustworthy and deserves a loan - in the antebellum South, all the elites knew each other personally and the big plantation owners were the only few guys you ever had to deal with, so that was fine. But a few big banks could not have good info on a dispersed population of small farmers - former slaves - they didn't know. Who takes up the role of providing credit? The merchants, who have monopoly power because once they get specialized knowledge, they can beat any newcomer who tries to operate in his area. So the freedmen are screwed because there's only one game in town, and that guy keeps secret books that he can change - and the freedmen can't read anyway, and probably can't get law enforcement to help them. You should be able to describe the cycle of exploitation that leads the Southern farmers to abandon self-sufficiency. You should also be able to

link this logic to the stuff from before about overproduction to draw the conclusion that this was the “correct” decision for each individual, but bad for the region as a whole.

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#### Lecture 27

You should be able to explain why the South did not have the incentives to invest in education. Bob Margo found a wage gap between the North and the South in unskilled farm laborers but not skilled carpenters. What is Wright’s ideas on this? The Southern workers have been denied education and lack skills so they have nowhere else to go, and they are stuck in the low wage South. Since only low skill workers are to be had, the South can’t attract outside industries that need high skilled workers. So the South is stuck in a low wage, low skill trap. You should be able to show in a Fogel-Rutner diagram how Bob Margo’s wage gap finding supports Wright’s idea of a captive labor force. If wages were so out of whack, what ought to happen? Unskilled workers should move out of the South until wages equalize - but this never happens. Why not? Think about how sharecropping and debt peonage keeps the unskilled farmers trapped in debt on a piece of land.

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#### Lecture 28

There are some general statements on how you know there’s something right going on in the US. We have overproduction in all regions, and this is true even today. Even if you believe that the 19<sup>th</sup> Century overproduction was just opening more land and more resources, you can’t make that argument today. Even though population increased by a \*factor\* of 4.8 from 1850 to 1910, agricultural production outran even that. We’re the only major country that cannot consume all the food we produce, and that’s even today when we have the least farmers as a percentage of our labor force than we’ve ever had. We’ve never had 20<sup>th</sup> Century food shortages and even have farm surpluses that have to be dumped. We have a national obesity problem. All of these things are evidence that Malthus’ prediction doesn’t hold for the US even though we’ve already opened all our resources.

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#### Lectures 29 and 30

How does the American System of Manufacturing differ from Old World processes used in Europe in the 17<sup>th</sup> and 18<sup>th</sup> Centuries? What are the 4 features of the American System of Manufacturing? What was the major obstacle to reaper adoption? Repair costs if you broke the thing on a rock were enormous and you would suffer from major downtime. Think about the short harvest window - your grain would rot. How does interchangeable parts solve this? The coulter pin makes it possible for farmers to “fix” their own reapers quickly and cheaply. At first, why did Americans make most of their machines out of wood instead of metal, even if it was less durable and had to be replaced often?

When you consider the 4 features of the American System, you should be able to relate them all to cotton textiles. What did relative factor scarcity mean for selection of manufacturing processes? Americans had to use power looms that saved on labor, but these could only make low yarn count cloth.

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#### Lectures 31 and 32

What does a Rostow leading sector do? It teaches entrepreneurs management and financing skills, it teaches workers mechanical skills that can transfer to other industries, it provides forwards and backwards linkages by demanding from “good” sectors like machinery and iron and also supplies services or goods to boost efficiency and lower costs in downstream sectors. The leading sector should be capital intensive, requiring lots of saving and investment to provide the economy with a stock of productive assets.

You should know the fundamentals of the Infant Industries Argument: that young firms need to be protected from low cost foreigners. Over time your infant industry grows up, its costs lower, and you can remove the protection from your now-competitive industry. Your consumers bear a burden now for presumably big future benefits from a native industry that reduces the need to import. Drawing a picture of cost curves may help.

Mark Bills and C. Knick Harley check to see if the US cotton textiles industry became competitive after protection. F.W. Taussig said by 1832 they were competitive, so Bills checks 1833 and Harley checks even later. This is important because it is challenging Taussig's claim. You should know the general method of how Bills constructs his check on competitiveness: he finds the quality level at which British cost advantage is zero, and it turns out to be even lower than the average quality level US firms were actually selling. The conclusion is that at least half the US industry would have gone out of business if British firms were allowed to sell at will. The fact that cotton textiles wasn't even globally competitive casts doubt on its leading the charge to economic growth.

