The Formation of American Financial Centers

John Colin Yee
Honors Thesis
May 9th, 2006

Table of Contents

Section 1: Introduction and Theory

Introduction

The purpose of this thesis is to attempt to explain why American financial centers formed in some cities but not others. To this end, this thesis will take into account a myriad of factors. The first set of factors to be analyzed will be those set forth by Charles Kindleberger in his 1974 paper, "The Formation of Financial Centers: A Study in Comparative Economic History." These factors encompass what Kindleberger terms staple theory, a framework that incorporates several different indicators to evaluate the suitability of a city as financial center. These factors include sovereign finance, commercial finance, government finance, transportation finance, industrial finance and personal finance. Kindleberger postulated that a preponderance of these factors would indicate a significant level of financial development, and ultimately the formation of a financial center.

However, Kindleberger's theory does not adequately explain all the factors that might contribute to the rise of a financial center. Kindleberger's theory was specifically tailored for the explanation of international financial centers, such as London and New York, giving an easily measurable explanation if not a totally complete one. Moreover, it is easy to point at the factors after the fact and assume that they have some sort of explanatory power. In order to gain some predictive power in the formation of financial centers, this thesis will also analyze three other factors in the rise of these cities, gleaned mainly from economic development literature: competition, innovation, and the role of public investment. The goal is to take models regarding the development of nations and apply them to the development of the financial sector.

Taking in the whole of these theories will allow a better understanding of why financial centers formed in New York City, Chicago, and San Francisco and not other cities.

Before delving more deeply into the issue, it is important to briefly define what a financial center is and why they exist. A financial center is a city that has a relatively high level of financial development, with a large degree of "high finance" firms and jobs such as investment banking, corporate finance, and securities trading. The three cities that Americans most associate with financial centers, New York, Chicago, and San Francisco, have a consistently high proportion of their workforce in financial analyst or "high finance" positions (Table 2) when comparing them to other large population centers (Table 1). Unlike home mortgages or savings and loans activity, high finance involves significant capital transactions on behalf of firms or government entities. On the face, there seems to be a certain logic to centralization, an issue that will be addressed later.

However, despite the importance of capital investment to economic development, the theoretical landscape on the geography of financial centers is relatively barren. While urban and regional economists have devoted considerable time and effort and resources to the understanding of how commercial and industrial activity agglomerates, they have comparatively little time on how financial centers do the same. He states "Apart from a sentence or two, one would think that the money and capital market was spread evenly through a given country." (Kindleberger, pg. 1) However, it is clear that financial centers have formed over the course of history, easily identified as New York in America, London in Britain, and Paris in France. Cursory explanations have tended to downplay the complexity of financial center choice. One might assume that financial and political power go hand in hand, which might explain the rise of centers like London and Paris. However, such an analysis fails to take into account the example of Milan or New York, which are not the political capitals of their respective nations. The situation is complicated when one observes that there tends to be a single major financial center per nation, even while there are numerous industrially and commercially important cities.

Faced with this information, one might be tempted towards despair. With so many similarities across cities, especially in the late 18th and early 19th century, it is difficult to identify the factors. Anticipating this difficulty, Charles Kindleberger offers a concrete theory explaining how banking comes to form in a particular place.

> "On a staple-theory showing, banking starts out to serve the needs of sovereigns and nobles; develops in connection with commerce, then less personally with governmental finance; next with transport, including shipping, canals, turnpikes, and railroads; then with industry; and then finally with intermediation in insurance, mortgages, consumer finance, factoring pension funds, and the like."[1]

He continues by citing the specific examples of both New York[2] and London[3], dialing down the specific factors which distinguish a financial center.

> "In a highly developed setting like New York or London, the money market in a broad sense includes a (1) money market with many specialized segments for commercial paper, acceptances, collateral loans, Treasury Bills, federal funds, certificates of indebtedness, etc. and (2) a capital market, both private and governmental, dealing in new issues and secondary distribution, together with (3) trading in commodities, foreign exchange, bullion, and, to a lesser degree, ships and ship charters, and insurance. The borrowing and lending pattern starts locally and extends into a national center, with perhaps intermediate regional stops, finally becoming international."[4]

Kindleberger noted that there were some similarities in the development of financial centers, as for the most part they were established during the nineteenth century, with a couple of notable exceptions, during a great period of centralization that combined decentralization of granting credit through the establishment of local branches and the placement of actual reserves in a centrally located headquarters. However, beyond that critical insight, Kindleberger does not elaborate.

Before looking at financial centers specifically, it is helpful to review some urban

---

[1] Kindleberger, Charles. The Formation of Financial Centers: A Study in Comparative Economic History. (Princeton, NJ. International Finance Section, Department of Economics, Princeton University, 1974), 9
[2] Kindleberger, 52
[3] Kindleberger, 12
[4] Kindldberger, 9

economics and analyze the creation of other commercial centers. History reveals that the vast majority of cities considered commercial centers tend to form around either large natural resource deposits or as transportation centers. Atlanta, a city formed around no great natural transportation or resource advantage, was formed around the cross of two railroad tracks. The San Francisco Bay Area and New York gained prominence as port cities before their respective incarnations as a technology center and a financial center. Commercial centers provide a significant degree of specialization, especially within their central business districts. Richard Andrews, in Urban Growth and Development, states that specialized functions such as administrative services (including the corporate headquarters of major companies based in the city), professional services, wholesale operations, and light manufacturing tend to complete the make up of the central business district. The commercial center, therefore, is identified by the high volume of trade and manufacturing that goes on and the specialized services it can offer to facilitate it.

The financial center is distinguished in much the same way. Although the items being traded are different (in this case money and capital transactions), the method of identification is similar. Major national and international financial firms, almost by default, locate their headquarters inside financial centers. The modern day example of New York City is telling. According to the Vault Guide to the fifty most prestigious banking employers in the United States, thirty three of the fifty have either their firm headquarters or North American headquarters (in the cases of foreign banks) in New York City. If expanded to include two more cities widely considered to be "regional" financial centers (San Francisco and Chicago), almost 80 percent of the listed banks are headquartered in financial centers.[5]

---

[5] Loosvelt, Derek. Vault Guide to the Top 50 Banking Employers. (New York. Vault Inc. 2006), 20

As in their commercial center counterparts, this immense centralization is accompanied by a considerable level of specialization in financial services. Looking at London in the early 20th century, specialization in finance was rapid, but not completely understood. “The extreme specialization of the English banking system defined the frontiers of the profession quite precisely and raised the question of the type of banker corresponding to each category of bank.”[6] Cassis goes on to describe the types of banks found in London, during the late 19th and early 20th century, private deposit banks which focused on a few high net worth clients, merchant banks which are widely considered the forerunners of today's investment banks because of their involvement in the extension of credit to merchants, joint-stock banks (the forerunners of today's commercial banks and branch system) and the colonial banks which laid the foundation for international letters of credit, and banking facilities.

To accentuate the similarities, it is easy to note that almost all the financial centers of the world (Paris, New York, London, Frankfurt, Hong Kong, Singapore, etc.) were founded as commercial and trading centers. However, it is there that the similarities begin to end, because while all financial centers were once commercial centers not all commercial centers become financial centers. Across countries, there is often the primacy of a single national financial center over others, New York over San Francisco, Frankfurt over Berlin. Part of this can be attributed to agglomeration economies, given the accumulative effects of intellectual and monetary capital. “It seems that there is little disagreement about the existence of scale economies or agglomerative forces that favor concentration of international financial activity in a few international financial centers.”[7]

---

[6] Cassis, Youssef. City bankers, 1890-1914. (Cambridge, UK. Cambridge University Press, 1994), 13
[7] Gehrig, Thomas. “Cities and the Geography of Financial Centers.” (University of Freiberg and the Centre for Economic Policy Research. Mar. 1998. < http://www.vwl.uni-freiburg.de/fakultaet/erwien/multimedia/centers.pdf>), 3

Indeed, a migration of banks and other financial service organizations often occurs when a financial center is established.

> "One can formulate the aspect of the issue as a riddle: What do the Midlands Bank (now part of HSBC), the Credit Lyonnais, the Dresdner Bank (now Dresdner Kleinwort Wasserstein), the Banca Tibernia, the Bank of Nova Scotia, and the First Boston Corporation (now CSFB) have in common? The answer: Their executive offices are located in a different place from that implied by their name."[8]

If one takes the efficient state of finance to be centralization, then it is unsurprising that there is a high degree of centralization within nations and even across nations.

However, this insight leaves the seminal question unanswered. Why did particular financial centers form in New York or London, when candidates such as Philadelphia or Birmingham existed? Taking the American examples, we know that Baltimore shared many of New York's characteristics, a strong harbor, plenty of international trade, and a reputation as a commercial center. Moreover, Baltimore had financial organizations to rival those of New York's, including Legg Mason, Alexander Brown and Sons (now Brown Brothers Harriman), and George Peabody & Co. (forerunner of J.P. Morgan)[9]. We can see that financial centers can coincide with national capitals (the harmony of money and politics) as in London and Paris, but can also be situated quite far away from capitals as well as in the case of New York and Milan.

The theoretical factors set forth above finally give a lens through which to analyze the growth patterns of certain urban centers and their respective trajectories towards financial center designation. Kindleberger's framework provides a set of easily identifiable economic designators that can be used to identify a financial center. Likewise, the three additional factors described, competition, innovation, and public

---

[8] Kindleberger, 2

[9] Chernow, Ron. The House of Morgan: An American Banking Dynasty and the Rise of Modern Finance. (New York. Grove Press, 1990), 3

investment, round out the explanation, particularly because they focus on more intangible aspects involving the choices of individuals and governments

The final question to be addressed is why anyone should care about how and why financial centers form. Aside from the academic answer of simply not knowing yet, this study on the formation of financial centers will shed some insight on the seminal question of why they form and particularly what factors might be helpful in their formation. While many of the Kindleberger factors are relatively difficult to influence, the last three factors are can be influenced significantly through government policy. As the following case studies will suggest, state and federal governments have the ability to shift the odds of financial center formation in their favor, even if there are significant geographical disadvantages. Public investment near certain cities by a state or federal government could significantly advantage one city over another in the financial center development race. Government actions could shift the balance from one city to another even if it is relatively disadvantageous to do so, causing a net loss in societal surplus. This thesis will help provide some groundwork understanding of the formation of American financial centers and, in turn, hopefully shed some insight on the development of financial centers in the future.

It is with that understanding that we can begin to investigate first why agglomeration into financial centers happens in the first place.

Why Agglomeration in Financial Centers?

First, it is important to define a financial center to give clarity to the position. A financial center is an agglomeration of financial firms, particularly devoted to the raising and administration of capital. Major financial centers are headquarters to major banks (or significant branches thereof), investment firms, and often large financial markets. With that definition, it is important to understand why financial firms agglomerate in the first place.

Finance is a service based industry, focused on facilitating the transfer of monetary assets from lenders to borrowers. Although there are hundreds of variations on this financial theme ranging from equities to bonds to collateralized mortgage backed obligation futures, the fundamental process is the same. As such, the most important factor in financial transactions is information. A firm with better information on a company or market conditions stands to make tremendous profits off of market inefficiencies. Because of the advantages of superior information, financial firms and authorities have set up significant information dissemination and gathering systems such as Bloomberg or the Quotron machine. Indeed, large secondary information markets have emerged, devoted not to disbursing first hand information but to interpreting investor reactions to first hand information through technical charts and indicators. The modern communications age has increased the speed of information flow to investors, increasing market efficiency considerably through information tools such as cellular phones, online brokerages, and the Internet. The field of academic finance is premised on the idea of efficient markets, where information is disseminated nearly instantly with the requisite effects on the prices of securities and assets. That theoretical assumption is now close to reality. The ability of investors to get information on an event in Moscow from Honolulu and then relay that information to a broker in New York, nearly instantaneously, has miniaturized the world of finance.

But because information is really the one necessary component of the financial services field and because information flows have increased in efficacy and efficiency over the past decade, it is easy to argue that financial centers are no longer necessary. In older days when information flows were not nearly as fast, it might make competitive sense to locate near other financial firms in order to share information. However, the age of modern communications and efficient markets has trumped those needs. It makes no difference whether a competitor is located two miles away or two thousand. The same information flow is possible with absolutely no time difference. In fact, modern communications would seem to imply that co-locating financial firm divisions isn't even necessary. As there are no physical inputs necessary to the revenue stream, a financial conglomerate could locate an arbitrage operation in Boston, a trading floor in San Francisco, and a client management organization in New York City, tying the disparate parts together with computerized communication. A current example of this practice can be found in the international banking conglomerate UBS which located all of its front office investment banking operations in New York, its trading desk in Stamford, CT, and its alternative investments department in upstate New York. Computerized communications would seem to indicate that the age of the city financial center is over.

Yet, there is evidence supporting the opposite conclusion as well. In fact, UBS is something of an anomaly as the majority of investment banking organizations headquartered in New York locate the majority of their trading and investment operations in the city itself.[10] Moreover, there has been a gradual migration of financial firm headquarters from various parts of the country to New York, including The Blackstone Group and Banc of America Securities. If anything, financial firms seem to be clustering even more than before. How does one reconcile theory with observation?

It is instructive to define what economic clustering is before proceeding. "A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities."[11]

With that in mind, it is helpful to begin to understand why clusters form in other industries. In industries where physical inputs are used, the reasons are fairly obvious. Co-locating minimizes the transportation of inputs from supplier firms and of output to consumers. A similar argument can be made for financial firms regarding firm employees. "Clusters offer similar, although not identical, sourcing advantages in the area of specialized and experienced employees. A cluster represents a pool of such employees. This lowers search and transactions costs for recruiting and makes possible more efficient matching of jobs to people."[12] Despite advances in communication, it is still difficult to completely extract the human element from certain essential positions. A client seeking to raise capital cannot be completely placated by meeting a client engagement specialist with a sales pitch. Rather, the client will want to meet the team crunching the numbers and the managers who support them. When attempting to recruit said employees, it is best to locate in an area where there are large numbers of firms employing them.

Specialized services are another benefit to clustering. "Outside specialists are

---

[10] Loosvelt, 142
[11] Porter, M. E. "Clusters and Competition: New Agendas for Companies, Governments, and Institutions," *On Competition*. (Boston. Harvard Business School Press, 1998.), 4
[12] Porter, 14

often more cost effective and responsive than in-house units, not only in component production but also in areas such as training."[13] In the case of financial firms, those specialized services include securities law firms, financial consultancies, and accounting firms. Many of these services require significant amounts of face to face client time. Locating near to these specialized firms in clusters confers a competitive advantage. Specialization in services might also create major information advantages.

> "By reducing the cost of co-ordination and by overcoming problems of asymmetrical information, the process of clustering tilts the balance in favor of further specialization so that a high level of knowledge creation might be obtained. The main advantages are not the ease of intra-cluster interaction as such, as our manner of speech sometimes seems to suggest, but the deepening of the knowledge base that it enables."[14]

Theory would indicate that specialization of would confer research and development advantages. As clustering provides a supportive environment for specialization, it follows that clustering would actually have positive knowledge creation effects.

Another benefit to clustering is access to institutions and public goods. "Clusters make many inputs that would otherwise be costly into public or quasi-public goods. The ability to recruit employees trained in local programs, for example, eliminates or lowers the cost of internal training. Firms can often access benefits, such as specialized infrastructure or advice from experts in local institutions at very low cost."[15] The wide array of training mechanisms and programs available at financial clusters is tremendous. Examples include trade conferences, local business journals, and extensive software and hardware training opportunities. The proximity of major business schools to financial centers provides breakthrough research on financial techniques and other innovations. The presence of both central bank and federal attorney offices aid in the oversight of

---

[13] Porter, 14
[14] Maskell, Peter. "Towards a Knowledge-based Theory of the Geographical Center." (Industrial and Corporate Change. Vol. 10 No. 4. 2001. pp. 921 – 943), 932
[15] Porter, 15-16

financial practices. It is often competitively advantageous to locate near these public goods in order to receive their full effects.

Finally, it is advantageous for financial firms to cluster because of performance and incentive management.

> "Rivalry with locally based competitors has particularly strong incentive effects because of the ease of constant comparison and because local rivals have similar general circumstances (for example, labor costs and local market access), so that competition must take place on other things...Clusters also facilitate measurement of the performance of in-house activities because, often, other local firms perform similar functions."[16]

Metrics like profit spreads on trades and league tables for merger and underwriting activity force firms into greater competition. As it is often difficult to determine the performance of a single individual or team to a deal, firms can turn to competitors in the same clusters who had performed similar deals and analyze their employee monitoring efforts. It is easier to determine the performance of competitors when close together. Moreover, clustered firms may accumulate common knowledge of employees and customers to pass on to rivals. "Because of repeated interactions, the easy spread of information, the spread of reputation, and the desire to maintain a standing in the local community, cluster participants usually strive for constructive interactions that will positively affect their long-term interests."[17]

It's increasingly clear that despite increases in communications technology, clustering among financial firms actually confers significant competitive advantages. The clustering of financial firms together in the same area, and the subsequent formation of cities around them, is not surprising.

---

[16] Porter, 16
[17] Porter, 16

Why do Financial Centers Form in Certain Cities?

