The Development of Modern Financial Markets

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What do financial markets and institutions do?
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- Mobilize saving.
- Fund attractive investment opportunities.
- Intermediate between savers and investors.
- Provide corporate control/corporate governance services (they represent the interests of outside investors in widely-held firms).
What institutions fulfill these functions?
What institutions fulfill these functions?

• Not only banks, but also:
  – Savings and loans, cooperative banks, credit unions.
  – Stock and bond markets
  – Commercial paper markets
  – Insurance companies
    • As we will now see, starting in the American case...
Banking in the early republic

• Prior to independence, there were almost no banks in the United States.
  – The British Parliament was not inclined to grant the kind of charter required for, inter alia, limited liability.
  – There were few private banks, the most successful of which was established in South Carolina in 1731 and lasted for 10 years.
• But most credit was provided through nonbank channels. For example merchants extended “book credit.”
• The monetary circulation was a melange of foreign coin, commodity currency and, paper obligations (bills of exchange) issued by colonial governments.
• The first bank in the newly independent country (the Bank of North America) was chartered in 1782.
• In the 1780s there were only four chartered banks in the new republic.
• To establish a bank, you had to obtain a charter from a state government.
  – This conferred limited liability on the owners (liability limited to their capital subscription).
  – It allowed the bank to issue notes (up to a prescribed limit).
• From this start, there developed a reasonably active banking system, first in the New England States and then more widely.
Naomi Lamoreaux describes these banks. What does she say about them?
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- Dominated by families.
- No professional loan officers.
- Upwards of 80 per cent of loans were made to family members.
- Often the majority of the loans were to the banks’ own directors, who themselves made the operating decisions for the bank. (Critics of Asia call this crony capitalism...)
- This was the dominant form of banking into the 1830s and, in some places, even later.
Why did banks take this form?
Why did banks take this form?

- Family orientation reflected kinship networks as basis for information dissemination and contract enforcement.
- The argument is that when accounting practices are unreliable and property rights are uncertain, it makes sense to lend to insiders. Banks have more information about the financial condition of insiders. They can apply social sanctions to family or community members who default on their loans.
- The family members in question initially pooled their resources to fund shipping enterprises.
- Families then formed banks to disburse funds from this pool when other kinds of businesses owned and operated by family members regularly needed loans for working capital and other purposes.
- This happened at the end of the 18th and beginning of the 19th centuries, roughly coincident with the shift in the New England economy from agriculture and shipping to industry.
So were these entities really banks as we know them, or is calling them banks a misnomer?
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- They were certainly different in structure from modern banks.
- In particular, most funds were raised not by deposits but by paid in capital.
- Banks tapped the savings of the surrounding community not by taking deposits (with a few exceptions) but by issuing stock. (Deposits were 21% of bank liabilities, she notes, in New England in the 1840s).
- These institutions didn’t have the 12 times (or more) leverage of modern commercial banks.
- Capital was typically 60-80 per cent or more of loans, as opposed to 20 per cent at the end of the 19th century and maybe 8 per cent now (if you’re lucky).
- One may want to think of these were more like private equity funds or venture capital firms rather than deposit banks.
Are you convinced by her interpretation?
Are you convinced by her interpretation?

• These banks seem to have been riddled by “crony capitalism.” Many loans to favored family members were not repaid.

• How does she explain the absence of deposits? Banks “weren’t interested?”

• Maybe outsiders were reluctant to commit their funds to banks that favored family members.

• Lamoreaux herself notes that these banks were too small, as a result of their inability to raise deposits, to provide funding for modern industrial enterprises. Maybe they really did a rather poor job of mobilizing the resources of small savers and intermediating them in modern fashion.
• Or did these banks develop governance mechanisms (checks and balances) that helped them to deal with the problematic aspects of insider lending?
• I’ve asked this question in Ec210a before.
• One student’s answer resulted in this paper:
• Meissner studied the records of several dozen New England banks. He argued that discount (or loan) committees provided the necessary checks and balances. There had to be a consensus among the members of the committee before a loan could be extended. This limited the problems of crony capitalism that would have occurred had one director been put in charge of loan allocation, allowing him to lend money mainly to himself.