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#### Lecture 33

The point of this lecture is to convince you that the traditional story of big cotton textile factories being representative of American industrialization is probably wrong. What is Harberger's Law? You should be able to give a quick arbitrary example of how it works. How does Harberger's Law shoot down the idea that technological improvement in cotton textiles was what drove the industrial revolution and economic growth in America? About 1% of productivity gain in all of cotton textiles comes from machinery improvements. The 80 million dollars value added in all textiles is about 2% of GNP. This is an annual growth rate contribution of 1% to a sector that represents value added equal to 2% of GNP. This cannot be very important to overall economic growth.

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#### Lecture 34

What are the two reasons Railroads might be a better pick? The railroad is an inherently technological thing demanding iron and steel and engines, involving huge corporations investing hundreds of millions of dollars in capital goods. Also, it is wide reaching because transportation services hit every sector, so that might deal with Harberger's Law issues. What are the two arguments that the Axiom of Indispensability rests on? First, railroads provided crucial demand for iron, steel, machinery, and other industries. Second, the transportation service improvements from railroads made North-Callender interregional trade possible. The first can be shot down by looking at North's computations on iron, coal, timber and machinery demands. More iron was used in nails than rails, and railroads were just 6% of all machinery sales in 1859.

Why does Fogel say people were asking the wrong question about the contribution of railroads to transportation? It is not fair to compare railroads to carts because in the absence of the railroad, people would not have given up - they would have done the next best thing: canals. What are the 5 advantages I gave of rail over canals? Riskier by ocean (pirates and storms), railcars can simply switch locomotives instead of having to offload onto completely different boats, water freezes so water transport shuts down in the winter, canals need water sources at the top of a hill, and water distances are farther and take longer.

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#### Lecture 35

Fogel's social saving computation initially is based off ton-mile freight rates, distances, and tonnage carried. This produces a -38M rail advantage, making no sense. But this doesn't take into account non-price factors, and when Fogel figures in the institutional details, he gets a rail advantage of 73M. But even this is pitiful by a Harberger's Law argument when GNP is 12 Billion dollars in 1890. Why is this significant? Because if there's any time you would expect rail to show a big advantage, it's in the later 19<sup>th</sup> Century after railroads are fully established.

Why might you believe that Fogel's asking the right question? How do we know canals really could have been a substitute? He actually goes and gets Army engineer surveying data to make a counterfactual canal system to replace the rail system and can cover most of the same area. In fact, when you look at where the canal and rail networks actually went in reality, they overlap to a great extent.

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#### Lectures 36, 37, and 38

What is "the Paradigm"? It is the body of knowledge and methods known at any given time - the worldview of how someone perceives information. This is important because what you can think of or what you can invent

depends on what you believe is possible. Most scientists will spend their careers checking and verifying the Paradigm, to make sure society has the “right” beliefs. How does the Paradigm change? We’re not always right, but we don’t toss the Paradigm simply because someone says so. The guys who verify find something wrong, and then more guys verify the weird finding that the Paradigm has an incorrect prediction. Eventually, enough ideas and data accumulates where someone finally makes the connections and the Paradigm shifts. This implies that discovery and invention depends on social institutions because beliefs are what shape the Paradigm for any society, and you really need a big collection of people who agree and can work with each other and exchange ideas to get progress and correct the Paradigm. What is the difference between invention and innovation? Revolutions in ideas can be fast or slow, but whether you’re talking about inventing or innovating, the exchange of ideas and openness to new ideas really depends on the features of the society. So even if you believe technology is important, the features of the society are even more fundamental to the process of economic growth and technological change.

Think about how the North and the South developed, and why they developed in those ways - what do the crops and climate in each region have to do with this? Consider how in previous lectures we saw political and social choices and institutions picked based on these different agricultural systems. There are various measures of equality: political participation, land ownership, equality under the law, access to public services, etc. Think about how these things were vastly different in the North and the South. Are you surprised at all that the North came out more industrialized and developed in the 20<sup>th</sup> century? This kind of logic can be extended to the rest of the world, when you make comparisons between the United States and anyone else. Can you give me an example of a bad government (does not need to be one I discussed), and explain what features are harmful to growth?