However, an understanding of agglomerative tendencies does not furnish a complete understanding of financial center formation. As far as clustering is concerned, a financial center is as likely to form in Detroit as it is in New York City. The competitive advantages focused on by clustering are proximity-based only. However, it is clear that something attracts financial firms to particular areas.

Charles Kindleberger's theory supplies a framework upon which individual cities can be evaluated for their suitability as financial centers. His staple theory outlines several major factors which he postulates are necessary to the formation of a financial center.

The first is sovereign finance. In Europe, the formation of financial powerhouses such as the Barings and Rothschilds were intimately tied in with the funding of the personal spending habits and war activities of sovereigns and nobles. However, as the United State largely did not have a hereditary aristocracy, this is not a major issue in the template of American financial history.

The second factor is commercial finance, particularly the funding of trade and shipping. In the early eighteenth and nineteenth centuries, merchants needed significant levels of capital in order to purchase and sell their goods. Originally this practice was supported by the merchant's own capital, but financial firms began to facilitate trade through the issuance of short terms, low interest loans. It follows that the presence of trade would provide a ready market for financial service firms to start short term loans. Every major American financial center is located near large ports or transportation networks.

The third factor is government finance. As governmental power shifted away from the feudalism and towards national governments, the clientele of sovereign bankers changed. Instead of loaning to the aristocracy, bankers and financiers focused on the raising of capital for government through the issuance of bonds or other mechanisms. In the United States, governmental finance often occurred at both the state and Federal levels.

The fourth factor is transportation finance, particularly canals and railroads. Transportation finance can take on a multitude of incarnations, whether through direct finance of chartered transport companies or funding of government efforts to the like. Increased transportation finance enhances trade and often provides an opportunity for financial firms to lend to highly profitable ventures. Locating near such projects would be necessary for financial firms, in order to protect their investments. The very nature of the projects are long term, meaning larger degrees of oversight are necessary to prevent loss of principal. Where transportation networks are headquarters, so too are the firms that fund them.

The fifth factor is industrial finance. Industrial finance parallels transportation finance. The eventual recapture of principal and interest necessarily requires a long term view. Logically, co-location with industrial firms would allow for two things. The first would be the advantages of management of cash reserves for industrial conglomerates. The second would be the lending of capital to the same industrial conglomerates. As with transport firms, profits are necessarily delayed and so location near borrowers would allow for more effective oversight. More industry might imply more financial firms around them. As information transfer lag decreased, so to the need for financial firms to co-locate.

The final factor is personal finance. Although seemingly more mundane than the rest, American financial history would suggest that consumer finance is one of the most powerful forces in economics. The advent of personal savings accounts and personal loans would imply that financial firms would be located around population centers. Financial activity ought to be proportional to population.

Kindleberger's theory is, in a way, a tautological argument. Financial centers form only when there is an abundance of the above factors.

It is important to note that even in financial centers that adhere more closely to Kindleberger's theory, the issues of competition, government intervention, and innovation seem to have had roles to play. At least in one case, factors not described by Kindleberger trumped the more traditional ones he put forth. It is therefore important to investigate the issues which Kindleberger did not state in his theory.

Unlike the development of finance with regards to commerce, industry, and the like, the issues of financial competition, government oversight, and innovation are much more tenuously linked to financial development. It is nearly impossible to quantify these factors. However, their importance to general economic development is undeniable. An investigation into the theoretical frameworks underlying these economic aspects is warranted.

To analyze the role of competition in financial development, it is helpful to widen the picture and attempt to understand the role of competition in economic development before applying it back down to the more specific levels. The role of competition in economic development is a theoretically and empirically messy one. Economic theory of the Cold War era often advocated stifling competition to promote growth. Empirical evidence weighed heavily against perfectly competitive markets as engines for economic development. "Latin American countries were pursuing import substitution policies, which allowed countries like Peru, Brazil, or Mexico to double their per capita GDP levels relative to the United States between 1945 and the early 1970s."[18] As Latin America eventually suffered a huge crash and debt crisis in the 1980s, more recent economic opinion has weighed on the side of competitive markets as a more effective method of economic growth. Still more recent theories postulate that competition has different effects at different stages of economic development. Strong competition might be more helpful in the highly industrialized, knowledge based economies where innovation is the primary economic driver, whereas weak competition would be more helpful in proto-industrial economies in order spur more efficient capital investment.[19]

However, the most commonly accepted competition model would be the argument that competition aids economic development and growth. There are two commonly discussed types of competition. The first is "weak" competition. "Firms jostle for advantage in commodity markets: they seek market share by underpricing and by enticing customers; they try to get the best price on materials from suppliers; and they work to secure the best labor at the lowest wage."[20] Weak competition assumes a set of historical and economic parameters, primarily with regards to the size of the market place. The adjustment process in this type of competition is, in fact, a movement towards equilibrium in a no-growth market and economy in the neoclassical sense. The second sort of competition is a Schumpeterian notion of "strong" competition.

> "In its strong sense, competition drives capitalists to revolutionize production in order to gain an edge on competitors, thereby continually disrupting established conditions, pushing the economy

[18] Aghion, Philippe and Rachel Griffith. Competition and Growth: Reconciling Theory and Evidence. (Cambridge, MA. The MIT Press, 2005.), 1

[19] Acemoglu, Daron, Philippe Aghion, and Fabrizio Zilibotti. "Distance to Frontier, Selection, and Economic Growth." Discussion 2002. National Bureau of Economic Research. (15 Mar. 2006. http://papers.nber.org/papers/W9066), 41

[20] Storper, Michael and Richard Walker. The Capitalist Imperative: Territory, Technology, and Industrial Growth. (New York, NY. Basil Blackwell, 1989.), 44

> to grow and keeping it from ever settling into equilibrium…This can include new products, new forms of work organization…Simply making the best use of current resources – the neoclassical vision of economic rationality – is not the point; overcoming present limits to growth is."[21]

The analysis of strong competition reveals an understanding of the role of competition in economic development. Competition is necessary to continued innovation and growth.

Stephen Nickell posed an empirical test to this theory, attempting to correlate a proxy for economic development (in this case corporate performance) and competition in an industry. In a study of industrial firms in the United Kingdom, it was found that there was a moderate correlation between competitiveness of the industry and performance of the firm in terms of profits. Two major insights were revealed. The first was that market power, as measured by market share, generated decreased levels of productivity. The second was that competition, as indicated by number of competitors or by lower levels of monopoly rents, was correlated to higher levels of total factor productivity growth.[22] The evidence seems to point strongly towards competition as a important factor in economic development and growth.

The theory established above, gives us a framework with which to evaluate the various competitive atmospheres. If a city had a more competitive financial marketplace, it is reasonable to postulate that it would have an advantage in financial development over a city that had a less competitive market. Therefore, comparisons between competitor cities are necessary.

Innovation is another contributing force in financial development. In many ways, innovation can be considered a subset of competition, a vein where innovative practices are simply a method by which companies compete with each other. However, the role of innovation in economic development is considerably more complex than the roles of

---

[21] Storper and Walker, pg. 48

[22] Nickell, Stephen J. "Competition and Corporate Performance." The Journal of Political Economy. Vol. 104, No. 4. (1996. pp. 724 – 746), 741

other aspects of competition. It is difficult even to assume that competitive markets will result in innovative activity (via Schumpeter's argument that perfectly competitive markets will lack companies with the capital to undertake innovative activities in general). Rather, the central positioning of technological development and other innovative activities in economic growth models begs a more specialized analysis.

Economic growth is dependent on innovative activity. For an economy to grow and for firms to make profits, there is the continual struggle for newer and better products to deliver to the rest of society. "Firm's invest significant resources in research and development (R&D) activities to discover qualitatively improved products and capture associated profits."[23] The important fact to glean from this pass is the fact that innovation is a deliberate activity.

The neoclassical Solow model of economic growth with labor augmenting technological progress, with a Cobb Douglas production function, is as follows,

(1) $Y = K^{\alpha} (AL_Y)^{1-\alpha}$, where $0 < \alpha < 1$

where Y is GDP, K is capital, A is the stock of knowledge, and L_Y is the amount of labor devoted to the production of output. New ideas (additions to the current stock of knowledge) are produced according to the following model.

(2) $A = \delta L_A$

where A is the flow of knowledge produced per period, δ is the average research productivity per researcher, and L_A is the number of researchers. The major constraint to be aware of is $L_A + L_Y = L$ or the total labor force.[24]

Model presented capture the importance of innovation or the accumulation to

[23] Segerstrom, Paul. "Innovation, Imitation, and Economic Growth." The Journal of Political Economy. Vol. 99, No. 4. (1991. pp. 807 – 827.), 807
[24] Abdih, Yasser and Frederick Joutz. "Relating the Knowledge Production Function to Total Factor Productivity: An Endogenous Growth Puzzle." (2006. George Washington University. 15 Mar. 2006. http://home.gwu.edu/~bmark/Abdih-Joutz-Text-Flood.pdf), 4

economic growth. The steady growth in technological process is necessary to sustained growth in per capita GDP.

Edwin Mansfield proposed the presence of an empirical link between research and development. In a study of American manufacturing in the 20th century, it was found that basic research and total factor productivity were linked.

> "There is a statistically significant and direct relationships between the amount of basic research carried out by an industry or firm and its rate of increase of total factor productivity…Holding constant the amount spent on both applied R&D and basic research, an industry's rate of productivity increase during 1948-66 seems to be directly and significantly related to the extent which its R&D was long term."[25]

The empirical evidence confirms our belief in the model.

However, research and development has numerous effects outside of increasing the effectiveness of the company that undertook innovative activity. Rather there are numerous effects to innovation outside of those conferred to the initial technology benefactor.

One of the more widely discussed aspects of innovation in economic growth is the role of the knowledge spillover. Basic research is often applicable to numerous parties, competitors and otherwise. The model presented above only accounts for the role of innovation on the economy as a whole, without regards for who the benefits accrue to. An additional layer of analysis is necessary to parse the effects of knowledge spillovers.

It is difficult to determine the effects of knowledge spillovers, because of the diversity of knowledge sources.

"The benefits of R&D are widespread, so that each firm will benefit from both its own R&D, as well as the research results of other firms, the domestic science base and research carried out by foreign governments and foreign firms. Patents, scientific literature, technology licenses, and technology embodied in capital and intermediate inputs, and personal contacts provide the means for research results to diffuse throughout the domestic and world economy."[26]

---

[25] Mansfield, Edwin. "Basic Research and Productivity Increase in Manufacturing." The American Economic Review. Vol. 70, No. 5. (Dec. 1980, pp. 863-873), 871

[26] Cameron, Gavin. "Innovation and Economic Growth." Discussion Paper No. 277. (1996. Centre for Economic Performance. 15 Mar. 2006. http://cep.lse.ac.uk/pubs/download/dp0277.pdf), 5

To complicate matters further, these knowledge transfers are highly valuable events with no clear cost associated with them. The ease of information retrieval and the existence of government research programs allow the provision of information at prices lower than market value preventing an analysis of knowledge as a production input. This prevents an effective valuation of knowledge spillover effects.

So what are the effects of knowledge spillovers? An understanding of the effects of spillovers can be followed through the analysis of a single type of spillover, imitation. Although much of traditional economic theory pointed towards the idea that original innovation is the engine for economic growth, it is important to not underrate the economic activity generated by others attempting to find ways around or simply copy the product or processes developed.

> "Firms devote resources to discovering new superior products, and new products are periodically discovered. Other firms devote resources to imitating new superior products and successful innovators cannot count on earning dominant firm profits forever…Discovering new products is costly, takes time, and involves uncertainty. Copying the state-of-the-art quality products of other firms also is costly, takes time, and involves uncertainties."[27]

So it seems as though imitative activity and innovative activity are related, with many similar characteristics. However, this does not resolve the question of whether imitative activity translates into economic development. A solution to this problem can be found in an analysis of entrepreneurial activity and economic growth.

> "Specifically, at each date there is a stock of industry knowledge. In the process of implementing the current industry technique, entrepreneurs augment the existing stock of industry knowledge in a learning-by-doing fashion. Note in this formulation that there is no individual-specific knowledge, only industry knowledge. Knowledge is a common property resource, and no one earns a return from creating new knowledge. An entrepreneur's compensation comes entirely from imitating existing activities and putting them to use."[28]

Admittedly this model does not accurately represent actual economic activity. In most industrialized economies, there are various methods with which to actually receive

---

[27] Segerstrom, 825

[28] Schmitz Jr., James A. "Imitation, Entrepreneurship, and Long-Run Growth." The Journal of Political Economy. Vol. 97, No. 3. (1989. pp. 721 – 739), 724

returns from the creation of knowledge, particularly through protective patents and royalty agreements. However, the implications of the model are staggering. Economic growth is possible even when innovative activity by specific actors does not occur. If every innovation is treated as an exogenous growth in the stock of technology, then entrepreneurs will still be able to make economic profits by copying industry technology. Therefore, economic activity can result both from original innovations and from imitation of innovations.

The importance of innovation (and ancillary imitation) to economic development allows one to make the similar assumptions about their roles in financial development. The logic follows that a successful economy is one that has successfully innovated and/or successfully imitated other innovations. If the effects of innovation and imitation are similar on both economic development and financial development, it would follow that the city financial sector that most successfully innovates or imitates would in turn aid the development of a city into a financial center.

The final theme requiring investigation is the role of government in financial development. To further clarify the prompt, as government regulation, particularly of competition, has already been described. Instead, analysis of government investments, particularly those in financial infrastructure or projects, are necessary to gain a more complete perspective on the role of government in development

The relationship between government investment and economic growth is a well worn topic in public policy and academic economics. From Adam Smith to John Maynard Keynes, government investment has been touted as a necessary component to economic development, vilified as a wasteful gesture that distorts markets, and characterized as every shade in between.

This paper will take a moderate, common-sensical approach to public investment. Public capital investment can be extremely beneficial to economic development. "A well constructed high way allows a truck driver to avoid circuitous back roads and to transport goods to market in less time. The reduction in required time means that the producer pays the driver lower wages and the truck experiences less wear and tear. Hence, public investment in a high way enables private companies to produce their products at lower total cost."[29] However, public investment is not an unlimited good. Rather, it has costs, much like any other perturbation to the market. "On one hand, public capital enhances the productivity of private capital, raising its rate of return and encouraging more investment. On the other hand, from the investor's perspective, public capital acts as a substitute for private capital and 'crowds out' private investment."[30] However, on balance, public investment has a positive statistical correlation with a panoply of positive economic indicators. "…Public capital has a positive impact on several measures of state-level economic activity: output, investment, and employment growth. The magnitudes of these effects are considerably smaller than those found at the national level; for instance the elasticity of public capital with respect to output was .15, roughly half the estimate at the national level."[31] Following the logic of the highway example above, it is reasonable to assume that public investment probably has some causal effect on economic development and growth.

However, merely finding a correlative or even causal relationship between public investment and growth does not adequately describe the situations at hand as it does not address the issue of diminishing marginal returns. If there were capacity for unlimited

[29] Munnell, Alicia. "Policy Watch: Infrastructure Investment and Economic Growth." The Journal of Economic Perspectives. Vol. 6, No. 4. (Fall 1992. pp. 189 – 198), 191
[30] Munnell, 192
[31] Munnell, 192

public investment, the point would be moot. As there is no such thing, the quality of public investment is at least as important an issue as the quantity of said investment. Given the rationality constraints of human beings, not all capital is invested equally. The common sense argument follows. Efficiently deployed capital is better than inefficiently deployed capital. "Data presented in the 1994 World Development Report (WDR) suggest that $12 billion in timely road maintenance in Africa over the preceding decade would have avoided the need for $45 billion in reconstruction and rehabilitation."[32]

In fact the reasoning follows that countries or entities that inefficiently deploy their capital investments ought to realize lower growth rates because of their policies. However, there is significant difficulty in capturing the idea of investment efficiency in models.

> "Infrastructure facilities tend to be congestible public goods that are organized into capital-intensive networks (e.g., roads and bridges, railroads, air and water transport, water and sewer systems, electricity generation and distribution networks, telecommunications facilities.) The efficiency of any one segment of the network depends on the size and configuration of the entire network, and complementarities may exist between some segments while others are substitutes."[33]

But using a very rudimentary index, incorporating scale effects, maintenance, other factors, to determine infrastructure effectiveness provides a striking conclusion. In a comparison of national growth rates across countries with different levels of infrastructure effectiveness and accounting for quantity of public investment, more than forty percent of the growth differential can be explained by effectiveness of investment rather than quantity of investment or quantity per capita.

"It is no longer appropriate to ignore the efficiency with which this capital is used…international aid programs aimed only at new infrastructure construction may have a limited impact on economic growth, and may actually have a perverse effect if they divert scarce domestic resources away from the maintenance and operation of existing infrastructure stocks."[34]

---

[32] Hulten, Charles. "Infrastructure Capital and Economic Growth: How Well You Use It May Be More Important Than How Much You Have." NBER Working Paper No. 5847. Dec 1996. National Bureau for Economic Research. (30 Mar. 2006. <http://papers.nber.org/papers/w5847>), 1
[33] Hulten, 4
[34] Hulten, 25

The theoretical basis outlined above gives two indicators to look for when evaluating the public investments of each financial center and competitor city. Again, the paper will assume that the factors influencing overall economic development are the same as those influencing financial development. Both quantity and efficiency are important to the story.