• Consider a committee choosing between a good and a bad loan (where the bad loan was profitable for the recipient – the director in question – but not for the bank). If the loan committee had only two members, extending the bad loan would require only one side payment from the director receiving it to the other director. But a larger loan committee would have required more side payments, which would have been more difficult to execute.

• Meissner relates discount committee size to the profitability of the banks in his sample (measured by the stock price, relative to par). He finds a strong positive relationship, even controlling for other bank characteristics (age, scale, etc.), consistent with the predictions of his theory.

• (Note that this is common practice, to try to infer an underlying variable like profitability from an asset price. But does it make sense in this setting, where stock markets were highly underdeveloped?)
Another perspective on early financial markets (another 210a paper)

- Practice was prevalent in 1850s and 1960s.
- What explains it? Author’s preferred explanation is potential employees providing capital as a substitute for missing bank intermediation.
- Maybe so. But what are some alternative interpretations of this practice?
What else might these ads reflect?

• Rogers considers the moral hazard explanation, that these loans were bonds that worked to discourage the worker from shirking. He would then lose the ability to monitor his loan. But then why did the volume of these loans decline sharply toward the end of the 1860s, when there was not concurrent decline in monitoring costs?

• He shows that the number of savings banks in the San Francisco triples in the later 1860s. This was also the time when the completion of the transcontinental railways lines in 1869 eased inter-regional communication and information transfer, and made the California credit market more competitive.

• Rogers then considers the possibility that these loans were “bonds” designed to minimize costly labor turnover. Revealingly, however, none of these advertisements mentioned long-term contracts.

• So the interpretation as workers substituting for missing financial institutions seems most convincing.

• We see again how formal financial institutions of a modern sort did not carry out many intermediation functions in the early part of the 19th century.
Free banking

• All this said, by the middle of the 19th century, and excluding regions of recent settlement like California, much of the U.S. had developed something resembling a modern banking system. However, the regulation of these banks – from the 1830s to the 1860s – was very different from today.

• This was the era of free banking. Banking was lightly regulated and unstable, or so the conventional view goes. Failure rates were high. Fly-by-night operations — “wildcat banks” — disrupted the provision of financial intermediation services.
Before the free banking era

• The banking system of the early republic was comprised of state-chartered banks and a single federally-chartered bank, the Bank of the United States, which was supposed to act as banker to the government. (Only the Bank of the United States operated in more than one state.)

• [Andrew Jackson, like Thomas Jefferson before him, saw the Bank of the United States as an exemplar of big government and vetoed the bill authorizing its renewal when its charter expired in 1836.]

• State chartered banks raised capital, as we have seen. Gradually over time, they increased their dependence on deposits for funding.

• They also issued bank notes, subject to regulations on their issuance. Prior to the advent of free banking:
  – Banks were required to redeem their notes for specie upon demand.
  – These notes circulated as money.
  – They got into circulation when the bank made a loan – it paid out the funds it was loaning to the borrower in engraved bank notes.
  – Liquidity and reserve requirements were largely self-imposed.
But there were complaints about this system of state charters

• Charter solicitation was a mechanism for corruption (favored insiders).

• Often the few banks possessing charters enjoyed considerably monopoly power.

• The one source of market discipline on these monopolists was the Bank of the United States, and it disappeared after 1836.
• Hence many states responded by lowering entry barriers for the establishment of state-chartered banks.

• These so-called free banking laws allowed anyone to set up a bank. It was no longer necessary to obtain a charter from the state legislature, as before.

• Now banks were free to enter so long as they met certain minimal requirements for their operation.
  – Banks were required to invest a certain minimum amount of capital in their operations.
  – They were still obliged to redeem their notes at par with specie.
  – They were required to deposit that specie, or a close substitute for it – typically marketable securities – with the state banking authority.

