Grain and finance

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Wheat influenced the growth of railroads, and railroads increased the influence of wheat, but wheat, and railroads, also had an impact on the world of finance. That is the core of this episode, although as with the entire trilogy, it is impossible to separate transport, finance and empire neatly or completely.

The story of wheat and finance starts with the question of who actually owned the wheat that was being traded from the Black Sea to the empires of the Mediterranean. In ancient Greece, remnants of contracts tell us who owned the wheat and how a shipment would be shared between the ship's captain and others. In Rome, things were different.

Scott Reynolds Nelson: The Roman Empire and whether all the grain that came into Ostia near Rome belonged to the state or not? I think my sense is fairly clear that it was owned by people and that that's why the *horrea* looked like a bank. There are others, Moses Finley and others, who say no, this was a command economy, and it was entirely owned by the state.

Jeremy: When you say the *horrea* looked like a bank--

Scott: [laughs] The *horrea* are the places where grain is stored, but they were also places where you stored valuables, very much like a bank. It was clear that the *horrea* were broken up into pieces with the names or imprints of particular families above these little rooms inside the *horrea*, which held the grain. That to me suggests there's clearly a secondary market or a market for this grain, but there are contracts and things like that that suggest that people are getting a loan on this grain that's in their *horrea*, very much like you would with a bank. The fact that you have something like safe deposit boxes inside a bank suggests how much the *horrea* was like a bank. It was in some ways the ancestor to the bank.

Jeremy: There were guards posted outside and everything?

Scott: Guards outside and an easy way to bring your wheelbarrows in, that carried the grain to its destination.

Jeremy: You mention then, zipping forward, that the *Camera di Frumento* in Venice, you suggest that was the first real bank because they were dealing with abstractions of grain.

Scott: Right. When we talk about capitalism, when we talk about Venice and Genoa, I think the important thing there, is that the grain becomes more abstract at that point. You've got a bill of exchange which is a representation of a journey. It's going to finally reach its destination, say Venice, on May 1st, and people will hold these bills of exchange because they increase in value over time. That makes it very attractive for a merchant or a shopkeeper or something like that to hold onto for 20 or 30 days because you know that it's going to increase in value. That I think is an important starting point if you want to talk about the history of capitalism.

Jeremy: The bill of exchange is like a promise to pay? Or is it a promise to deliver?

Scott: Simultaneously a promise to pay and a promise to deliver. It's got the names of the person who's finally responsible for payment and the name of the person who's going to deliver those goods. It's really in some ways a predecessor to modern paper money. Paper money is older than this, but appreciating paper money, that you can trade in a bank instantly, that's really when we're talking about capitalism.

Jeremy: Yes, it's like a treasury bill or something like that.

Scott: Exactly, right. Yes, in fact, the treasury bill was modelled on the bill of exchange.

Jeremy: And you could use a bill of exchange ... if I was holding one and I needed, I don't know, fabric or leather or a new gun or something?

Scott: Exactly. You could hand over a bill of exchange and have a credit with a shopkeeper or something like that for it. It operates as a kind of currency, but it's safe because it's got names on it, it's got a number on it. If someone breaks into your house and takes it, you can advertise and say don't cash bill number 315 because that's my bill and it was taken from my house.

Jeremy: Okay. Coming then a little closer to now, Catherine the Great and the whole story of getting into Ukraine. What's different about the way she finances the way grain is grown and traded?

Scott: One of the things about Venice and Genoa and the genesis, I suppose, of the bills of exchange is that some parts of this absolutely come from the Ottoman Empire. There's the hawali note, which is something like a bill of exchange, but the Ottoman Empire did not operate with bills of exchange. Just one more thing about Venice, Venice takes Arabic numbers because doing double-entry bookkeeping is impossible with Roman numbers. There's all these Arabic influences in the bill of exchange, but the Ottoman Empire doesn't use them.

When it's delivering food to soldiers in the field, it does so by establishing fortresses which are going to be near where they are. The fortresses are going to hold a bunch of grain for those soldiers. If extra grain is needed, you get gold and silver and you carry it along with you to pay farmers for it. In Russia, what Catherine the Great does is she issues bills of exchange, promises to pay in 30, 60, or 90 days, something the Greek merchants are very familiar with having used them for hundreds of years. It's kind of a gamble on whether Russia is actually going to win this conflict because you'll take the bill of exchange expecting that Russia is later going to dominate this region and is going to pay it.

She uses these paper instruments for her officers. If they're captured and they hold these bills of exchange, no one else can use them. It's simultaneously a gamble on the future of the Russian empire and a brilliant financial instrument that makes it possible to invade.