In this section, we have theoretically laid out the foundations for the Kindleberger factors and the three additional factors in financial center formation.

Methodology and Approach

With the theory in place, it is now appropriate to turn towards a roadmap of the thesis. This thesis will examine the cases of three cities, New York, Chicago, and San Francisco, by sketching an economic history of each city, then proceeding to compare it against a competitor city, Philadelphia, St. Louis, and San Francisco. The economic histories will be organized chronologically while the comparisons will be organized by financial factors.

We have utilized the case study method because it allows for a more complete portrait of the cities being studied. This paper will focus on three major American financial centers, while performing several levels of analysis on each. The first level will be to frame the question by analyzing city histories. The second level will be to analyze the city in reference to a competitor city that at one point rivaled the city for financial centerdom. This analysis will utilize the Kindleberger and non-Kindleberger factors stated above to determine why a particular city won and the competitor lost.

There are inherent limits to statistically testing these factors. Despite the fact that many of them might seem to lend themselves to quantitative analysis of some sort, it is difficult to accomplish in fact. Kindleberger's theory provides an excellent place to start from when beginning to evaluate suitability of certain cities as financial centers. However, the very nature of the topic prevents statistics from being a central part of the narratives constructed around each city. First, the cities dealt with are in different states, underneath different economic and legal atmospheres. Any statistics gleaned would have little comparative power because of the inability to isolate factors. Second, the timelines analyzed are different in each case, making it difficult to take statistical metrics from one era and apply it to another. Finally, the timelines analyzed have very few organized statistical databases from which to glean data and plug into statistical packages. Statistical analysis, in this case, would require large degrees of backward prediction, which has significant accuracy issues. Due to the inherent limitations on statistical analysis, this paper will avoid its widespread use.

The evidence used, therefore, will be primarily anecdotal in nature. Although lacking in much of the rigor of statistical methods of proof, anecdotal evidence is able to analyze tendencies and trends. It also does not limit itself to the findings of statistics of the time, rather able to take in the entire range of ideas and possible factors and use them to inform Kindleberger's theory of financial center formation. It allows analysis of factors that Kindleberger did not address, competition, innovation, and role of government.

The next issue that needs to be addressed is the need for chronological organization of the economic histories. The Kindleberger theory has a chronological progression to it, arguing that transportation finance precedes industrial finance but only once commercial finance takes hold and so on and so forth. While this is cleanses situations of the complicating factors of interrelated and intersecting areas of finance, it is overwhelmingly clear that the theory does not describe reality. Indeed, the various modes of finance are seminally linked together, with the rise of one often contributing to the rise of another. Transportation finance comes after commercial finance in the Kindleberger progression, however investment in transportation could indeed aid the growth and development of a commercial financial sector due to the beneficial aspects of transport systems on trade. It is a case where A may indeed lead to B but through C.

The final issue requiring explanation is why only focus on a single competitor city while there are sure to be dozens of cities who at one time vied for the financial center position. This is a valid concern. The path of financial development is necessarily an indirect one and many factors are necessary to the creation of a successful financial center. It is reasonable to assume that at one point in a financial center history, another city might have gained a clear advantage in a particular factor and might have posed a credible threat to financial center-dom. Cincinnati's competition with Chicago or Baltimore's challenge to New York in the mid 19^{th} century spring to mind as cities worth analyzing.

However, the difficulty of investigating every city that could have been a potential competitor is evident. There are simply too many cities to look at. Instead, this thesis has taken a much more conservative route and sought competitor cities that possessed many of the same beneficial attributes as the financial center itself. Isolating the competition to a single city trades of breadth for depth of understanding in the factors of financial center formation.

It is with that knowledge that one can proceed on an investigation of New York as a financial center.

Section 2: City Histories and Competitor Analyses

New York

In terms of sheer capital transactions, New York is the center of the American (and international) financial universe. The New York Stock Exchange is largest stock exchange in the world. On December 1st, 2005, the New York Stock Exchange transacted almost 2 billion shares for a trade value of almost 65 billion dollars.(NYSE.com) The Federal Reserve Bank of New York is the most powerful arm of the United States central banking system, charged with oversight over national securities markets and with financial transaction monitoring. Virtually every major banking firm in the world, American or not, is either headquartered in or has substantial operations in the city. It is home to the New York Mercantile Exchange, the largest commodity futures exchange in the world. There are a bewildering array of financial firms in Gotham, built not only on the fundamental financial transaction of moving money from one place to another but on the raising of capital in markets or the use of derivatives to profit from them. A quick search on Monster.com for financial service jobs in New York City, reveals over one thousand postings for positions ranging from commodities trading to credit risk analysis to equity derivative sales and research.

New York was founded in the early 17th century, by Dutch fishers and fur traders. The area, first mapped by Henry Hudson, was christened New Netherlands after the interests who had funded and prepared to colonize it. Unlike most New World colonies, New Netherlands was not an escape from religious persecution or a state sanctioned colonial expedition. Rather, the founding of New Netherlands was a purely commercial venture, funded by private merchants to cut into French fur trading in the New World. The New Netherlands Company soon obtained the exclusive rights to voyages to the mouth of the Hudson River. According to Thomas J. Condon in New York Beginnings: The Commercial Origins of New Netherlands, “By the terms of this patent it was to have the right to make four voyages to the exclusion of all competitors, during a three year period commencing January 1, 1615 to the area of New Netherlands.”

However, the profitability of trade eventually attracted the attention of competitors, including the famous state chartered Dutch West India Company. The Dutch West India Company was founded primarily as a weapon of war against Spain, hiring ships and mariners to plunder Spanish treasure galleons from the New World. By virtue of strategic necessity, the infant colony in New Netherlands was transferred to their care, both as a colonization project and as a base for treasure raids. Unlike the New Netherlands Company before it, the Dutch West India company was focused on the idea of colonization. Having noted the tremendously successful colonial strategy of Spain in the 16th century, the Dutch sought to replicate it to the best of their ability. Thus was founded the city and fort of New Amsterdam, the most important Dutch colonial outpost of the New World.

In 1664, the English, who controlled New England in the North and Virgina in the South, asserted their control over the New Amsterdam area and forced the Dutch leadership to surrender the city and rechristened it New York. The city, founded on the basis of profit, was to become one of the most important trade and commercial centers of the American colonies. The late 17th century saw New York's position as a trade city increase immeasurably as Hudson Valley wheat began to find its way into European markets. Perhaps with an eye to the future, New York's well sited harbor was equally famous for piracy, including the infamous William Kidd. However, it is unmistakable that trade during the period flourished as the population continued to grow from zero white inhabitants in 1605 to nearly thirteen thousand in 1759.[35]

However, it is important to remember that the wealth created from New York's position as a trade center was not accompanied by financial activity. There were systems of rents and various forms of insurance offered as financial products, but nothing compared to the central banking system modeled by the Bank or England or the myriad of private and joint-stock commercial banks such as Barclays or Lloyd's. It was wealth born of agricultural entrepreneurship, the manufacturing of staples, and trade with Europe. In the period leading up until the Revolutionary war, financial institutions were almost nonexistent in America. "The Protestant ethic had not yet disappeared, and leverage was not well accepted. Borrowing money to become successful in Business was becoming popular because it was recognized as the only way that capitalism could be practiced in some cases. But the practice was still not socially acceptable and also had a weak institutional underpinning."[36] Moreover, British authorities prevented the formation of commercial banking on the basis of mercantile theory, that wealth was supposed to be lent out by Britain rather than the colonies.

It was not until after the Revolutionary War that modern financial institutions began to form in the colonies where they first engaged in large scale government finance. In fighting the war against Britain, the American colonies had incurred huge war debts. "The colonies had resorted largely to irredeemable paper currency as a method of public financing, since their credit was not good enough to permit the issue of bonds."[37] The federal government assumed the debt of its constituent states and was soon in need of a way to redispense them into the hands into the hands of investors. "If the new Republic

[35] Collins, Frederick. Money Town. (New York. Van Rees Press, 1946.), 84
[36] Geisst, Charles R. Wall Street: A History. (New York, Oxford. Oxford University Press, 1997.), 7
[37] Myers, Margaret. The New York Money Market Volume 1: Origins and Development. (New York. Columbia University Press, 1931.), 11

did not honor its existing debts, progress would be difficult for new creditors would not be found easily. As a result, the U.S. government borrowed $80 million in New York by issuing federal government bonds."[38] It was from these primitive roots that American finance was born.

New York's contribution was a relatively crude approximation of the European bourse or stock exchange, known as the Tontine. Unlike Philadelphia securities which had a formal stock exchange, securities on New York markets were bought and sold by local traders who would congregate in the streets to haggle with each other. This was not to say that financial institutions were not taking hold in New York. In 1784, before his tenure as Secretary of the Treasury, Alexander Hamilton founded the Bank of New York, currently the oldest continuously operating financial institution in the country. However, an even larger financial institution, the federally chartered Bank of the United States was opened, headquartered in Philadelphia. Modeled on the Bank of England, the Bank of the United States (1791-1811) and its successor the Second Bank of the United States (1816-1836) were the most important financial institutions in early United States History.

> "Each of those banks, working in conjunction with the...U.S. Treasury department, attempted, usually quite successfully, to keep inflation low, interest rates within a reasonable range, and business cycles from oscillating too violently. They also on occasion act as lenders of last resort. And they usually acted as the federal government's financial agent, the depository of its cash, the source of its short-term credit, and the payer of its bills."[39]

In this role, the first privately owned central banks of the United States were very successful. The First Bank of the United States had branches in every major American city, including Boston and New York and was able to exert a level of control over state chartered banks. The First Bank of the United States was able to limit the amount of notes its competitors were able to issue by refusing to accept them unless they were

[38] Geisst, 10
[39] Wright, Robert E. The First Wall Street: Chestnut Street, Philadelphia, and the Birth of American Finance. (Chicago, London. The University of Chicago Press, 1997.), 68

convertible to gold. With its powers as central bank, it was able to limit the loans of state chartered banks and became the leading commercial bank in the country.

However, this success was to be its own undoing as powerful political interests conspired to bring it down. Despite a spirited defense by Hamilton and President Thomas Jefferson's Treasury Secretary Albert Gallatin, both the House and Senate of the United States Congress voted against reinstating the charter as a usurpation of federal power. With the Federalist Party that created it no longer in possession of enough power to force a positive vote, the BUS expired.

> "It eliminated a major competitor in the expanding New York market for bank credit and removed a potential restraint on the new bank's ability to issue bank notes....Without the Bank of the United States there were only five banks in New York City. Collectively they enjoyed a local monopoly over note issue. By issuing notes each bank could borrow from the public at low cost-a saving that could be passed on to its merchant-owners in the form of credit on favorable terms."[40]

In 1810, New York had just passed Philadelphia as the largest city by population in the country, 96,373 to 91,874. Moreover, New York State quickly surpassed Pennsylvania in working capital. "In 1824, the Secretary of State for the Unites States estimated that in New York the total investment of capital in Manufacturing enterprises was about 7.8 millions of dollars compared with 6.3 millions of dollars in Pennsylvania, 5.7 millions in Maryland, and 4.5 millions in Massachusetts."[41]

All these facts conspired to provide a tremendous market for business loans in New York City, aiding the development of commercial finance. In an era when banking was primarily a local affair, the size of the New York market for credit constituted a tremendous comparative advantage for New York banking interests. Still, New York could not be relied upon to be the undisputed financial capital of the country. Despite the replacement of Philadelphia by New York as the import/export center of the United

---

[40] Cleveland, Harold van B. and Thomas F. Huertas. Citibank: 1812-1970. (Cambridge, MA. Harvard University Press, 1985.), 7
[41] Myers, 7

States, Philadelphia still commanded central banking in the United States through the Second Bank of the United States and was center to the nation's first merchant bankers. Founded in 1816, the Second Bank of the United States was to operate along the same lines as the First Bank of the United States, save with a charter lasting until 1836. It still operated as a hybrid commercial and central bank, with dual responsibilities to stabilize the United States money supply and loan funds to both governments and citizens. In that role it performed relatively well, stabilizing the money supply during Britain's financial crisis in 1825.[42]

It is important to remember that Philadelphia, at the time, was the major entry point for most European investment into American business. The post-Napoleonic period saw a stop in borrowing for war finance and a diversion of funds to exotic American stocks and bonds. Philadelphia's relatively advanced stock exchange and older banks gave European investors a level of confidence that could not be matched in New York City. In New York, almost all trading was over the counter with little oversight or securities regulation. To combat this reputation, New York merchants launched a formal marketplace based on the Philadelphia model, known as the New York Stock and Exchange Board, in 1817.[43] Still the New York exchanges toiled in second place until another fortuitous event that pushed New York's position as a commercial center far beyond Philadelphia's reach.

The Erie Canal is one of the most important waterways in American history. Widely credited with opening up trade in the West by linking the Great Lakes to the Hudson River and the Atlantic Ocean beyond, it is also responsible for the ascendancy of New York as financial center of the United States through significant development of the

[42] Wright, 149
[43] Sobel, Robert. The Big Board: A History of the New York Stock Market. (New York, The Free Press, 1965), 33

transportation finance sector and subsequent development of commercial finance. Although other cities had attempted canals to open up the Western United States to trade before, none had the political will of the Erie behind them.

> "Begun in 1817, it was carried on in the face of tremendous political opposition, and at a terrifying cost, to its completion in 1825. It was an immediate success, not only in its purpose of attracting the trade of the middle West, but equally so from a financial standpoint. During the first year of operation it was self-supporting, and within ten years it had redeemed at a premium the state bonds issued for its construction."[44]

The Erie Canal was the first to spark the interest of European investors who, by 1829, owned almost half of its debt. The success of the Erie Canal offering created a self perpetuating cycle.

> "Wall Street financed the creation of a very long but strategically located ditch. It also lent to the merchants who transformed that ditch into the nation's most important interior commercial artery. In return, Wall Street was entrusted with a huge chunk of the nation's cash, which it used to make its stock exchange yet more attractive to investors. Wall Street's financiers then turned those investment flows into additional projects, including extensions of the canal system, railroads, steamship lines, and the cotton...trades."[45]

The New York cause was aided immeasurably by President Andrew Jackson's opposition to the Second Bank of United States. Despite passage in both houses of the United States Congress, the charter for the Second Bank of the United States was vetoed by President Jackson in 1832 and government funds withdrawn in 1833. The Second Bank of the United States was eventually privatized in 1836, before going bankrupt.[46]

The tremendous influx of capital from the Erie Canal offering and other transportation fundings, combined with the closing of Wall Street's largest competitor, began a new era of finance. In the mid-19th century, American merchant banks modeled on the great houses of Rothschild and Baring in Europe were formed, taking advantage of the laxer rules for the creating of merchant banks as opposed to chartered state banks. Unlike state banks, merchant banks risked their own capital and did not require charters.

---

[44] Myers, 22
[45] Wright, 147
[46] Wright, 158

Some of the most famous names in American financial history entered the market at this time, including Morgan and Drexel and their competitors of Kuhn, Loeb, and Seligman. Foreign banks also began to enter American markets for themselves, basing local headquarters in New York to bypass local intermediaries. "The House of Baring-which bankrolled the Louisiana Purchase and always had an American on its board-employed Thomas Ward as its American agent, while the Rothschilds, who were ambivalent about America, posted August Belmont, Sr. to New York."[47]

Yet, the time was not a completely idyllic one either. Despite the surge in numbers of banks and trade in New York City, the American markets seemed in peril. New York unquestionably presided over national financial matters. However, it remained yet to be seen whether or not there would be anything left to preside over. The lapse in central banking (resulting from the nonrenewal of the Second BUS charter) created a more unstable economic and financial system, a system susceptible to major panics and depressions. The issuance of state bank notes to subsidize public land purchases (for transportation projects such as railroads and canals) rather than payment in specie, prompted Andrew Jackson to suspend acceptance of state notes as payment for the sales. This vote of no confidence in paper currency precipitated a specie run on the banks. "When the top heavy credit structure finally began to totter in 1837, it was in the commercial paper market that the first difficulties arose; cotton houses in New Orleans, and their correspondents in New York to which a disproportionate amount of credit had been extended, began to fail; specie began to flow towards England in alarming volume."[48] This credit crisis eventually militated into the securities markets, when American states first stopped selling bonds then defaulted on their existing loans. New

---

[47] Chernow, 5
[48] Myers, 30

York banks were hit tremendously by the defaults, because the sources of European capital that had fueled their whirlwind growth in the 1830s had simply dried up. "The United States' popularity as a safe haven for money, somewhat exaggerated prior to the Civil War, had sunk considerably, and it would take some extraordinary salesmanship to convince substantial foreign investors to continue investing as in the past."[49]

The continued default of loans might have spelled the end to the American financial system, except for the continued attractiveness of the market and the distinct change in how funding in the American system was performed. Many states did end up defaulting on their loans, with some remaining in default until today.