• Thus, the critical point (and the definition of Free Banking) is that entry was free (subject to minimal capital requirements, which varied across states), not that banks were free of regulation.
Engraved bank note from a bank in Omaha, Nebraska in 1857
The problem with free banking

• The securities with which the banks backed their notes were not always properly valued.
• In Minnesota, nearly worthless railway bonds were accepted as security at 95 per cent of their issue value.
• Hence, a group of wildcat bankers could put up $5,000 of capital, purchase railway bonds with a face value of $100,000, deposit these with the state banking authorities, issue to themselves in the form of loans $95,000 of bank notes, and use those notes to make loans or even buy commodities of value from people willing to accept them.
• And when those who came into possession of the bank notes sought to redeem them by presenting them to the chief cashier, they found that the cupboard was bare. At that point the bank would be declared insolvent, and the note holders would get whatever they could out of the collateral posted by the bank’s founders with the state authorities.
Free banking does not exactly have a good reputation

1903). According to Bray Hammond, these so-called “wildcat bankers” purchased bonds with their own circulating notes and disappeared in order to avoid having to redeem the notes. They had to be hunted for in the woods... their cash reserves were sometimes kegs of nails and broken glass with a layer of coin on top (1957, p. 601).
Hence, there was widespread skepticism about the value of the notes of less reputable banks.

Their notes traded at a discount.

As a result, the country lacked a uniform currency.

There was a lack of trust in banks, understandably given that the majority of free banks went out of business (as many as 86 per cent of all in Indiana, for example).

Hence, it is argued, the country lacked an efficient and effective banking system.

But Hugh Rockoff challenges this conventional wisdom. What does he argue?
• In fact, most paid their note-holders full value for their notes.

• Big differences were, however, evident across states. Whereas in New York only 8 per cent of banks did not pay off their note-holders in full, in Minnesota the comparable figure was 56 per cent. Another measure of this is that the average bank note issued by a New York bank never traded for less than 99 cents. (For Minnesota the comparable figure was 50 cents.)

• This suggests that creditor discipline was important. Bank notes traded at a discount, but Note Reporting Services made that market reasonably efficient. This made it hard for banks that didn’t hold full collateral to get full value for their notes. Reduced the incentive to wildcat.
• Rockoff’s estimates, in the article that you read for today, suggest that the redistribution of wealth from note-holders to wildcatters was less than one one-hundredth of 1 per cent of national income during the free banking era.

• The fact that turnover of banks was high does not mean that the average bank was short-lived.
  – Think of this by analogy with the distribution of life expectations in a population. Consider life expectancy in societies characterized by high infant mortality rates: while many children die soon after birth (infant mortality is high), the life expectancy of the average adult is relatively long, and most “life experience” is that of long-lived individuals. So many new banks may have been entering and disappearing, but most banking was done with long-lived institutions.
  – (This analogy will come back next time...)
Raising the question:

• Why did some states allow their bonds to be overvalued in this way?
Why might some states have allowed their bonds to be overvalued in this way?

• A conjecture is that these were states with fiscal problems, which wanted to create a captive market for their bonds.
• Powerful special interest groups (the bankers themselves, railways issuing bonds?) benefited from lax regulation.
• That would be an interesting question to study for someone still looking for a research paper topic...
How important was free entry for competition and efficiency?
How important was free entry for competition and efficiency?

- Not for the first time, economists disagree.
- The traditional picture is of an inefficiently fragmented, unstable unit banking system.
- In contrast, authors like Rockoff suggest, at least implicitly, that free entry and competition rendered the ante-bellum American banking system quite efficient.
But how would you measure efficiency?
But how would you measure efficiency?

- Regional integration is one possible measure of market efficiency.
  - And a measure especially appropriate for the early United States.
- The point of departure is the article by Lance Davis, “one of the most famous articles in all of economic history.”
- Davis measures market efficiency by computing interest rate differentials across space.
What is Davis’ main finding?
What is Davis’ main finding?

• Capital markets become progressively better stitched together over the 1870-1913 period.
• The South and to an extent the West remain a bit of an anomaly.
  – But what was the mechanism (the market institution) that brought about this result?
But what is the mechanism?