Jeremy: Because they're not carrying gold and silver so they're less vulnerable to being captured?

Scott: Right. One of the documents that's written afterwards, to explain why the Ottomans lost in the 1700s in these battles on the Black Sea, said: we would capture these Russian officers and they had bills of exchange and we didn't know what to do with them, not really understanding that this was a kind of representation of a future promise to pay by the Russian empire. It's this paper money, I think, that helps make it possible — paper money and a gamble on the future — that makes it possible for her to invade again and again, her and the people that followed her in the 17th and 18th and 19th century in the wars against the Ottoman Empire.

Jeremy: She finances the building of Odessa?

Scott: She does. She finances the building of Odessa, again with bills of exchange. She understands that there are fairly high cliffs, which make it attractive for bringing in large ships, ships can come in, and it's the Goldilocks zone. You've got fresh water, you've got flat plains behind Odessa. You've got deep, deep black soil, this chernozym soil. It's the perfect place for growing grain. Odessa becomes the place where all sorts of grain is made available to the rest of the world.

Jeremy: Over on the other side of the world in the US, how is grain financed there?

Scott: Both Catherine the Great, Thomas Jefferson, and Benjamin Franklin have one thing in common, they're all reading the physiocrats, this new way of understanding the economy; which is to say that the economy depends ultimately on farmers, and don't mess with farmers. That's the big takeaway from the physiocrats. Don't tax them, they're the basis of all the wealth in your economy. Tax everyone else but the farmers. That's partly how the United States organises, it wants to be the Russia of the world. It wants to be in a position like Odessa where it's providing grain to the rest of the world.

The Northern colonies that become the United States are basically the provisioners for the Caribbean colonies. This is important. We think about the United States as being important in the 1750s and 1760s. It's not, it's really a place to feed the Caribbean. The Caribbean is where all the wealth is being generated. All those high-value, low-weight things — coffee, tobacco, sugar, cocoa — all of those things that are being produced in those Caribbean islands are the really valuable things, and most of the Americas is basically providing food for the enslaved people on those islands.

Jeremy: How does this thrust — of provisioning the Caribbeans — how and why does that change? Is it due to the westward expansion or the slowing down of slavery? What's going on?

Scott: Part of the issue is that in a colonial context, in the Imperial context, the British Empire does not need very much of what New York and Philadelphia and Boston have to provide. It's such a long distance to travel that you wouldn't send something as cheap as grain all the way to Britain from those places. What it does become is a place for feeding the Caribbean. It's really part of how slavery works in the Caribbean, that it's not just that you have somebody standing over you with a whip. The food is coming from the plantation. The plantation is getting the food in flour barrels, and it's providing that food. Starving people is one of the ways in which slavery operates.

The Caribbean is never really self-supporting, it needs someplace else to get its food. When the French Revolution happens after the American Revolution, and then wheat fields are burning all across Europe, then things start to change. Then, Odessa becomes more important as a provisioner, and the US becomes an important provisioner, not necessarily for Britain itself (it does feed Spain and Italy to a certain extent in Napoleonic wars) but primarily provisioning ships. Once the war of 1812 happens and the US is at war with Britain and that's concluded, then things are different and Britain has decided that it wants no more grain from the United States.

In fact, it's going to block grain from the United States that goes to the Caribbean. In 1819, it forces all of the grain that comes from the United States, if it's going to come to the Caribbean colonies, it's first got to go all the way up to Canada, then move to a British boat, and ship all the way to the Caribbean. This seems like a great idea or way of Britain thumbing its nose at this newly liberated United States. It's terrible for the Caribbean though, because it doubles prices for food. It's around this time 1822, '23, '24 that the British Caribbean — what's called the West India interests — decides that this is too expensive and they start to divest themselves from slavery in the Caribbean.

To a certain extent, the end of slavery in the Caribbean has something to do with the fact that it gets suddenly much more expensive to feed the Caribbean, and then, of course, there are also all these slave revolts connected with food as well.

Jeremy: In Europe, a lot of the poorer farmers especially are eating potatoes, and then 1845, the blight hits — famously Ireland — but also the Low Countries, much of Europe. Does that increase the demand for wheat, and how's that supplied?