However, the default of state governments proved to be increasingly less important as the infrastructure and investment projects that had necessitated their borrowing began to be taken up by private firms. Rather than states taking up the burden of railroad, road, and industry building began to be replaced with joint stock companies that raised capital through bonds or stock placements. The degradation in state credit ratings was matched with a reciprocal rise in the credit rating of private corporations and partnerships.

All that was required was a catalyst and, in 1849, they received one in the news of the California gold strikes. Merchants began to expand their factories and exports to America and the means to transport goods began to be bid up higher. "The rails were the prime glamour issue in London; by 1853, 26 percent of all American rail bonds were in the hands of overseas investors, most of them English...By 1856 there was some $1.5 billion worth of American securities outstanding."[50]

Although the history of New York past the 1850s is immensely interesting, the

---

[49] Geisst, 43
[50] Sobel, 57

core period of financial center formation had passed by that time. Its competitor city, Philadelphia, had largely disappeared as a major financial center and New York firms began to take up the duty of financing the country's investment measures. There would continue to be large degrees of innovation and financial change after the 1850s, but from the perspective of financial center formation the story had already ended.

New York vs. Philadelphia

As the previous section implies, the major competition for financial center of the early America was between the two largest cities of the time, New York and Philadelphia. The dominance of New York over Philadelphia was neither immediate nor assured. It is important to remember that early 18th century New York had a smaller population, less trade, and less prestige than Philadelphia. As seat of the Continental Congress and thereafter home to the first two of America's central banks, Philadelphia was also home to America's first generation of financiers. "Early economic factors joined political ones in Philadelphia's behalf. The city at that time led the nation in both domestic and foreign trade; it was also the home of the few Americans with skill in banking methods, including Robert Morris, Nicholas Biddle, and Stephen Girard."[51] Philadelphia was the first American city to found an organized stock exchange for the trading of securities, primarily continental bonds. In light of these ancient prestiges, it is surprising that New York replaced Philadelphia by the 1830s. To analyze this phenomenon, I shall apply Kindleberger's theory regarding the formation of financial centers to gain a little more insight.

The first point to consider with both cities is the role of finance in commerce, particularly trade. In pre-industrial America, trade was among the most important of economic activities. As it was generally unable to produce finished goods for itself, America was forced to trade commodities until it could build up its own industrial strength. The major consumer of these commodities was Europe, transportable only by ocean going ship. The merchants who chartered those ships were among the first to

---

[51] Robbins, Sidney M. and Nestor E. Terleckyj. Money Metropolis: A Locational Study of Financial Activities in the New York Region. (Cambridge, MA. Harvard University Press.), 6

demand credit and payment services, in order to better facilitate the transfer of their goods. In terms of international commerce, New York almost immediately asserted its superiority over Philadelphia.

> "New York did possess very great intrinsic advantages; the excellence of her harbor facilities, and her strategic location at the mouth of the Hudson, convenient both to New England and to the new West, were factors with which Philadelphia could not compete. These superior attractions first made themselves felt in the sphere of foreign trade. As early as 1796, imports into Philadelphia had been exceeded by those into New York, and in the next year Philadelphia lost first place in exports."[52]

The simple fact of the matter was that compared with New York's tremendous natural harbor, Philadelphia was forced to settle with a shallow unnavigable river, the Delaware. Anecdotal evidence indicates that oceangoing ships were forced to hire experienced pilots from Philadelphia's port authority to deliver their loads to the city itself and then hire them back for the trip out. It follows that port space in Philadelphia was very expensive, discouraging international trade. Moreover, Philadelphia was eventually crippled in terms of internal trade as well. New York's completion of the Erie Canal was a major blow, as it cut off Philadelphia from drawing trade in the vast agricultural and farm resources of the West. Even its trade with the South dried up. "The lucky thing (for Philadelphia) was that early eighteenth century Maryland specialized in tobacco production. Due to the nature of the tobacco economy, with its heavy reliance on slaves and British capital investment, Baltimore did not develop until after the Revolution. It proved in the nineteenth century that, as a seaport, it was far superior to the Quaker City."[53] It is clear that as Philadelphia lost out on more and more trade, it subsequently lost out on more and more profitable methods with which to lend the capital of its bankers. As more profitable opportunities moved to New York, so to did the payments and deposits of investors.

---

[52] Myers, 4
[53] Wright, 15

The next criteria to investigate is the development of financial services with regards to transportation. Again, Philadelphia emerged with an early advantage, funding a myriad of transportation projects to open up the interior of Pennsylvania to trade and forge stronger trading ties to the South and Great Lakes region. However, there was never the same political and economic will driving the completion of the Philadelphia transportation system as there was in New York. Rampant competition with funding lotteries, where tickets were sold to fund both the investment project and a large cash prize, tended to allow canal offerings to get lost in the shuffle. It was only in 1823, when the Erie Canal was on the verge of completion that Philadelphia builders and financiers were driven from their lethargy.

> "Despite Chestnut Street's innovative financing (such as the invention of convertible securities), Pennsylvania could not catch New York's Grand Canal...All that money served Pennsylvania well. But the network of improvements did not establish inexpensive, convenient connections between the state's three watersheds and Lake Erie. Philly got its flour, wood, coal, marble, and iron on the cheap, but much of the trade of the central and western parts of the state ended up with merchants in Baltimore and New Orleans. And via its magnificent Grand Canal, Manhattan economically drained the entire Great Lakes basin. The liquid wealth of the nation therefore poured into the financial institutions of Wall Street, not Chestnut Street."[54]

The building of the canal had another tremendous benefit for New York. The floating of the Erie Canal bonds sparked European interest in New York markets, especially in transportation issues. The influx of European capital flow allowed New York to upgrade its exchanges, and divert even more capital from Philadelphia.

Industrial finance closely paralleled the development of trade. In an era of relatively slow transportation, it became increasingly cost effective to locate manufacturing operations near to transportation centers. New York State's position around New York City made it uniquely suited to producing goods to be shipped either out of the country or other areas in the United States. The same advantages that made New York a desirable trading center also attracted increasing amounts of factories and

---

[54] Wright 129

other industrial concerns. Philadelphia, on the other hand, was largely unable to capitalize on its meager trading and the rest of the Pennsylvania suffered for it. "By 1840, the manufacturing capital of New York had grown to 55 millions, nearly one fifth of the total for the country, while Massachusetts, the nearest rival had 42 millions and Pennsylvania had only 31 millions."[55] This need for capital was amply filled by Manhattan financial institutions, who drew on the deposits of its increasingly enriched workers and entrepreneurs to lend even more out in the form of commercial notes and short term collateral loans. This boon vaulted New York quickly ahead of Philadelphia as a financial power center.

The presence and development of insurance poses yet another criteria for the formation of financial centers. Insurance is an ancillary financial product that tends to be passed over, compared to relatively more glamorous products like commercial and investment banking. However, insurance is the staple of trade and business operations, as it allows businessmen to take acceptable risks to gain profit that they might not normally due to normal human risk aversion. What is usually not realized is that the insurance company, fundamentally, is an investment vehicle designed to take the premiums of its policy holders and reinvest them to generate profits. Although restricted primarily to highly secure assets such as Federal or state bonds, insurance companies constituted an important market force in early American finance. "In 1827, the capital of the insurance companies of the state amounted to 16 millions. By 1860, the total capital of insurance companies of all kinds doing business in New York state was about 75 millions, a sum slightly above the capital of all the banks in New York City at that time."[56] Philadelphia firms were the first to offer life, fire, and marine insurance and were jealously protected.

[55] Myers, 7
[56] Myers, 41

The decline of Philadelphia as a port city doomed its marine insurance firms as the scale of shipping declined but state legislation prevented inroads in the former two. In an act of protectionism, Pennsylvania imposed taxes on businesses written in Pennsylvania by out of state firms of over 20 percent. This reduced competition for firms domiciled in Pennsylvania, but eventually produced inefficient Philadelphia firms that could not compete with more capably governed and innovative New York insurance companies. "The key problem was that the Pennsylvania legislature allowed life insurers to keep their liabilities secret and allowed them to use ham auditors. Market participants, therefore, often believed they had a better understanding of each company's financial situation than they actually did."[57] An insurance company that has lost the faith of its policyholders will fail without a doubt, and will taint the industry as a whole. Such was the case of Philadelphia where the decline in local insurance firms was complemented by the entry of New York firms.

The final two Kindleberger criteria, the commercial money markets and capital markets were not terribly differentiated in the early days of American finance. Philadelphia was the first city in America to develop a formal stock exchange where the primary traded issue was government bonds. The creation of the First Bank of the United States and the Bank of New York allowed for the first issuance of equity on the exchange. It was far advanced to anything offered by New York City, who had an informal system where buyers and sellers would meet and haggle over prices. Recognizing the inadequacy of the system especially with regards to attracting precious European capital, New York bankers copied the Philadelphia exchange and re-branded it as the New York Stock and Exchange in 1817. Despite its head start, the Philadelphia

[57] Wright, 91

Stock Exchange soon fell behind its younger counterpart as the New York Stock and Exchange began trading not only government and private bonds, but the equity issuances of dozens of high growth companies. The real coup started with the successful flotation of Erie Canal bonds, which were snapped up as soon as their profitability was determined. "As a result, the transportation companies became the first growth securities of the early capital markets, which otherwise still specialized in bank stocks, insurance companies, and bonds of the federal government and municipalities."[58] The creation of an organized exchange offering the equity of high growth companies catered to a specific market niche craved by European investors. The end of the Napoleonic wars found European capital looking for quickly growing markets to turn a profit in. The New York exchanges provided that niche and grew in prestige and volume as a result.

Unsurprisingly, New York is a nearly perfect example of the Kindleberger theory. Despite a later founding and inferior initial development in the financial industry, the core advantages New York possessed in trade, industrial development, and transportation lent it an incomparable competitive position with regards to financial center development.

It is not sufficient to stop there. There are still three additional factors to input into the analysis of New York as a financial center. It is distinctly possible that the Kindleberger factors were sufficiently powerful to overwhelm the non-Kindleberger factors. However, it is imperative that New York's suitability for the three factors of competition, innovation, and public investment be carefully analyzed if only to understand the relative strength of the Kindleberger factors against the non-Kindleberger factors and vice versa.

[58] Geisst, 30

The first factor is competition in the market. New York's financial environment was simply far more competitive than that of Philadelphia. The biggest difference can be seen through a comparison of the insurance environments in the two states. The Pennsylvania state legislature erected anti-competitive legislation in order to protect state insurance companies. Measures included the imposition of taxes on premiums for out of state insurance companies. Moreover, numerous financial loopholes were enacted to give Philadelphia insurers advantages in local markets. "The key problem was that the Pennsylvania legislature allowed life insurers to keep their liabilities secret and allowed them to use ham auditors."[59] The rise in cost of business for out of state insurers prevented them from entering the market. New York, by contrast, did not erect protectionist legislature, placing local insurers in much more Darwinian markets. The same Darwinian markets forced weak insurers out and compelled stronger insurers to cut costs and act more efficiently. As there were no cost cutting incentives resembling that in Pennsylvania, Philadelphia firms eventually became significantly less efficient than New York firms and were ultimately unable to compete on a larger market. The story of competition indicates that New York had a smaller hand in the regulation of financial competition which resulted in stronger firms and an overall stronger financial sector.

The second factor to analyze is the role of innovation and/or execution in the rise of New York as a financial center. Philadelphia was the first financial center of the United States and had more than its fair share of banking talent. More importantly, it was an early financial innovator, with numerous hallmark developments to its credit. One of the most important financial innovations was the introduction of life, marine, and fire insurance as well as insurance related products such as annuities to North America.

---

[59] Wright, 91

Formerly, insurance had been written exclusively out of England. However, by the war of 1812, the Pennsylvania Company for Insurance on Lives and Granting Annuities had been incorporated to be followed by numerous other Philadelphia based insurance firms. Within the realm of insurance, Philadelphia firms continued to innovate into the middle of the century. The Pennsylvania Company "leveraged its twenty-five years of hard-earned experience, however, by updating its tables 'based upon rates of interest conformable to their experience in the improvement of funds, and upon rates of mortality observed among actual insurers and annuitants in Europe and America.'"[60] The use of mortality rates to determine premiums is the centerpiece of actuarial analysis, forming the basis of the modern life insurance industry. Moreover, Philadelphia pioneered consumer finance in early North America, forming its first thrift in 1816 (The Philadelphia Savings Funds Society) and its first mortgage lending institution in 1831 (The Oxford Provident Building Association).[61] Both institutions were aimed at lower to middle class consumers, a departure from the aristocratic private banking prevalent in Europe through firms like Baring or the House of Rothschild. Rather, they provided low risk, high return, illiquid investment opportunities for less landed individuals. Depositors included "mechanics, tradesmen, laborers, servants,…and other members of the 'frugal poor.'"[62] This level of innovative activity ought to have conferred onto Philadelphia a large advantage, particularly with regards to the eventual downstream effects of organized financial activity. New York lagged behind in every category above, forming its first insurance companies, thrifts, and mortgage houses several years after their start in Philadelphia.

However, as theory established above, the initial innovation is only a single

[60] Wright, 90
[61] Wright, 112-114
[62] Wright 114

component of successful economic development. Without successful transformation of innovation into a workable business idea, innovation is not a positive factor in development. Rather, it is essential that we not only look at who innovated first, but who executed the innovations better. As established above, imitation is also a viable force in economic development.

Suffice to say, New York was tremendously successful at imitation of original innovations that Philadelphia started. In insurance, Philadelphia's companies were quickly outstripped by the size and scope of New York companies. Life insurance had a better market in New York, particularly because of supportive demographic trends and a widening population. Marine insurance benefited from the vast amounts of trade that ran through the city, from the Atlantic port and later the Erie Canal. "The core problem was that volume of trade was simply too small to support so much capital. By 1840, New York insurers held scale advantages that Philadelphia companies could only dream of."[63] Moreover, New York began to innovate in insurance as well, matching Philadelphia's advances with newer and more superior product offerings. "To make it easier for Philadelphia shippers to insure in New York without the aid of a Philadelphia based agent, Manhattan insurers innovated, offering to insure ships for an entire year rather than particular voyages."[64] In thrifts and mortgage houses, the same demographic factors militated against Philadelphia as in insurance. Even though highly profitable organizations and ideas were discovered by financial innovators in Pennsylvania, the advantage swung immediately once New York implemented the ideas effectively. It is arguable that they even implemented them more effectively than Philadelphia, because New York expanded to take Philly customers itself. In this case, imitation of innovations

[63] Wright, 102
[64] Wright, 102

is clearly a strong force for financial development and one that swung heavily in New York's favor.

The final aspect worth investigation is that of public investment. Strangely in New York, it is difficult to see where government investment in infrastructure had a particular role to play. The narrative does not describe government spending to any great degree in infrastructure or human capital investment. In order to see government infrastructure effects, one must look to the major infrastructure projects authorized by the state of New York, chief among them the Erie Canal in 1817. Although the financially most interesting aspect about the Erie Canal was its eventual creation of the New York bond market, it is not widely known that New York State put up the initial capital for the canal, relying on tolls to pay it back eventually. That was standard practice in early America. "Although they stimulated the public imagination, canals were extremely capital-intensive and bond offerings alone would not pay their development costs. As a result, many had to be funded with state monies as well because they were risky ventures as well as new concepts in the United States."[65] What separated the Erie Canal from other canal offerings was the tremendous commercial success it spawned. Not only did it provide a large market for bonds in New York City, it opened up previously sparsely inhabited upstate New York to convenient settlement. It contributed to the rise of cities such as Buffalo and Utica, expanding the market for New York City goods and services. It gave incentive for firms to construct transportation offshoots to the Erie Canal in order to open even more areas to habitation. Finally, it allowed transport of agricultural goods from upstate and the Great Lake Regions to New York for export to other parts of the United States and eventually international markets. Government support for the Erie

[65] Geisst, 29

Canal vastly increased incentives for trade and industrial development, with positive downstream effects on the financial firms those companies relied upon for capital.

It is important to realize that Pennsylvania also had extensive investments in canals and other infrastructure improvements, even before New York's construction on the Erie. "In 1791, its legislature incorporated two canal companies, one charged with connecting the Schuylkill and Susquehanna rivers, the other with linking the Delaware to the upper Schuylkill. Both companies met with unanticipated engineering difficulties."[66] In fact, the impetus to finish canals remained weak until New York had nearly finished the Erie. The first canal to be finished in Pennsylvania was not started until 1830, five years after the finish of the Erie.[67] By that time, the Erie had already taken the majority of trade from the regions Philadelphia companies sought to enter. "The network of improvements did not establish inexpensive convenient connections between the states three major watersheds and Lake Erie. Philly go its flour, wood, coal, marble and iron on the cheap, but much of the trade of the central and western parts of the state ended up with merchants in Baltimore and New Orleans."[68] The result was a modest increase in trade for Philadelphia. The central story that emerges from this story is the effectiveness of public infrastructure investment. Both cities and their respective states invested heavily in canal systems and other transportation infrastructures. The only real difference is the effectiveness of the deployed capital. New York's investment essentially opened up a completely new market for the goods and services of New York firms, with increased funding opportunities for financial firms in that city. The reciprocally modest effects of Philadelphia's public infrastructure investments relatively crippled the financial industry in the city.