– The commercial paper market. Prior to the development of the commercial paper market, the only paper that traded was 90-day two-name paper (“trade acceptances.”) The retailer who needed credit signed the note, but the wholesaler who provided him with credit also signed the note, so both of them were liable for the payment. These restrictive conditions meant that only limited amounts of two-name paper circulated (both signers had to have good credit).

– The commercial paper market, which began to develop in the 1870s, was a market in “one-name paper.” Banks purchased it and resold it on the open market (often to other banks). Since their reputations were at stake, they took care that the issuer was reputable. Commercial paper was the instrument for shifting funds across regions and creating a national capital market.
Is his evidence convincing?
Is his evidence convincing?

• How does he measure interest rates?
And why was there no commercial paper market in the South?
But why is there no commercial paper market in the South?

- Davis’ story for the North seems to be that the commercial paper market sprang up to fill the gap created by restrictions on cross-state branching of banks.
- But Southern experience suggests that a commercial paper market springs up only when there is already a critical level of bank intermediation. James emphasizes the role of banks as “market makers” in commercial paper, which the case of the South suggests is indeed important. So maybe these alternative institutional forms are complements, not substitutes.
But is this the right way of viewing the matter?

• Are interest differentials really evidence of informational and contracting impediments to the creation of an integrated market?

• What else could they be capturing?
Risk

- Howard Bodenhorn* regressed Davis’s interest rates on a measure of the riskiness of lending and controls (banks’ costs, number of banks per capita, and past loan losses).
- The question of course, is how to measure risk.
  - Bodenhorn’s proxy for risk is income per capita.
  - His argument is that risk of default is higher where per capita income is lower.
- His results show a significant negative coefficient on per capita income for some years.
- Does this approach make sense?

• We would want to measure risk more convincingly.
• Let me suggest one way of doing so, for a particular market (the market in farm mortgages – which, as Snowden tells us, was an important 19th century financial market in what was still a heavily agricultural economy).
• Bodenhorn’s own arguments suggests that that default occurs when farm income falls below some critical threshold. That’s why he includes average income. But, in addition, the higher the variance of that income, the greater the likelihood of default.
  – The higher the variance, the greater the share of the density function that falls below that critical threshold.
• The problem is that we can’t easily observe income variability.
  – In order to infer it, we would have to make additional assumptions....
• Maybe we can extract information on it from land prices. (This is another example, then, of how to use asset prices to capture information on something that we can’t observe but that market participants, who determined those asset prices, were presumably concerned about.)

\[
\text{Loan rate} = \text{Risk Free Rate} - b_1 (Y - Y^*) + b_2 \text{var}(Y)
\]

• Where \( Y^* \) is the threshold level of income below which default occurs.
• We have some information on farm income (if we are prepared to be heroic, we can substitute actual for expected).
• But it also is reasonable to assume that land prices increase with farm income, but fall with its variance (and with the associated risks to farming).

\[
\text{Land Price} = c_1 Y - c_2 \text{var}(Y)
\]

• By substituting for var\( (Y) \):

\[
\text{Loan rate} = \text{Risk Free Rate} - d_1 Y - e_1 \text{Land Price}
\]

– Loan rate will fall with farm income
– Loan rate will fall with land price
• Strong evidence that risk matters.
• Much (50%) of what we see in terms of interest rate convergence in 1870-1890 reflects declining risk.
• Then risk rises again (agricultural settlement moves West onto arid high plains; weather becomes more volatile for a period).
• And we see regional interest differentials opening up again.
Is this approach convincing?

• I like to think so, since it comes from my research.

• But even if you don’t like this implementation, there are some general lessons for the literature on financial market integration and development:
  – You need to think about risk
  – And you should try to use observable prices (from financial markets?) where possible to infer its importance.
There is however an alternative: regulatory restrictions

- In a JEH article, Richard Sylla argued that interest differentials reflected regulatory barriers to entry and market power.
  - Specifically...