Scott: Absolutely. When *Phytophthora infestans*, which is the thing that co-evolves with the potato, finally gets across to Europe and eats up so many potatoes in the 1840s, it's a come to Jesus moment for Europe in relation to its food supply because poor people are going hungry; there are riots in Poland, there's conflict in Germany about food. And so it's around this time that Britain and then the rest of Europe decide to lower tariff barriers to allow grain in. It had stopped it from the 1820s to the 1840s or tried to block it with tariff laws. It lowers those barriers to avoid revolution. That's frankly how they put it, that the revolutions of 1848 directly follow from the potato blight.

It changes Europe basically fundamentally, because now wheat becomes poor people's food, Odessa and the Black Sea generally become the bread basket of Europe, and it not only feeds Europe, but it feeds primarily European cities, which have those deep ports that are closest to that grain. And so it goes to Livorno, and then out from Livorno all over Europe. The world changes drastically with free trade, and Britain famously pats itself on the back for being the inventor of free trade, but we should rather thank *Phytophthora infestans*, the thing that invades the potato and makes it absolutely necessary for everyone in Europe to eliminate its tariff barriers. The world really does drastically change.

The thing that changes Europe too and I would argue is the most important fundamental feature about what becomes industrialisation, is that as food gets cheaper, particularly in cities, industrialisation follows it, and we see a tremendous surge of growth and economic development after 1845 because of cheap food.

Jeremy: In the United States, how does the civil war affect the way wheat is traded? The old Napoleonic Army marching on its stomach … these are huge armies, the Confederacy and the Union Forces, how are they being provisioned?

Scott: Initially, the Union Army is being provisioned by merchants who can provide, say, 10,000 bushels of oats on October 1st and deliver them to a staging post. That's initially how it works, and that's the way every army in the past had provisioned itself, by very large merchants making possible very large deliveries of food. But by 1864, the latter part of 1863, what we see is a complicated deal that breaks down, in which there's all sorts of theft inside the Union Army. The Union Army is surrounded at Chattanooga by the Confederacy, and there's the danger that they will have to surrender at Chattanooga because of the lack of food. The solution to this problem becomes the futures market.

The way in which the futures market solves the problem is, it breaks up that contract from one or two or three contractors to 100 or 200 contractors, each of them providing 1,000 bushels of oats or 100 bushels of oats in very, very small, regular sizes with a very particular grade and a set delivery date. It's a little bit like the old bill of exchange that's used in Venice and Genoa, but it's much more regular. It's not 272 bushels of wheat, it's 100 or 1,000 bushels of oats or something like that that's coming in. You break that up into multiple pieces, there are many people that can come up with that amount of grain, deliver it to Chicago Board of Trade to a grain elevator, and then that collectively can feed the army.

Jeremy: You switched to oats ...

Scott: I switched to oats, yes.

Jeremy: ... because the horses are more important than the soldiers?

Scott: Absolutely. [laughs] Well, oats are of course also food but the oats were the serious problem. The oat prices doubled basically during the civil war and were going to double again by 1864. The first trades on the Chicago Board of Trade are for oats basically to feed starving horses in Chattanooga, and it works so well that by '65 and '66 ,once the war is over, graded wheat becomes accessible. Breaking up the futures contract into little bitsy pieces is important. What's also important is there's a standard grade, so it's not this shipment of coffee or oats or wheat that's coming in, it's any shipment of this grade that's 100 bushels or 1000 bushels that's coming in. And the buyer is not obvious.

In a bill of exchange, the buyer is pretty obvious because the buyer is going to pay this amount. In a bill of exchange, the last person to hold the bill of exchange is the one who can expect that grain to be delivered to him in Chicago. That's very important for the Union Army, because it can disguise its need for oats so that no one knows that it's the Union Army that desperately needs those oats and is willing to pay almost anything for it. People in Chicago know, but those merchants, the dozen or so merchants who had been providing food for the Union Army, didn't know that there was an end run going around them in these little regularised futures contracts.

Jeremy: So they couldn't gouge the government?

Scott: They couldn't gouge the government. And there's a bunch of other things that follow from the futures contract that nobody really expects; like when you divide it up into little pieces like that and you don't know who the buyer is, it makes it more like money. So you can take five futures contracts into a banker and say, look, I've got these five contracts for May 1st delivery of my grain, I need $300 quick. Here, I'm handing you my bills of exchange and I'll take them back before May 1st. A banker looks at them, looks at the price of oats, and says, all right, $300 is yours. It becomes much more like currency than the old bill of exchange.

Monday through Friday, you can take it to the Chicago Board of Trade and turn it into money instantly, and so it's very, very attractive. It really becomes like money, and it becomes like a bank. The Chicago Board of Trade becomes one of the biggest banks in the world.