---

[66] Wright, 125
[67] Wright, 130
[68] Wright, 127-129

In the case of New York versus Philadelphia, the balance of the non-Kindleberger factors also swings heavily towards New York City. With the same conclusions drawn between the Kindleberger and non-Kindleberger criteria, it is easy to see that New York's ascension to the role of financial center is not only unsurprising, but to be expected.

San Francisco

San Francisco poses a very different sort of analysis than New York's. According to the United States Census Bureau, San Francisco is the fourteenth largest city in the United States, behind California population centers like San Jose, San Diego, and Los Angeles. The San Francisco Bay possesses an excellent natural harbor, but the port itself was outdated by 1920 and still takes in very little commercial trading each year. The San Francisco Bay Area has not been the industrial center of California since the 1910s, seemingly depriving San Francisco of some of the necessary raw components for the construction of a financial center.

However, San Francisco, until recently, was the home for two of the largest commercial banks in the world, Wells Fargo and Bank of America. Barclays Global Investors, one of the largest investment management firms in the world, headquarters North American operations out of San Francisco. And lest one forget, almost every major investment bank in the world headquarters or maintains significant operations in the city. These two portrayals are highly incongruous, yet allow us a measure of understanding for the unlikely nature of San Francisco as a financial center.

The relatively low levels of economic activity prevalent in San Francisco, and California as a whole, before 1849 allows one to treat the discovery of gold at Sutter's Mill in 1849 as an exogenous economic event. The effects of the gold rush can be analyzed demographically. "..By January 1, 1850, the population reached 107,057, according to one estimate, as compared with the estimated twenty thousand before the discovery of gold. By the end of the decade, in spite of heavy outward migration, almost

380,000 persons were living in the state (primarily in Northern California)."[69] A boost in population subsequently caused a significant positive shift in the demand for goods and services. This change in demand is interesting on its own merits, however the more important effect for the purpose of this thesis is how a financial system arose to address this 'economy in a vacuum.'

It is important to remember that pre-1846, California really had no financial system to speak of. As ranching and whaling were the two primary sources of income in pre-gold rush California, trade relied on trade in goods rather than currency. "The cattle furnished hides and tallow, which, together with furs, were the most important articles of trade…The *rancheros* frequently took their own produce to the wharves, where they bargained with the officers of visiting ships."[70] Pelts and other animal products were actually accepted by Midwestern Banks in exchange for cash, but barring this exchange California relied on the relatively primitive bilateral barter method. While sufficient for dealing with the largely self sufficient ranches of early California history, the pelt trading method was insufficient for the more complex economy that resulted.

California began to require not only the agricultural and animal products of local ranches, but also clothing, mining equipment, and luxury goods that could be more efficiently produced elsewhere. As the state moved from autarky to an open economy, a more advanced medium of trade was necessary for continued interaction with the outside world. The gold rush provided the raw materials for that system. Since an official United States Mint was not established in San Francisco until 1854,[71] the early California

[69] Winther, Oscar Osburn. Express and Stagecoach Days in California: From the Gold Rush to the Civil War. (Stanford University. Stanford University Press, 1936.), 9
[70] Winther, 5
[71] Doti, Lynne P. and Larry Schweikart. "From Hard Money to Branch Banking: California Banking in the Gold-Rush Economy." A Golden State. Ed. James Rawls and Richard Orsi. Berkeley. (University of California Press, 1999.), 212

economy initially took on the appearance of a metal based currency economy, with gold nuggets and dust substituting for an actual notes. However, the limitations of the metallic currency system were evident, especially with regards to the differing qualities of various samples of gold dust and nuggets. It was from these roots that banking in California began to develop.

The transformation of gold dust into currency was tackled first by gold dealers, who issued notes to miners, providing them with gold backed notes.

> "The early gold dealers had provided drafts or exchange for gold, giving the prospectors a liquid and divisible medium for a less liquid and less divisible metal or for notes from other regions that were less well known, and therefore, less reliable...This operation allowed merchants and miners to pay local dealers in gold, and get drafts that could be more cheaply and easily transported to pay suppliers or family."[72]

These gold dealers would subsequently transport their purchased gold dust to the East Coast and resell at profit. This mass dealing in gold drove many dealers to purchase safes and, in turn, act like banks in taking on deposits and exchange drafts.

The importance of secure and rapid transportation of gold products from West to East provided a second root from which California bankers would spring. Contrary to Kindleberger's expectation that financial institutions would help fund transportation companies and that financial centers would result from the economic activity inherent in that act, San Francisco's model seemed to reverse the process. Stage coach and express companies were on the scene before significant banking (or even financial development) during the gold rush era. The largest shipper of gold in the 1850s, Adams and Co., and future California financial behemoth, Wells Fargo, both started as stage express companies before plunging into banking operations such as loans.

"Wells Fargo, like so many other freighting and depot businesses, entered the field of banking services when it issued certificates of exchange, first appearing on July 13, 1852. Being well-versed in the difficulties and dangers of transportation, the company took precautions to ensure reliable transfers of funds

[72] Doti and Schweikart (Ed. Rawls), 214

with such bills, sending three copies between remitters and receivers in the East and West."[73]

The final source of banking talent in California was rich merchants, who lent credit to preferred customers. William Ralston's failed Bank of California and Amadeo Peter Giannini's Bank of Italy (and later Bank of America) were founded from merchant backgrounds, providing goods to cities and customers before expanding into loans and deposits.

It is important to realize that banking during the gold-rush period and immediately afterwards was almost exclusively a Northern California affair, simply due to proximity to the gold. Los Angeles's development is considerably later in California history. The United State census confirms this fact as the population of Los Angeles county in 1900 reached approximately 180,000 people while that of San Francisco County was over 340,000.[74] The challenge to San Francisco's financial supremacy would come in the early 20th century.

Despite the quick advances in financial sophistication driven by the gold rush era, the California economy was comparatively unstable. The reliance on the gold economy began to show its weaknesses. The original method of gold mining in California was placer mining, relying on mountain streams and swirling out gold particles using a trough or pan. However, as easily reachable pockets of gold became scarcer and more capital intensive equipment was required to reach pockets of gold, unemployment began to rise. Simultaneously, San Francisco banks were guilty of large scale speculation in Eastern railroad bubbles. William Tecumseh Sherman, at the time a San Francisco banker, was forewarned of banking troubles when he received notice that one of the largest San

[73] Doti, Lynne P. and Larry Schweikart. Banking in the American West: From Gold Rush to Deregulation. (Norman, OK and London. University of Oklahoma Press, 1991), 28
[74] United States Census: California: Population of Counties by Decennial Census: 1900 to 1990. <http://www.census.gov/population/cencounts/ca190090.txt>

Francisco banks, Page & Bacon, "was in trouble, having committed itself much too heavily in the Ohio and Mississippi Railroad and having to borrow money to pay for materials and to make large advances to contractors."[75] These events conspired to cause a widescale run on San Francisco banks, many of whom failed after being unable to pay off their depositors. The only bank to survive from the period was Wells Fargo.

The failure of the gold market and subsequent evaporation of investment capital on the banks might have stymied the economic development of California had it not been almost immediately followed by the discovery of the silver ore Comstock Lode in Virginia City, Nevada in 1859. "Virginia City and other Nevada towns soon experienced the same problems with a circulating medium as had Colorado and California: there was plenty of the valuable stuff but it was inconvenient to use, hard to carry, difficult to measure for exact quality, and its very abundance encouraged rising prices."[76] In a vacuum, a similar process that developed San Francisco might have prevailed. However, as there were large and prosperous banks based comparatively nearby in San Francisco, the Comstock Lode served as an investment opportunity. The silver boom allowed the formation of the first California banking power, the Bank of California based in San Francisco. "Silver mining offered tantalizing opportunities for wealth. The silver veins dove deep into the mountains, and became accessible only by digging expensive shafts, which required extensive capital. Silver miners might easily discover a vein of the blackened metal near the surface, but the pursuit of silver veins required deep mines with reinforced tunnels, ore cars and rails, and pumps and blowers to keep the miners alive, as well as elaborate mills and separators to process the ore."[77]

The Bank of California's (and other banks') extensive investments in silver mines

---

[75] Loomis, Noel. Wells Fargo: An Illustrated History. (New York. Crown Publishers, 1968.), 74
[76] Doti and Schweikart, 14
[77] Doti and Schweikart (Ed. Rawls), 222

and ancillary businesses created an economic boom, setting the stage for the growth of California industry. In the period from 1860 to 1880, the U.S. Census of Manufactures reported a growth in the number of non-gold related manufacturing establishments in California from 1,442 to 5,885 and a growth in value of output from 23,535, 895 dollars to 116,218,973 dollars, aiding in the development of industrial and commercial finance.[78] Even as San Francisco banks reaped the benefits from significant ownership in the silver mines of Nevada, they shunted the earnings into loans for local manufacturers of goods. As it turned out, silver production was a highly risky business and the Bank of California was unable to pay off its depositors when the after effects of the Panic of 1873 sparked bank runs that eventually crippled the bank.

The brutally Darwinian California economy that weeded out financially deficient banks spawned considerable levels of innovation. Before the run on the Bank of California, William Ralston introduced one of the most important innovations in American banking to San Francisco, branch banking. The Bank of California was the first California bank to establish a wholly owned subsidiary bank in another state, allowing the efficient shifting of resources between branches. This innovation would be used to considerable effect by latter day California bankers, specifically A.P. Giannini of the Bank of (Italy) America.

From the 1870s to the beginning of the twentieth century, San Francisco was the undisputed financial and economic center of California. However, the geographical positioning of San Francisco limited population and industrial expansion opportunities considerably. On the other hand, Los Angeles was among the fastest growing counties in the state with its population tripling in the period from 1900 to 1910 and becoming the

---

[78] St. Clair, David. "The Gold Rush and the Beginnings of California Industry." A Golden State. Ed. James Rawls and Richard Orsi. (Berkeley. University of California Press, 1999.), 192

most populous in the state. Irrigation of the semi-arid inland enabled Los Angeles to overcome its population disadvantage quickly. The extension of its borders to the sea and the construction of an artificial harbor at the San Pedro anchorage transformed Los Angeles into a bustling port city, with considerable industrial development accompanying it. "By 1913, the harbor, far from complete, was handling nearly three million tons of ocean borne commerce, and Owens River water coursed through Los Angeles mains. Building permits were ahead of San Francisco's. Bank deposits and loans had doubled in five years."[79] The rapid industrial expansion spawned complimentary financial institutions including banking powers, such as Security Trust and Savings, which were comparable to even the largest San Francisco banks.

Economic determinism might have implied at the time that Los Angeles was on the ascendance and San Francisco on the decline as a financial center. However, the founding of the Bank of Italy in San Francisco shifted banking paradigms again. The Bank of Italy, later changed to the Bank of America, focused not on making loans to large corporate concerns but to individuals. A previously underserved market, B of I focused on small loans and deposits and aggressively expanded the reach of the business by use of branch banking tactics.

In a sense, the financial supremacy of San Francisco through the middle of the 20th century is a direct tribute to the financial supremacy of the Bank of America. "In the late 1930s, the Bank of America had approximately five hundred branches, California Bank of Los Angeles had fifty-four, Security-National Bank of Los Angeles had fifty-two, and American Trust Company of San Francisco had twenty eight."[80] The impetus in

---

[79] James, Bessie R. and Marquis James. Biography of a Bank: The Story of Bank ofAmerica N.T. & S.A. (New York. Harper & Brothers, 1954.), 58
[80] Fradkin, Philip. Stagecoach: Wells Fargo and the American West. (New York. Simon and Schuster, 2002.), 209

California banking was towards more flexible deployment of capital and assets and Bank of America led its rivals in almost everyway.

However, it would be folly to disregard the effect of a dominating company and its effect on competition. Wells Fargo, partially in response to the rapid growth of Bank of America, merged first with Nevada National Bank in San Francisco, then Union Trust in 1924. Wells Fargo enhanced its flexibility in a different manner than branch banking, calling on its express roots to send and receive rapid shipments of cash from its disparate branches. By 1960, it had merged with American Trust Company and became the eleventh largest bank in the country. It was from that position of financial strength that Wells Fargo continued its acquisition spree to purchase Crocker National Bank, First Interstate of Los Angeles, and Norwest Corporation. By the middle of the 1990s, Wells Fargo had shifted a paradigm beyond even that of Bank of America. It had graduated from a bank confined primarily to California, to a technology driven national banking and mortgage finance powerhouse with branches in all 50 states and the first online banking services in the world. "From horses through stagecoaches, trains, trucks, and airplanes Wells Fargo had connected people to goods and money. It was no different with the Internet, the most recent form of communication."[81]

[81] Fradkin, 217

San Francisco vs. Los Angeles

In contrast to the New York/Philadelphia example, the competition between Los Angeles and San Francisco was not an ancient rivalry. Instead, the competition between Northern and Southern California was short and fierce, fueled by the early twentieth century population boom of Los Angeles County due to advanced irrigation methods and the opening of the Panama Canal.

If one takes the lessons of New York/Philadelphia to heart, one might draw the conclusion that Los Angeles, with its rapidly growing and heavily industrialized economy would eventually wrest financial supremacy from San Francisco. New York's ascendance as a port city and industrial center managed to trump Philadelphia's older advantages of banking talent and larger population. It is not unreasonable to assume the same would happen in California, with San Francisco eventually being eclipsed by its expanding southern neighbor. That San Francisco is still the dominant financial center of California would imply that the situation is more complex that originally thought. Again, the application of Kindleberger's theory is necessary.

The first aspect that needs investigation is the effect on finance on commerce and trade. On the surface, Los Angeles seems to have a clear advantage. The proximity of Los Angeles to the Panama Canal shows a clear advantage with regards to any trade from the Eastern United States and South America. Sheer tonnage is skewed towards Southern California as well. In fact, the Port Authority of Los Angeles surpassed San Francisco as the busiest port on the west Coast in the 1920s in tonnage. That superiority in tonnage has continued uninterrupted until the present day. When analyzing the Port of Los Angeles and the Port of Oakland (which has supplanted the Port of San Francisco as the major Bay Area port of entry), statistics from 2004 show Los Angeles with a total imports and exports of 3.94 million Twenty-foot Equivalent Units (TEUs), not including the Port of Long Beach[82], while Oakland only received 2 million TEUs[83]. Analysis of financial activities speaks to another story, however. The primary means of transaction in import/export activity is the banker's acceptance, which is a short term credit instrument issued by a non-financial firm against a bank consisting a bill of exchange draft and payable at maturity. The primacy of international trade in Los Angeles for the past eighty years might imply that southern financial institutions would have gained considerably against northern financial institutions, issuing more bankers acceptances over time. However, when looking at banker's acceptances outstanding by city of accepting bank, one notes a surprising conclusion. Taking a representative year of 1954, one notes that San Francisco accounts for 149.2 million dollars worth of bankers acceptances, accounting for 17.1 percent of the total issued in the United States. Los Angeles accounts for a negligible amount.[84]

A similarly surprising view is seen when investigating the role of personal finance. Southern California's massive population advantages ought to have spurred significant development of the local commercial banking. However, the lack of any nationally powerful Los Angeles banking concerns in the recent past seem to give lie to that statement. As it happened, in the 1910s, there were numerous regionally strong Los Angeles banks. "In 1913, Mr. Sartori's bank, then called the Security Trust and Savings, had assets of $48,000,000, or double those of Los Angeles's second largest bank, the First National. These two banks, and eight others, did three quarters of the city's banking

[82] Port of Los Angeles: 2004 Statistics. April 11th, 2006 <http://www.portoflosangeles.org/factsfigures_Annual_2004.htm>
[83] Port of Oakland: Current Container Statistics. April 11th, 2006 <http://www.portofoakland.com/maritime/facts_cargo.asp>
[84] Robbins and Terleckyj, 17

business. The remainder was divided among twenty-eight smaller banks, counting the Bank of Italy three branches as one bank."[85] The rate of population growth in Los Angeles were consistently the highest of any large city in America from the period of 1880-1910. In fact, the growth was large enough that Los Angeles pioneered the act of real estate subdivision, dividing land into pieces for eventual occupancy. Companies sprang up in order to take advantage of the rising population, one of which was the Los Angeles Suburban Homes Company. "Around 1909 this syndicate bought the southern San Fernando Valley, divided most of the 47500 acres into small farms, and platted the rest as the towns of Van Nuys, Marion, and Owensmouth."[86] The rapid expansion of real estate sales subsequently spawned a huge rise in the number of automobiles on the road. "It (the car) supplemented the electric train, as auto registration in Los Angeles County, less than 20,000 in 1910, exceeded 100,000 in 1920, and approached 800,000 a decade later."[87]

The development of industry in southern California also points to a significant Los Angeles financial advantage. In 1890, San Francisco firms produced $135.6 million in manufactured goods while Los Angeles produced less than $10 million. Nineteen years later, Los Angeles had grown to $68.6 million while San Francisco had fallen to $133 million. By 1929, Los Angeles produced over $1.3 billion in goods, finally surpassing the entire San Francisco Bay Area by $153.7 million. By 1930,

> "Los Angeles had even markedly enlarged its capital goods sector. Although iron and steel production lagged, the electronics, chemical, and aviation industries all found condition favorable for development. Industrialization-which, though it developed principally as a result of population growth and urban expansion, provided employment and sustained prosperity in the metropolis."[88]

The only area where San Francisco seemed to have any sort of advantage was that

[85] James and James, 62
[86] Fogelson, Robert. The Fragmented Metropolis: Los Angeles, 1850-1930. (Cambridge, MA. Harvard University Press, 1967.), 105
[87] Fogelson, 92
[88] Fogelson, 132

of the stock exchange. From its founding in 1862 to its eventual merger with the Los Angeles Stock Exchange in the 1950s, the San Francisco Stock and Exchange maintained a clear dominance in volume and market value of shares traded in Western Exchanges. However, it is important to note that the stock exchange was never as important to San Francisco's financial development as it was to New York City's. A comparison of the San Francisco exchange's volume and the New York Stock Exchanges volume in 1928 (a period where both exchanges were relatively high states of development) is informative. The San Francisco Exchange claims a volume of 31 million shares.[89] New York, on the other hand, cites a volume of nearly 1 billion.[90] The relative size of the exchanges speak to the relative importance of financial markets to each city. New York was a much more market-based financial system, with hot railroad issues fueling growth in equities. San Francisco stems from a much more bank-based heritage, as many of the financial transactions were based on mining then subsequently agriculture all of whom had collateral to stake. The stock exchange is almost a non issue.