**Federal Policy, Banking Market Structure, and Capital Mobilization in the United States, 1863-1913**

The success with which capital funds are mobilized and transferred to industrial and related activities is widely regarded as a critical determinant of both the timing and the pace of industrialization in the modern era. Gerschenkron, for example, has suggested that institutional developments which increased this type of capital mobility played an important role in the varying degrees of industrial progress of nineteenth-century European countries. A functionally similar development, resulting from government intervention at the time of the Civil War, occurred in American banking and provided a powerful capital-supply stimulus for the United States's postbellum industrialization. This study deals with the origins of this banking development, presents an analysis of its potential effects on patterns of capital movement, and tests the hypotheses arrived at in the theoretical analysis using banking data derived primarily from the Reports of the Comptroller of the Currency.

The overall argument of the study may be summarized as follows. Two major effects of the Federal government's wartime interventions in banking, which resulted in the National Banking System, were to restrain the growth of banking over large areas of the United States for several decades, and to link the country's banks together through a reserve system that provided a formal, legally sanctioned mechanism for transferring funds between banks. The first effect left many of the country's bankers in relatively monopolistic positions where they could charge high interest rates, restrict loan output in local markets, and practice price discrimination. The second effect, within this framework of wide variations

The author herewith expresses his appreciation to Lance Davis, Stanley Engerman, Donald McClosky, and the Editor of this Journal for valuable suggestions offered to him during the preparation of this article.

The National Banking Act was passed in 1864 to:

- a) replace the plethora of state bank notes with a uniform national currency, and

- b) create a captive market for Union Government bonds. National banks had to hold these. (One third of their capital had to be in government bonds. In return, banks received national bank notes in the amount of 90 per cent of the value of the bonds, which they could use to fund loans.)

Minimum capital requirements were $50,000 for cities with population of less than 6,000. This was a high number, reduced to $25,000 only under the Gold Standard Act of 1900.

To encourage banks to take out national charters rather than state charters, note issues of state banks were taxed, initially at a 2 per cent rate, and when this failed to work at a prohibitive 10 per cent rate. (This marked the end of free banking era.)
• Since the South was unrepresented in Congress when the act was passed, federal legislators set high capital requirements unsuited for the South and other relatively poor regions.
• In 1870 there were 1600 national banks but fewer than 100 in the South.
• Many state banks in the South went under as a result of the combination of wartime disruption and the new tax on bank note issuance. In South Carolina, only one bank, the Bank of Charleston, survived both the war and the reconstruction period.
• Business links between Southern planters and their Northern financiers were also disrupted, understandably, by the war.
• This meant that these regions were under-banked. Barriers to entry inhibited competition.
• Sylla includes a measure of competition — number of banks per capita — and show that this too can explain behavior of spreads.
What then led to interest rate convergence?

• Act of 1900, which reduced capital requirements for banks in smaller cities.
What else must be true if Sylla is correct?
What else must be true if Sylla is correct?

- We would expect smaller interest differentials **before** 1864, when the new higher capital requirements of the National Banking Act were adopted.

- Constructing regional interest rate data for this earlier period is even harder, but it is not impossible.

- This is, in fact, what Bodenhorn and Rockoff recently found.

5. Regional Interest Rates in Antebellum America

Howard Bodenhorn and Hugh Rockoff

5.1 The Debate Over the Short-term Capital Market

In one of the most famous papers in the literature of economic history, Lance Davis showed that short-term regional interest rates in the United States varied widely in the immediate post-Confederate era and converged slowly. This paper stirred enormous interest among economic historians because it challenged the conventional wisdom that financial markets quickly and completely eliminate price differentials among assets bearing the same risk. A number of explanations of the pace and degree of convergence have been offered. Davis stressed the expansion of the commercial-paper market; Richard Sylla, increased competition in banking and especially the provision for smaller national banks in the Gold Standard Act of 1900; Gene Smiley, risk and uncertainty as well as developments in the commercial-paper market; John Jones, the revival of free banking; Jeffrey Williamson, changing demands for capital; and Marie Elizabeth Sashko and Brian W. Barrett, the development of the stock market. And some of the authors of this paper, a number of years ago, argued that the risk of bank failure was a crucial determinant of the differences in the rate of return to bank capital. Various attempts have also

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So what picture comes out of this in the end?