Jeremy: There's a lot of talk about the futures market today, there always has been, but overall, is it a good thing to have a futures market, or are you better off, I don't know, having something like bills of exchange?

Scott: Oh, I think the futures market is a really important and really valuable thing. I think some of the things about a futures market … if you think about what's happening now, the price of grain doubling or almost doubling the day after Putin's invasion on February 24th, is farmers instantly notice that the price of grain has increased — almost doubled, the Chicago price — and will change what they plant from corn to wheat or soy to wheat, and that's very important. It provides very, very quick signals to farmers.

The only people that could really respond in fact to this loss of grain connected with a blockade of Ukraine were people in North Dakota and much of Canada, the very northern part of the plains, because they could plant in March for May or June or something like that. No one else could do that just based on the seasons and over-wintering and all that sort of thing. Yes, I think it's crucial that we have it.

I don't always agree with neo-classical economics, but one of the things that they have shown is that prices vary less when you have a futures market, that the band shrinks, because a futures market is a sort of opportunity for people to adjust to relatively small changes relatively quickly, and you see the price of all sorts of commodities regularise.

Jeremy: We talked in the last episode about how the Trans-Siberian railroad was financed by French widows and orphans (or probably not). This I find slightly strange, that Russia doing this huge, huge project somehow gets France to pay for it.

Scott: [laughs] Right. Well, France has an overabundance of capital that's connected again to these consumption accumulation cities. When you have these cities, they have the deep ports, the grain is coming in very cheaply, it's cheaper to buy food in the city than it is in the countryside, it tends to just draw people like a magnet into these major cities. And France, in particular, just collects a lot of people, and those people need to invest in something because they're in a city.

You don't buy land in the way that you previously might have in France. France was a nation of smallholders. People had small plots of land that they would save or buy to pass on to their children or something like that. If you're in Paris, living in a flat, the land that you're in might be worth something, the house might be worth something, but it's not going to be enough to support a family, so increasingly those people have to figure out a way of investing their money, and that's when these new banks — Crédit Foncier, Crédit Lyonnais — come on the scene under Louis Napoleon. And they say, we'll invest at 8% somewhere, and we'll make sure that you get 4% here. Or, we'll offer you these Russian bonds to buy directly, and you'll hold them and they'll collect at 8% and we'll only charge you 1 or 2% to get them.

Increasingly, Britain mostly invests in its own empire. France, that's less the case, and there's much more buying of bonds at other places. All these banks are chasing 8%, and one thing that pays 8% is a somewhat speculative railroad that's by Russia that's going to go all the way to Manchuria and provide a deep water port for Russia and allow it to sell grain to the rest of the world. You could argue that Russia leverages its own future on this very long-term plan to build a multimillion-rouble railway.

It's incredibly expensive. Some of the people who are connected with the Russian empire in 1905 say that once Japan takes Manchuria, that Russia will never pay those loans back. The Russian Empire, as they see it, is done. The Russian empire cannot possibly make these payments, and if they can't make these payments, they can't ever borrow money again; the Russian Empire will collapse. The people are saying this in 1905 and 1906, after Japan takes Manchuria back, that this whole complicated, highly-leveraged enterprise to provide 8% returns to investors all over the world, but mostly in France, that this will never work.

Jeremy: So is France responsible for the Russian revolution?

Scott: [laughs] Well, I was actually at the Institute for Social Sciences in Paris and I gave a couple of talks, including one in the economics department. A couple of people came up afterwards because they were very angry about their great grandparents, and said they lost everything in the collapse of the Russian Empire, when the Bolsheviks take over and said they're not going to pay those bonds back. Yes, so there's still some hard feelings, I have to say, in France about those payments. But I think realistically that this entire speculative enterprise to get to Manchuria was not going to happen once they lost Manchuria and the ability to make money on this railroad was, I would say, 50 years, maybe 100 years down the road.

There was no possibility of it ever working without Manchuria in the mix. We think about bonds as being minor things, but in a way, bonds are crucial to the integrity of empire. They're literally the mark, the bond of the sovereign, and if the sovereign cannot be trusted to pay those things back, then the empire is finished to a certain extent. It can't fight any more wars if it can't issue bonds, which it needs to buy troops. It can't be an empire anymore.

I think we're starting to see this in Russia right now, just as we saw in Russia in 1905, is that from 1905 forward, the clock is ticking on this empire because it cannot pay for this Trans-Siberian railroad that it's invested other people's money so heavily in. And when that happens, when you have sovereign default, serious default, then the future of that nation, that empire, becomes a serious question.

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