In three of these four aspects, Southern California had marked advantages, yet eventually San Francisco banks came to dominate the Western marketplace. The underlying advantage of San Francisco (and financial centerdom as a whole) must lie with something more than simple proximity to resources or businesses. To address these inconsistencies, it is imperative to analyze the non-Kindleberger factors and see if San Francisco's position as a financial center can

First, it is important to investigate the competitive atmospheres of both cities.

---

[89] Arthur, Lindsay. "San Francisco's Big Board Grew Out Of A Basement Meeting." San Francisco Call Bulletin. Oct. 10, 1955.

[90] NYSE Factbook: Annual Reported Volume, Turnover Rate, Reported Trades (mils. of shares) (1900-2003) <http://www.nysedata.com/nysedata/asp/factbook/viewer_edition.asp?mode=table&key=2206&category=4>

Luckily, the bank-based financial development of California makes for more traditional comparative analytics. The primary difference between the San Francisco and Los Angeles competitive environments lay with northern California's early adoption of branch banking, spearheaded by A.P. Giovanni's Bank of Italy. Other California banks quickly followed suit. This alone created a significant competitive advantage with regards to the assembling and deployment of capital. However, Superintendent Charles Stern of the California State Banking Commission opposed branch banking, attempting to stifle this competitive practice. "Among other things, Stern charged that the loose coordination between 'this mosaic of many units' had resulted in a number of unsound banking practices."[91] Given the stronger financial development and competitive positions of northern California banks, it is difficult to interpret this movements as anything but an act of protectionism for southern California banking concerns. Stern's statements agree with this conclusion, slowing issuances of branch banking permits to a crawl. To get around this, San Francisco banks began to found bank holding companies in order to purchase and operate banks in various regions without being subject to banking and permit regulation. An example can be found in A.P. Giannini's Stockholders Auxiliary Corporation. "In 1919 the Stockholders Auxiliary Corporation, of which A.P. Giannini was president, bought six country banks in four towns. Four of the acquisitions were national banks. Two were state banks which Giannini immediately removed from Stern's jurisdiction by merging them with two of the newly purchased national banks."[92] This acquisition tactic enabled San Francisco banks to begin to enter markets outside of the San Francisco Bay Area, into the Central Valley and other agricultural areas. When Stern finally stepped down and regulatory restrictions on

[91] Bonadio, Felice A. A.P. Giannini: Banker of America. (Berkeley. University of California Press, 1994.), 68

[92] James and James, 100

branch banking were loosened, Southern California banks were consistently outcompeted in branch growth and acquisitions. The early formation of a competitive banking market in Northern California translated into a sustained competitive advantage as firms began to engage in statewide and then interstate banking. San Francisco ends with a clear advantage with regards to competitive structure.

Second, it is necessary to investigate innovation's effect on financial development. San Francisco, by virtue of its earlier founding and the role it played in the development of California gold mines, fostered the majority of financial innovation in the Western United States. In contrast to the innovation competition between Chicago and St. Louis, Los Angeles banks and financial firms did not initiate considerable competing innovation. Through the rival period between the two cities, San Francisco supplied the vast majority of new financial methods, which were often subsequently adopted by Los Angeles firms. The situation, in fact, resembles the earlier example of New York and Philadelphia, where the demographically advantaged city eventually assumed financial supremacy despite Philadelphia's considerable lead in innovations. It was, in fact, noted earlier that it was strange that San Francisco maintaining its financial center position because of the considerable demographic advantages of Los Angeles. To explain the discrepancy between New York and San Francisco, we must again analyze the role of imitation in innovation. New York stands as a successful example of imitation. If Los Angeles was not as successful, then it would provide a clear distinction between the results of the two different scenarios.

San Francisco's financial innovation was considerable through the rival period with Los Angeles. The San Francisco-based Bank of Italy was the first to establish significant banking operations in agricultural areas, analyzing the risks more accurately than its predecessors and passing the savings onto borrowers.

> "Customers who were paying on loans from the bank's previous owners were astonished to learn that their interest had been reduced to the 7 percent his Bank (Bank of Italy) was then charging...In addition to making banking more competitive locally by forcing his opposition to meet Bank of Italy's interest rates, Giannini also won praise in the rural press for his policy of financing strictly local development."[93]

A single company's innovation (and subsequent carry through of that innovation) fueled much of Northern California's financial development as the Bank of Italy was responsible for significant advances in all areas of banking practice.

Amadeo P. Giannini's Bank of Italy and his myriad of holding companies formed the first municipal bond underwriting business on the West Coast (James and James, pg. 103) and pioneered modern film finance. "Besides advancing loans to film producers Attilio (Giannini, head of Bank of America, Los Angeles) introduced an innovation to banking that proved to be a boon to the film industry. To enable moviemakers to maintain a steady production of films, he adopted the practice of accepting the negative of a complete film as collateral for a loan to begin production on another."[94] Perhaps even more innovative were the methods which the Bank of Italy adopted towards personal finance, which included a sophisticated system for the identification of good credit risks in underserved market areas.

> "More than just a promotional arm of the bank, the Italian department (or rather Italian market research department) was a sophisticated, highly disciplined, and well organized system of private financial information. In San Francisco, the department maintain an 'Italian index file' consisting of three by five cards on which were typed the names and addresses of every Italian living in California on a town by town and county by county basis...Out of this flow of information the Italian Department put together, long before centralized credit files became fashionable, 'an ingenious and confidential intelligence system of its own making' to assist Bank of Italy officials in determining who among the state's population of Italians was a good credit risk."[95]

But perhaps the most important financial innovation to come out of Northern California was branch banking. Although used first in the American South, it can be

---

[93] Bonadio, 62-63
[94] Bonadio, 112-113
[95] Bonadio, 77

considered a local innovation particularly because it had not been seen west of the Mississippi until used by San Francisco bankers. First introduced by Ralston's First Bank of California, it was taken to its furthest extent by A.P. Giannini's rapid opening and acquisition of banks across California.[96] Northern California banks, faced with significant encroachments to their market share, responded quickly by adopting many of the same tactics as well as introducing their own innovations, such as Wells Fargo's money transport advantage and focus on online banking. Imitation and innovation occurred hand in hand in Northern California.

The same imitation process did not occur in southern California. Instead of adopting branch banking practices, Los Angeles bankers petitioned to the state government to prevent future branch operations, a request that was granted by Superintendent Stern.[97] It was not until the 1920s that even the largest Los Angeles bankers adopted branch tactics. "Henry Robinson's Los Angeles Trust and Savings, for example, increased the number of its branch offices from three in 1920 to thirteen one year later."[98] By comparison, the dominant Northern California Bank, the Bank of Italy, had forty-one branches. Another example relative lack of innovation can be found in the way which they did not enter Hollywood finance even after the Bank of America proved it was a highly profitable business. In fact there was considerable pressure for the Bank of America to abandon their aggressive movie lending practices by local bankers and state regulators.[99] With these examples in mind, the differences between the New York/Philadelphia and San Francisco/Los Angeles stories begin to emerge. Unlike the New York, Los Angeles did not effectively imitate San Francisco. Rather, it sought to

[96] Bonadio, 85
[97] James and James, 102
[98] Bonadio, 85
[99] Bonadio 112

regulate the advantages of San Francisco banks out of existence, and when that became impossible, began to imitate when San Francisco banks had already entered their market.

The last factor to analyze is the role of public investment. The competition between San Francisco and Los Angeles seems to be the one where public infrastructure investment had the least effect in the financial center competition. Los Angeles undertook one of the largest public infrastructure investments of the 20th century, the construction of the Port of Los Angeles, and was widely successful in draining trade from the San Francisco Bay Area. Los Angeles undertook numerous other public investment schemes, including the irrigation of the desert interior and the construction of highways. By comparison, San Francisco lagged behind Los Angeles, primarily because of its lack of modern port facilities. Understanding how San Francisco rose as a financial center requires a nuanced view of the financial center situation.

It is helpful to remember that the rise of San Francisco as a financial center coincided with the rise of branch banking. In fact, as detailed earlier, branch banking allowed San Francisco to tap into markets across the state for lending and borrowing opportunities. As it turned out, despite significant legislative efforts, certain northern California banks managed to break into the Los Angeles market. On the Bank of Italy's international banking business, "Bidding for international business, the department furnished information on market conditions, credit standing, transportation costs and routing, customs requirement and duties throughout the world. The Los Angeles branches made this service available to the business community there, which, through its man-made port, was entering overseas trade with little experience to guide it."[100] Moreover, the Bank of Italy managed to respond to the rampant state construction of

[100] James and James, 103

highways in Los Angeles and across the state of California with municipal bond services. "A bond department was organized. The first year it handled $11,500,000 in securities, mostly municipals."[101] The fact that vast amounts of infrastructure investment occurred in an around Los Angeles was irrelevant. The financial benefits of construction of ports and roads accrued to banks based in Northern California. Public investment eventually served the purposes of San Francisco rather than Los Angeles.

San Francisco's position as a financial center is due to a myriad of coinciding factors that allowed it to grow outside of its geographical limitations and exert an almost imperial level of control over other cities and their economic interests. Kindleberger's theory still holds with San Francisco as personal, industrial, and commercial finance are necessary to financial center-dom. However, Kindleberger did not account for the unique circumstances which allowed San Francisco to tap into the development of other regions to fuel its own financial growth. San Francisco showed clear superiority in all three of the non-Kindleberger factors. Competition in local markets meant that when deregulation eventually occurred, San Francisco firms were stronger and more able to survive in the market. Constant innovation and willingness to imitate successful financial practices elsewhere in the United States likewise enabled it to encroach on Southern California lending businesses and even open up new markets for profitable expansion. Finally, public investment, even in Los Angeles, enhanced the financial development of San Francisco through loans and underwriting fees. Although the Kindleberger factors might indicate otherwise, it is not difficult to understand why San Francisco rose to prominence as financial center of the West Coast.

---

[101] James and James, 103

Chicago

The case for Chicago as a financial center resembles that of New York. Chicago is home to one of the world's largest agricultural commodities exchanges, the Chicago Board of Trade. Located in the third largest metropolitan statistical area in the country (and the largest in the Midwestern United States), the city of Chicago seems to be a natural candidate for financial centerdom. The Midwest is home to a large portion of American industrial production and natural resources extraction. Chicago itself is situated on Lake Michigan, allowing it to profit from the considerable Great Lakes merchant trade.

However, there are unlikely factors to its rise as well. For much of the 19th century, Chicago was not the dominant city of the Midwest. St. Louis outpaced it in terms of population and economic development. Moreover, St. Louis had the strength of the Missouri/Mississippi River behind it, as well as a strong commercial relationship with an eminent American port city, New Orleans. There were also other cities on the Great Lakes, giving rise to direct competition for lake business. It is important, therefore, to investigate Chicago's history in order to better discern the particular reasons for the city's eventual rise as a financial center.

Chicago was originally founded as French trading outpost on the shores of Lake Michigan. Under the Native American name of Chicagou, the city was to become the center of the French Imperial holdings in America. However, their defeat in the Nine Years War (French and Indian War) foundered those hopes and led to the simultaneous decline of both the French Empire and of Chicago the city. It would remain a sparsely populated border outpost even after its annexation by the British in 1763 and then its liberation during the American Revolution. The Illinois territory, as a whole, was still incredibly sparsely populated through much of the eighteenth century. “Virginia boasted a population of 540,000 and Pennsylvania claimed 330,000 residents in the 1780s, but only about 1,000 white settlers lived inside the borders of present-day Illinois at this time.”[102]

The arrival of American troops and the establishment of Fort Dearborn in 1803 cemented Chicago’s identity as an American settlement and the United States’ commitment to opening the interior of the nation to white settlement. Still, the fundamental nature of Chicago was still that of a fur trading outpost. “Between 1815 and 1830, it was the fur trade – and, more specifically, the American Fur Company – that invigorated Chicago. John Jacob Astor had formed his fur company in 1811, headquartered in the northern Great Lakes area, and he sent permanent fur traders to Chicago in 1817.”[103] It was not until the 1830s, when the fur trade began to die out, that Chicago’s population began to grow and it passed from army outpost to town.

The Bank of Illinois was established in Chicago in 1816, the first bank to receive a charter in what is now the State of Illinois. In frontier America, the bank served two purposes. The first regarded the provision of capital investment to areas without significant liquid assets, aiding in commercial finance. “In a pioneer community, capital of all kinds was scarce, because there was seldom much surplus product…such capital accumulation as occurred usually took the form of fixed capital, of houses and barns, of fences and herds of livestock, which the farmer was able to build up gradually over the years without the intervention of any monetary transactions whatever.”[104] The second

[102] Spinney, Robert. City of Big Shoulders: A History of Chicago. (Dekalb, IL. Northern Illinois University Press, 2000.), 15
[103] Spinney, 24
[104] James, F. Cyril. The Growth of Chicago Banks. (New York, NY. Harper & Brothers Publishers,

purpose regarded the provision of notes as a means of facilitating exchange and local economic stabilization. "If banks were to supply the community with either currency or capital funds, it has to be in the form of bank notes: if banks were to exercise any influence upon the general level of prices, it would have to be through the policies that they adopted in regard to the issue and retirement of such notes."[105] The rise of the Bank of Illinois was facilitated by the growth in land sales in Illinois in the 1810s. The number of federal acres sold rose from less than 9,000 in 1814 to almost 600,000 in 1818 when it applied for statehood.[106] This growth in acres sold was matched by a significant growth in population. Two years after statehood, the population of Illinois had grown from 40,000 to over 55,000, growing another threefold by the end of 1830.[107]

However, through much of this period, Chicago was still an extremely small settlement, populated by less than one hundred white settlers. It was not until the 1830s when Chicago began its own growth spurt. The original settlement was not actually located on Lake Michigan itself, but on a small river to the side aptly named the Chicago River. The Chicago River itself was a navigationally tricky river, with a sandbar across its mouth. Large ships attempting to reach Chicago would be forced to dock half a mile out and send out small ships to convey their cargo up the river. "By the spring of 1834, government engineers had cut a channel through the sandbar and shored it with two long piers…the schooner Illinois sailed up this channel into the sheltered river harbor, instantly establishing Chicago as one of the leading ports on the lake."[108] The ease of transportation to the city proved to be a massive boon to Chicago's population growth.

1938.), 12
[105] James, 13
[106] James, 17
[107] Spinney, 14
[108] Miller, Donald L. City of the Century: The Epic of Chicago and the Making of America. (New York, NY. Simon & Schuster, 1996.), 68

"In 1833, the town's population stood at 350…by 1835, more than 3200 residents called Chicago home."[109]

The dredging of the Chicago River was complemented by the start of construction on the Illinois and Michigan Canal in 1836, the first transportation finance to directly affect Chicago. The canal, a product of the canal fever spawned from New York's Erie Canal, was projected to link up the Chicago River with the Illinois River. "Such a canal would enable large ships to sail directly from Lake Michigan to the Mississippi, solving the portage problem dilemma."[110] The extension of Chicago's port facilities to Lake Michigan (and by proxy the Atlantic Ocean through the Great Lakes system and Erie Canal) and the westward opening of water shipping to the Mississippi River had two effects. The first was to provide the impetus for continued government organized and executed public works projects, aiding the sphere of public investment. The projected success of the Illinois and Michigan Canal eventually resulted in the passage of the Public Improvements Act of 1837 in the Illinois legislature, which, among other things, provided appropriations for nearly 1300 miles of railroad track. "The Act authorized the State to borrow 8,000,000 immediately, and created a Board of Fund Commissioners…to undertake the negotiation and subsequent management of the loan."[111] However, unlike the Illinois and Michigan, the board had a difficult time placing the securities with lenders. It was quickly suggested that Illinois banks take subscriptions for the public works. To accomplish this feat, the State of Illinois authorized the sale of bonds to purchase shares into two Illinois banks, The Second Bank of Illinois and The Bank of Shawneetown. "The capital of the second Bank of the States (Bank of Illinois) was increased by $2,000,000, all of which was taken by the state and that of the Bank of

[109] Spinney, 29
[110] Spinney, 32
[111] James, 109

Shawneetown was increased by $1,400,000."[112] In return, the two banks purchased $2,665,000 in states bonds. This influx of capital gave Illinois banks their first major investment project and a pool of funds to invest in ventures elsewhere.