• Interest rate differentials depend on:
  – Changes over time in the information environment (which tends to improve over time)
  – The changing incidence of risk (which similarly tends to decline, although with settlement of the Far West in the 1890s there is some evidence of a reversal)
  – And with the decline of regulatory restrictions, especially after 1900.
    • So Davis’ picture of a progressively better integration national capital market survives, although it must be tempered in various ways.
But we also read another article for today by Ken Snowden

• Is his analysis consistent with this mainstream interpretation?
Is Snowden’s analysis consistent with this view?

- Institutions like the commercial paper market and mortgage broker-insurance company connections provided more efficient interregional intermediation services over time, but as the market expanded West, longer distances at the same time mean more severe information problems.
- Sounds a bit like Davis....
- The insurance companies contracted with Western mortgage brokers, who were privy to the relevant information, but had to grapple with serious agency problems.
- Entry for brokers was relatively free – and many entered when the market was booming.
- Brokers made a commission for loans that the packaged up (securitized) and sold on to the insurance companies.
- They had little incentive to carefully vet and monitor borrowers, especially if they didn’t expect to be in the business forever.
- The result was a furious real estate boom and then bust in the sand states.
- Doesn’t seem like a particularly efficient market....
What do you think of Snowden’s methodology?
What do you think of Snowden’s methodology?

• Snowden doesn’t provide formal tests of his hypothesis (like those who argue that entry barriers or risk were what mattered).
• Rather, he relies on narrative, institutional detail, and tools from the literature on information economics (agency theory, asymmetric information).
• Is his article any less convincing for the fact?
• So far we have been talking about banking (unit banking) in the United States, since this is the national experience on which much of the early literature focused.

• The literature on other parts of the world (Europe, for instance) has a rather different focus.
That focus is universal banking

• Universal banks were a Belgian invention of the mid-19th century.
• They spread to France, Austria and Italy but reached their apogee in Germany.
• They feature prominently in the literature as an explanation for the distinctive character of European industrialization.
• Alexander Gerschenkron characterizes them as mechanisms for funding the more formidable capital requirements of late industrializers.
• Prime example of Gerschenkronian* “institutional substitution.”
• Same arrangements did not prevail in the United States, where limits on branching limited bank size, span, and concentration.

What were their economic functions?

• How would an economist explain the existence of universal banks?
• Existence of economies of scale and scope in banking
  – So we see the universal form most everywhere except in the U.S., where it was suppressed for political reasons
• Delegated monitoring/corporate governance services
  – Bank directors on corporate boards
  – Direct share ownership
  – Holding proxy to vote shares of customers (addressing the problems created by dispersed ownership)
• Mechanism for solving coordination problems
  – Interlocking directorates as a solution to the problem of big-push industrialization
• Less happily, mechanism for facilitating collusive behavior
  – Interlocking directorates again
The modern literature has not been too kind to these hypotheses

- Bank directors on corporate boards not that common in fact.
- Little evidence that, where they were present, they relaxed financing constraints by solving agency problems.
- Interlocking directorships even less common.
All banks, no markets?

• You will have noticed that we haven’t talked much about securities markets.
• But weren’t securities markets an important alternative to banks.
• Theorists would say that securities markets have different advantages than banks. They work best when technological uncertainty is greatest (they allow investors to take bets on competing technologies).
• In practice, however, they were relatively thinly capitalized.
• Debt finance was important (corporate and government bonds).
• Why wasn’t there more debt finance?
  – Significant fixed costs of debt issuance.
    • Only a few entities were big enough: governments and railroads.
  – Significant information asymmetries.
    • Debt is safer (“senior” to) equity. Debt-holders get paid first. Arguably, agency and information problems are less.
    • There existed the requisite information only about governments and government-guaranteed entities (which in practice included many railroads).
  – And, as we will see in a couple of weeks, these markets did develop eventually.
  – But they had plenty of problems.
• Stay tuned....