The second effect of the canal was to fuel a speculative land boom in 1830s Chicago. Following the example of the Erie Canal boom town of Buffalo, land speculators began to purchase lots in Chicago. This moved Chicago merchants to begin to lend cash to fund speculative land investments. This constituted a primitive sort of consumer finance until the Second Bank of Illinois opened a branch in Chicago itself. "The extent of its services can be judged from the fact that one firm of land auctioneers, Garrett Brown and Brother, deposited with the Bank more than $17,000 in cash during the first two months of 1836, but presumably borrowed even larger amounts because the Bank, early in March, refused to discount any more notes for the firm."[113] This speculative trade allowed Chicago branch banks to begin to accumulate capital at a very rapid clip, culminating with the funding of statewide public works projects.

The Panic of 1837 and the shortage of money caused land prices to fall precipitously, ending the speculative boom and sending the nation into a five year long depression. However, Chicago's population continued to grow steadily through the period from 1840-1860. Temporarily halted in 1841 for lack of funds, construction on the Illinois and Michigan was finished in 1848. The 96 mile long canal made stops through the hinterland of Illinois, enabling farmers to transport agricultural products and natural resources such as grain, livestock, and lumber to local canal ports while picking up finished goods imported from New York via Chicago. The canal system conquered the endemic problem of lack of roads or local rivers for farmers to transport their goods

[112] James, 111
[113] James 105

to market.[114] Chicago's position as a trading city grew accordingly, allowing it to exert influence beyond its immediate locality and into agricultural areas. "Corn shipments to the city increased eightfold in the canal's first year of operation, because many farmers chose to market in Chicago rather than in St. Louis. Chicago's lumber business doubled in 1848 as Michigan and Wisconsin lumbermen anticipated more Chicago customers."[115]

The city expanded its reach considerably with the adoption of railroads, another transportation and commercial finance boon. With even more local reach than the canal system, the growth of Chicago railroads cemented its position as a grain and lumber capital. "By 1850, track had reached Elgin, which was 40 miles west of Chicago. Rockford – 80 miles northwest of the city – enjoyed rail service by 1852…By 1857, an incredible three thousand miles of railroad track were connected to Chicago and nearly one hundred trains entered and left the city daily."[116] The Old Northwest was the most agriculturally productive area in the United States. Annual exports of wheat and wheat flour from Lake Erie and Lake Michigan ports rose dramatically from 6,828,000 bushels in 1840 to 15,560,000 in 1850.[117]

What is most surprising about the growth in Chicago transportation is that it was fueled primarily by outside sources. In 1851, two thirds of the shareholders in the Illinois Central were in English. In the Chicago, Burlington, and Quincy railroad, 113, 198 shares were held by New Yorkers, 166,198 by Boston residents, and 3,104 by Chicago residents.[118] This was not to say that Chicago did not develop large or prestigious banking organizations. Firms like First National Bank of Chicago, founded in 1863,

---

[114] Miller, 87
[115] Spinney, 48
[116] Spinney, 49
[117] Clark, John G. The Grain Trade of the Old Northwest. (Urbana, IL. University of Illinois Press, 1966.), 57
[118] D'Eramo, Marco. The Pig and the Skyscraper: Chicago: A History Our Future. (New York, NY. Verso, 2002.), 20

(recently merged with Bank One) and the William Blair investment bank, founded in 1935, are evidence to the contrary. However, the lasting effect of Chicago transportation on financial centerdom can be found in its dominance over two major Midwestern industries, grain and livestock, and the eventual development of Chicago grain and livestock trading arenas into two of the largest commodities futures markets in the world, the Chicago Board of Trade and the Chicago Mercantile Exchange.

Chicago became the grain capital of the United States because of its association and proximity to the vast grain and corn growing fields of the Northwest, constituting tremendous development in the commercial finance area. The availability of rail transport to Chicago and water transport to New York allowed farmers to begin to produce for profit, giving rise to industrial age agriculture. "The period 1850-57 was one of rapid railroad extension. Grain receipts at Chicago jumped from 6,928,459 bushels in 1853 to 15,011,548 bushels in 1854, to 19,284,723 in 1855, and to 23,050,309 bushels in 1856."[119] The combination of railroads, canals, and Lake Michigan ports allowed Chicago to eventually dominate the grain trade in the Midwest, from cities such as Cincinnati, Cleveland, and St. Louis. . In order to regularize and cope with the vast increase in the grain trade, merchants formed the Chicago Board of Trade in 1848, to regularize and rationalize the growing grain trade. Instead of relying on dozens of haggling farmers and buyers, the Chicago Board of Trade instituted a uniform pricing scheme where farmers' crops were evaluated by grade then were recorded on receipts to be placed in a general pool open for bidding. "Uniform contracts, standardized grades of inspection, weighing and quality of grain produced both uniformity and efficiency in commodities trading, contributing in turn to that predictability so necessary in large scale

[119] Duddy, Edward A. and David A. Revzan. "The Grain Supply Area of the Chicago Area." The Journal of Business of the University of Chicago. Vol. VII, No. 3. (July, 1934.), 2

market transactions and so desired during the late nineteenth century."[120] (Lurie, pg. 27) The substitution of face to face haggling and inspection with standard grades and liquid markets set the stage for the widescale use of futures contracts in grain. "Uniform standards for grading grain made it possible to undertake a commercial transaction by telegraph, without the need to send samples ahead before a contract could be finalized." The widescale usage of options and futures in the grain trading pits of Chicago contributed to the rise of the Chicago Board of Trade as the oldest (and most active) commodities futures exchange in America.

The growth of the meatpacking industry paralleled that of the grain industry. It too relied on the growth in efficiency brought on by the railroad. "Thanks to the railroad and new packing facilities, Chicagoans killed more cattle than any other city in the West by 1860, and they had increased their hog pack eightfold since 1848."[121] This market dominance was magnified during the Civil War, when the vast increase in the demand for meat by Union troops greatly benefited the Chicago meat trade through the highly developed railway and Erie Canal waterway systems. "They (Chicago pork packers handled 272,000 hogs in the winter of 1860-61 and a staggering 970,000 by the in the peak season of 1862-63. The number declined to 750,000 in the final winter of the war."[122] On the other side, competitor cities such as Cincinnati were almost bankrupted by the Civil War, as a large portion of their trade was tied up with Southern purchasers. "Their hog kill peaked at 600,000 in the winter of 1862-63, then declined to 350,000 at the end of the war, the same number packed in the early 1850s."[123] Chicago also

---

[120] Lurie, Jonathan. The Chicago Board of Trade: 1859 – 1905. (Urbana, IL. University of Illinois Press, 1979.), 26
[121] Wade, Louise Carroll. Chicago's Pride: The Stockyard, Packingtown, and Environs in the Nineteenth Century. (Urbana, IL. University of Illinois Press, 1987.), 32
[122] Wade, 33
[123] Wade, 32

benefited from the collusion of major meat merchants in the creation of a central processing station in the Union Stockyard and eventual organization underneath the Chicago Board of Trade. "By 1868, the stockyard consisted of 23,000 pens on one hundred acres of land, and it was able to hold 21,000 cattle, 75,000 hogs, 22,000 sheep, and 200 horses simultaneously."[124] The dominance of the Chicago meat market extended itself well into the 20th century, until the total relocation of meat packing companies to cheaper rural areas in 1971. However, the meat still ran through Chicago as the Chicago Mercantile Exchange (formerly a vestige of the Chicago Board of Trade) invented frozen pork belly futures in 1964 and live cattle futures in 1964 and remains today the largest commodities options and futures exchange in the United States.

The growth of Chicago's position as a transportation center contributed to its growth as the premier grain and livestock processing center in the United States. The dominance of those two industries and creation of common exchanges to trade them in enabled Chicago to become an agricultural commodities financial center.

The Kindleberger theory seems applicable in the case of Chicago. A clear advantage in transportation, government, and commercial finance allowed for Chicago's ascendance over its competitors. Although the eventual financial development came through the direct development of an exchange as opposed to the creation of a banking sectors, the Kindleberger staple theory still manages to apply in the case study of Chicago itself.

---

[124] Spinney, 58

Chicago vs. St. Louis

St. Louis was Chicago's economic nemesis for much of the 19th century. Their economic spheres of influence overlapped significantly. They relied on many of the same industries for their commercial interests, particularly the grain trade. Moreover, they received their grain from the same suppliers and sold them to many of the same customers. Their clash over dominance of economic activity, particularly the grain trade, in the Midwest is integrally related to their respect successes as financial centers (or lack thereof).

Founded in 1764, St. Louis was relatively developed city by the time Chicago was founded. As the proverbial gateway to the West, St. Louis had numerous advantages skewed towards its favor. At the confluence of the Missouri and Mississippi Rivers, St. Louis's commercial interests have always been tied to river trade. The northern reaches of its two rivers reached into fur, lumber, and agricultural territory, the southern towards New Orleans and its strong Gulf Harbor. To investigate the eventual success of Chicago over St. Louis, one must consult Kindleberger.

The first aspect that must be investigated is in the area of governmental finance, particularly in the transportation sector. Both cities had strong natural transportation advantages. St. Louis's river and Chicago's proximity to the Great Lakes were integral to their growth as cities and commercial centers. In this respect, Chicago was slightly disadvantaged in that it was forced to dredge a sandbar from the mouth of the Chicago River. However, this disadvantage was balanced by the development of the Erie Canal by New York City, which conferred a large economic advantage to Great Lake ports. Despite the relative equality in initial transportation endowments, the two cities embarked upon radically different policies of transportation finance. St. Louis focused on the exploitation of its natural position as a river city, investing in privately financed steamboats over canals and railroads (which served as a complement to water transport). Arrivals of steamboats at St. Louis from the Northwest increased from 2,897 in 1850 to 3,454 in 1860 for an increase of slightly over 19 percent.[125] However, the population of the Upper Mississippi River Valley (and demand for goods) expanded much faster over the same than did the number of steamboats servicing the area. Missouri's population grew by over sixty percent, Wisconsin and Illinois both doubled in population, Iowa quadrupled, and Minnesota went from six thousand inhabitants to nearly two hundred thousand.[126] Even with the most generous assumptions, it is clear that the steamboat trade did not expand adequately to match the growth in population of the Upper Mississippi. Those goods markets ultimately were forced to find alternative suppliers

The strategy of Chicago did not rely on natural transportation routes and, as a result, was heavily fortified in the construction of canals and railroads. Moreover, it was not exclusively privately financed. The State of Illinois and the city of Chicago undertook significant debt and sales of land in order to construct the Illinois and Michigan Canal. It immediately proved its worth as construction of the canal immediately cannibalized trade from St. Louis, allowing Chicago to divert agricultural goods from moving through St. Louis. "At St. Louis, the receipts from the Upper Mississippi lead mines declined from 749, 128 pigs (a unit of measure equaling approximately 150 lbs.) in 1847, the year before the Illinois and Michigan Canal was opened to 315, 677 pigs in 1855." Receipts in Chicago over the comparable period rose from twenty pigs to 142,000 pigs.[127] Moreover, Chicago exerted an early and sustained

125 Belcher, Wyatt Winton. The Economic Rivalry Between St. Louis and Chicago: 1850 – 1880. (New York, NY. Columbia University Press, 1947.), 48
126 Belcher, 49
127 Belcehr, 44

advantage in the construction of railroads. Public funds were appropriated in the Illinois State legislature for railroad construction as early as 1837[128] (James, pg. 108), while Missouri did not grant its first charter until 1847. State finance was complemented by tapping private investors in New York to provide more funds for joint stock companies, in perhaps a curious example of an existing financial center aiding the growth of another.[129] Not only did Chicago have a significant "first mover" advantage, it had a sustained cost advantage with respect to their actual construction. The average cost of the Chicago railroad up to 1860 was $36,000 per mile while that of St. Louis approached $50,000 per mile.[130]

The differing public investment atmospheres within the two states seems to have effected the position of transportation. Illinois seemed to take a much more actively interventionist stance towards transportation and commercial finance. An example can be found in the active willingness of the Illinois legislature to not only appropriate the vast majority of funds for the construction of the Illinois and Michigan, but actively encourage competing modes of transportation. The presence of government funding for both the canal and the railroad in the early and mid 19th century, despite the very real threat of fiscal insolvency, speaks to a certain level of prescience by local government. Not knowing which horse to back, they fund and charter both in the hopes that one succeeds. As it turned out, their first instincts were wrong and trade from the canal was eventually dwarfed by railroad trade. "The value of imports and exports of Chicago for 1858 reached the impressive total of $174, 896,011.70. Of this aggregate the value of the part moved by Chicago railroads was…nearly 70 percent of the total."[131] As shown

---

[128] James, 108
[129] d'Eramo, 20
[130] Belcher, 92
[131] Belcher, 69

earlier, St. Louis relied on the steamboat trade for a significant period before investing in railroads, by which time Chicago had already risen to an insurmountable lead.

Moreover, the centrally planned nature of Chicago's transportation advantage is worth mention. Records show that Illinois had planned significant public works projects as early as the 1830s, in the passage of the Public Improvements Act of 1837. In the Act, over 1300 miles of railroad track are planned for, to be funded either by chartered joint stock companies or state funding.[132] The vast trackage constructed by 1860 show the fruits of that labor, as more lines leading to Chicago were constructed at lower cost than to St. Louis. Lines laid to St. Louis on average cost 28 percent more than comparable lines in Chicago. It is difficult to imagine that the entire cost can be passed off to more difficult terrain or other natural difficulties. The fault must therefore lie somewhere else. A microcosm of the problems faced can be seen in the state funded Pacific Railroad Company. "On July 23, 1853, the Pacific Railroad Company completed and opened for business the first division of its road which extended thirty-seven miles from St. Louis to Pacific…No new construction was made the following year. It was obvious that if work was to be continued, more state, county, and municipal aid would have to be forthcoming."[133] The halfhearted commitment of St. Louis to railroad expansion eventually doomed its commercial interests to secondary status to those of Chicago.

The final aspect worthy of consideration is the development of institutions in each of the cities to cope with the trade that it received. The story of Chicago is outlined above, in the efforts by its merchants to centralize trade by the formation of the Chicago Board of Trade. The resultant order imposed on the grain markets allowed grain to be traded at unprecedented volumes while setting the stage for financial innovations,

[132] James, 108
[133] Belcher, 79

including the creation of grain futures. The real innovation, aside from the standardization of quality and pricing controls, was the creation of a market where the rights of buyers and sellers was upheld. An example can be found the Chicago Board of Trade's handling of certain abusive contracts in the marketplace, when they proclaimed. "The practice of 'corners,' of making contracts for the purchase of a commodity, and then taking measures to render it impossible for the seller to fill his contract…These transactions are essentially improper and fraudulent, and should any member of this Board hereafter engage in any such transactions, the directors should take measures for his expulsion."[134] Because of their monopoly on grain trade in Chicago, expulsion from the Board of Trade meant an essential ban from the grain trading as a whole. The imposition of fair trading rules on a marketplace means fewer dishonest traders. Fewer dishonest traders meant more liquidity because of the lower chance of being cheated. St. Louis simply had no comparable system, giving investors fewer incentives to sell their grain in that market.

It is clear that Chicago's position as a financial center is intimately related to its rise as an agricultural trade center. Advantages in its transportation finance, commercial finance and exchange development explain much of its rise.

Although Chicago holds relatively closely to the Kindleberger theory, it is important to realize the role of non-Kindleberger factors in the city's rise. Chicago's transportation boom was a government spearheaded project, with the canals and railways receiving initial funding from the State of Illinois. Chicago merchants innovated in the grain industry, eventually coming up with standardized qualities and practices that formed the basis for futures trading. As in the previous two city case studies, it is

[134] Lurie, 46

important to investigate competition, innovation, and the role of public

Unlike New York and San Francisco, the financial industry of Chicago was centered about the commodities industry, particularly grain and meat. Chicago's advanced exchanges were direct results of the development of the trade mechanisms that brought grain and meat from the hinterlands into the Chicago port. It is therefore important to investigate the competitive natures of these exchanges and determine whether or not they promoted or stifled the competitive market. At first glance, the centralization of grain shipments into a single entity, the Chicago Board of Trade with power over the determination of grain quality and trading privileges looks suspiciously like the formation of a monopoly. However, it is important to understand that the Board of Trade did not buy the grain itself, but rather provided an arena for the trading of grain futures and contracts. "The general public could not trade on the floor directly, although an individual could deal through a broker or commission merchant who was a Board member."[135] Despite the creation of a centralized, mandatory marketplace, price competition thrived in the grain market. The declaration of specific grain qualities prevented any sort of product differentiation. The high level of liquidity on the Board of Trade, evidenced by the 64 million bushels of corn traded in 1879,[136] ensured market efficiency. These two factors combined to enable Chicago reach a nearly perfectly competitive grain market. St. Louis never had a quality standardization mechanism or a central market to trade from, allowing inefficiencies in the trading system. In this regard, Chicago can be considered far more competitive than St. Louis.

A different situation arises in analyzing the innovation histories of Chicago and St. Louis. Most of the economic innovations central to the stories of either city had been

---

[135] Lurie, 75
[136] Lurie, 45

debuted in other parts of the country prior to their introduction into the Midwest. It is reasonable to state that any 'innovations' were in fact imitations of advances in other areas of the country. However, as many of the innovations detailed in earlier sections in Philadelphia had been invented in England or other parts of the world, it is equally reasonable to introduce the idea of locality in innovation. Despite the fact that English insurance companies were writing policies in the United States prior to the advent of Philadelphia and New York companies, the local emergence of insurance companies contributed to the growth of each city and their eventual competition as financial centers. Innovations that occur in one area do not immediately diffuse through the rest of the economy. Despite the widespread use of canals, steam engines, and railroad technology on the Eastern seaboard, such innovations did not have a measurable effect on the economies of the two cities until they were introduced by the St. Louis and Chicago themselves. Therefore, despite the fact that the innovations occurred before in other cities, the two cities introduced them locally and reaped significant benefits from them. Local innovation still seems to retain many of the economic benefits of original innovation and will be considered as such.

The most striking aspect of the innovation competition between the two cities is the fact that both cities were heavy innovators. Unlike the New York/Philadelphia example where one city simply copied the innovations of the other, Chicago and St. Louis were both pioneers, particularly with regards to the transportation industry. St. Louis had been an early innovator in the steamship sphere, employing them to enhance trade along the Mississippi River. Steamship technology allowed St. Louis to operate a thriving river trade, shipping products from the Old Northwest through the Louisiana port of New Orleans. "The boats propelled through steam had greater speed than any boats had had before. Going upstream a flatboat would make from four to six miles per day, while a steamer could gain that distance in an hour...Freight rates were reduced, and steamboats were used as general carriers for all classes of goods."[137] St. Louis invested considerably in steamships increasing its fleet tonnage from 24,995 tons in 1850 to 45,411 in 1853.[138] It would seem as though St. Louis innovated and managed to follow through with its innovation.

However, Chicago, too, was a heavy innovator in the transportation industry, countering St. Louis's investment in steam ships with massive investments in canals and later railroads. The immediate effect of Chicago's investment in the Illinois and Michigan Canal was to increase trade going through the city itself. "In the first ten years of its operation, the canal transported approximately 563,000,000 feet of lumber, 27,000,000 pounds of pork, 26,000,000 bushels of corn, 5,500,000 bushels of wheat, and 50,000 tons of coal."[139] The canal's role also aided in the cannibalization of trade from St. Louis. The complimentary innovation of railroad enabled Chicago to foster continued economic growth. In 1858, the total value of imports and exports going into Chicago was $174,896,011.70. "Of this aggregate the value of the part moved by Chicago railroads was $120,673,355.06, or nearly 70 per cent of the total."[140] The railroads, in particular, proved to be a considerably more effective than water transportation in moving goods to market. One of the greatest advantages that rail transport had over the river based transport of St. Louis was its ability to operate in all seasons. In the Old Northwest, there are significant obstacles to boat navigation during the winter. "At St. Paul, the river was closed by ice 143 days a year on the average; at St. Louis only 29 days. The ice barrier

---

[137] Belcher, 41
[138] Belcher, 41-42
[139] Belcher, 43
[140] Belcher 69

blocked the river between Keokuk and Dubuque each year from 75 days to 105 days."[141] The railroads were also not bound by natural features of the landscape but could be built to agricultural areas or major cities regardless of their location.

Chicago also invested considerably in downstream transportation advances, to amplify their transportation advantages. Not only did city business leaders dredge the Chicago River and construct a modern port, they invested considerably in methods to facilitate loading and unloading of cargoes. "At both Chicago and New York elevators and warehouses were built immediately adjacent to the water, so that the railroad cars hauling grain could be run alongside and emptied with economy and dispatch, and steamers could be loaded with equal facility on the other side."[142] The grain elevator method was a great improvement over the older method of sacks and barrels. This stands in marked contrast to the relatively unsophisticated methods by which St. Louis dealt with cargoes, which used drays and carts to unload grain shipments from incoming vessels. "A typical eye picture of business at the levee, boasted that there were 58 steamboats, 240 drays, 2,000 men, and 20,500 packages all in view at one time. The Chicago press was quick to reply that the lake city transacted twice the amount of business of St. Louis without the aid of a single dray and with the labor of less than one-fourth the number of men."[143] This is not the same story as New York/Philadelphia, where imitation won over original innovation. Rather, it the story of competing innovations, where Chicago innovated in one area and continued to build on that innovation by improving on all areas of the supply and transportation chain. Chicago had a clear advantage in financial and economic innovations.

The story of Chicago and St. Louis in public invesment is considerably more

[141] Belcher, 43-44
[142] Belcher, 103
[143] Belcher, 103

direct. The extensive infrastructure improvements funded by Chicago's city government and the State of Illinois have already been documented previously. Chicago invested considerable capital in transportation infrastructure. The city government was the primary impetus behind the dredging of the Chicago River and the construction of the Illinois and Michigan Canal. The canal itself was a tremendous boon for Chicago trade, enhancing it at the expense of St. Louis. "By a quick transition, then, the canal has enabled Chicago to supplant St. Louis as the receiving point for farm surpluses and the distributing center for manufactured goods for a large part of Illinois."[144] The most curious aspect of the Illinois and Michigan was the manner in which it took advantage of investment capital in other cities. The steamboats that St. Louis firms invested in were drawn to trade with the lake city because of its easier access to Eastern markets. Moreover, the Illinois state government chartered companies for and invested in railroads at early dates in order to bring agricultural goods from across the countryside into Chicago itself. In this manner, public infrastructure investment transformed Chicago into a local economic center, then eventually a national commodities exchange center with fully developed exchanges and markets.

St. Louis has also been discussed previously, but its public investment strategy will now be analyzed with respect to that of Chicago. St. Louis invested in transportation largely in response to Chicago's large scale investments in infrastructure improvement. Originally, their plan was to rely upon improvements constructed by other states and cities to enhance its river trade. "St. Louis welcomed the construction of the Illinois and Michigan Canal and believed that the completion of this project, connecting the Mississippi River with the waters of Lake Michigan, would open new trade possibilities

[144] Belcher, 34-35

for the city."[145] However, this policy soon turned out to be less than successful, and the state of Missouri initiated heavy investment in transportation infrastructure. However, the transportation investments widely overlapped in the markets already served by Chicago based transport lines. As shown earlier, St. Louis rail networks never reached the same economies of scale that Chicago rail companies did, with prices per mile of track nearly 50 percent higher. In fact, the food based industry of the Midwest made reliance on water transport instead of rail disadvantageous. The perishable nature of most foodstuffs means that rapid transport is a necessity. The long route down to the Gulf of Mexico and around to the East Coast could not compete with a more direct route from Midwest to East.

A curious aspect of St. Louis's trade was its reliance on New Orleans as its seaport. Despite its position as a river city, St. Louis had waterway with which to directly export goods to its major markets in the Eastern United States. Rather, it relied on the major sea port at New Orleans in order to find markets for its goods. It stands to reason that this symbiotic relationship would imply that the commercial success of either city would be somewhat dependent on the public infrastructure investment of the other. Poor port facilities at New Orleans would mean less efficient loading and unloading of river barges to ocean going vessels, affecting the trade efficiency of both St. Louis and New Orleans.

> "Besides being badly located in relation to the principal trade routes with Europe, it was not easily accessible from the sea, and it lacked good harbor facilities…The entrance of the Mississippi River was made difficult and uncertain by the presence of sand bars; even when trade was finally carried to New Orleans by steamboat, the best and largest steamers were discouraged from calling at that port."[146]

As shown with the dredging of the Chicago River, it was possible for many of these natural disadvantages to be overcome through modern engineering techniques. That they

[145] Belcher, 44
[146] Belcher, 104

were not eventually harmed the agricultural trade flowing into St. Louis, despite the fact that it was well outside its jurisdiction.

The lesson to be drawn from this study of public infrastructure is that no individual city or financial center exists in isolation. The effectiveness of public infrastructure investment is dependent upon the effectiveness of the system as a whole. In the case of Chicago, the railroads and canals only benefited city trade insofar as it could take advantage of infrastructure investments in another state, the Erie Canal and ultimately New York Harbor. Likewise, St. Louis trade was crippled by the lack of good facilities in New Orleans. As the Midwest grain and meat trades eventually developed into financial markets, the public infrastructure of each city and the ways they interacted with the infrastructures of other cities eventually determined financial supremacy in the Midwest.

The underlying themes emerging from this case study of the effects of public investment on financial development are simple. The first is that public investment is highly beneficial to financial development, both directly through profits gained from bond underwritings and placements and indirectly through its reciprocal effects on commercial trade and investment. The second is that the effectiveness of public investment matters. Governments that deployed their capital effectively reaped larger financial development benefits than those that simply invested large quantities entering already tapped markets. The third is that public infrastructure investment does not exist in a vacuum. As shown in the Chicago/St. Louis example, public investment in other cities actually affected the trajectory of financial development in the city itself.

The non-Kindleberger factors confirm the earlier Kindleberger based conclusions of Chicago's better suitability as a financial center. However, it lends a deeper insight into how a financial center works overall. It is difficult to decompose Chicago's ascent as a financial center into individual chunks as though it were driven by some unrelenting force of economic history. Indeed, it is easy to see that, at certain points, Chicago could have easily faltered or St. Louis could have invested more intelligently in public infrastructure, small factors that might have tipped the balance against the city on the lake and towards the city on the river. The non-Kindleberger factors vanquish any sense of economic determinism, and so are useful in that regard alone.

Section 3: Concluding Comments

Conclusion

This paper has developed an analysis of Charles Kindleberger's theory on financial center formation, finding that Kindleberger's theory does an admirable job of sketching out of the general features of the formation of American financial centers. The paper not only investigated the city histories of each of the chosen financial centers, but the histories of competitor cities that at one point may have actually prevented the financial center from becoming a center at all. A focus on commercial, government, transportation, industrial, and personal activity lent an understanding to the development of financial activities related to it. For example, Chicago's dominance in the foodstuffs trade of the Midwest, particularly grain and meat products, led to the creation of dedicated commodities futures exchanges. In this manner, Kindleberger's formula seems to have held quite well underneath an analysis of anecdotal evidence.

However, there were distinct cases in which Kindleberger's theory had to be stretched to fit the scenario. In fact, in the specific case of San Francisco, Kindleberger's theories seemed to indicate that its financial center competitor should have won the financial center race. Los Angeles possessed advantages underneath the Kindleberger theory that should have proven insurmountable with greater population, greater volume of trade, and greater industrial development. Yet, despite these handicaps, San Francisco managed to cling onto its position as a financial center. A closer analysis of the factors involved revealed numerous other issues that could have played a major role in financial center formation.

The first issue discovered was that of competition. Anecdotal evidence showed that competition among financial firms may have resulted in stronger, more financially viable firms. Competition had the effect of driving prices downwards and forcing firms to adapt by decreasing costs and smothering out inefficiencies in their business. Strikingly, protectionist policies emplaced by city and state governments almost always crippled financial firms when they were eventually forced to enter competitive markets. From the evidence assembled, competition seemed to play a role.

The second issue was the role of financial and economic innovation in the development of financial centers. Like almost all other industries, financial services has been changed dramatically through the creation of new products and business practices. The concepts of branch banking, actuarial tables, and other innovations did not appear when finance was first conceived. Rather, they evolved as appendages to the fundamental financial transaction of transferring money from one party to another. In some cases those appendages accurately determined the risk of borrowing and lending, in other cases the innovations simply provided more efficient means for the mustering of capital. However, those innovations always helped facilitate the flow of capital. As it turned out, the experience of the cities that eventually became financial centers was highly varied. Original innovation was not enough to make a city a financial center. Rather, it was found that effective execution of the innovation was the most important factor of all, a process known as imitation. Both imitation and innovation played central roles in the development of certain cities as financial centers and the eventual downfall of their competitors.

The third and final non-Kindleberger factor brought up above was the role of public infrastructure and investment in financial development. Public investment seems more closely akin to economic development as opposed to specifically financial development. However, the case studies above showed both direct and indirect links to the development of financial services. Whenever large amounts of public investment are undertaken, the state usually only funds a small part of it from its own fiscal year budget. It often relies on financial organizations to underwrite and disseminate bonds to the public in order to fund public works projects. That is the direct effect. The indirect effect lies in the ways public infrastructure investment affects the Kindleberger factors. Public investment in transportation infrastructure often has a positive effect on trade. Public investment in irrigation networks has an effect on population. It is worth mentioning that the effectiveness of said public infrastructure investment is important to the development of financial centers. Although certain financial centers and their competitor cities spent comparable amounts on the same sorts of infrastructure, it was not often who spent more but who spent more effectively that eventually decreed the eventual location of a regional financial center.

One fascinating aspect of these three additional non-Kindleberger facets are the policy implications. For a state or a country seeking to develop a financial center of their own, it is worthwhile to look beyond the prescriptions of the Kindleberger theory. Rather, supportive government action with regards to competition, innovation, or infrastructure development could enable a city to develop a burgeoning financial industry.

However, even with the discovery of new factors, the Kindleberger story does not end. It is helpful to speculate about cities beyond those laid out in my thesis. Although not widely considered financial centers like San Francisco, Chicago, and New York City, they depart from simply commercial cities enough and have a large enough concentration of financial industries to pique interest. These 'possible financial centers' include cities like Boston, Hartford, Charlotte, and Miami.

Boston is a city with as old a history as any in the United States. Although not extremely large by population standards, it has a distinct history in financial services, particularly in banking. Old line investment banks such as Kidder, Peabody headquartered in Boston until as late as the Great Depression. Today, there are still numerous financial firms still based in Boston, particularly in investment management with firms such as Fidelity Investments and Wellington Management Company or securities clearinghouse and custody banking which includes companies like State Street Corporation and Investors Bank & Trust.

Hartford is yet another possible financial center. The city has been home to insurance companies since the 1700s, when those companies were incorporated to protect shipping interests on the Connecticut River. Today, it is still home to many of the largest life, commercial and personal casualty insurance companies in the world, including Aetna, Chubb Group, and St. Paul Travelers Insurance.

Charlotte is a more recent incarnation, rising to prominence with the expansion of North Carolina Nations Bank and more recently the acquisition of the California banking power, Bank of America. Wachovia Corporation is also headquartered in Charlotte, making the city home to two of the largest commercial banks in the country.

Miami seems to be an odder choice still, given its reputation as a drug lair. However, the city possesses one of the highest concentrations of international banks in the country. A large percentage of Latin American finance is routed through the international banking sector in Florida.[147] With over 70 international banks in the city, Miami might be considered a possible financial center for Latin America.

---

[147] "International banking: with more than 40 international banking agencies, only New York can vie with Miami as a center for Latin America banking—in trade finance, private wealth management or investment services." Latin CEO: Executive Strategies for the Americas. Aug - Sep 2002. Findarticle.com. April 5th, 2006. <http://www.findarticles.com/p/articles/mi_m0OQC/is_4_3/ai_100463063>

All of these centers fit underneath the nominal conditions of being financial centers. All of them have significant ancillary services such as financial law firms, accounting partnerships, and other service industries with dedicated financial capabilities. It is difficult to see what might inherently separate these ‘possibles’ from the larger financial centers.

What is even more interesting to speculate on is what happens when one reverses Kindleberger. To pose a rhetorical question, would the confluence of the factors presented in Charles Kindleberger’s theory necessitate the creation of a financial center? If one takes that tack, why isn’t New Orleans a financial center? With a significant level of trade flowing into the port and a great deal of oil refining in the immediate area, it might imply that financial development of some sort ought to have occurred, at least beyond the local banking stage. Houston is another curious city, particularly because of its intimate relationship with oil refining and exploration companies. These are questions not easily answered.

The conclusion is that neither Kindleberger’s theory nor the factors I brought forth are enough to completely describe the financial experience of even a single city. Prudence indicates that there may be even more factors to watch out for, factors that may be hidden in the American financial experience. There are still dozens of questions that still need to be address for one to gain a complete picture of the geography of the American financial industry. It is a fruitful area for future discourse and certainly requires more research to more fully develop the ideas laid forth.

Section 4: Tables

Table 1: Ranking of Largest cities in United States by Population

	City	Employment	# of Financial Analysts	Percentage of Employment
1	**New York City, New York***	**4005480**	**18980**	**0.0047385**
2	Los Angeles, California	4002960	4800	0.0011991
3	**Chicago, Illinois ***	**3994530**	**10160**	**0.0025435**
4	Houston, Texas	2110410	2970	0.0014073
5	Philadelphia, Pennsylvania	2370110	5940	0.0025062
6	Phoenix, Arizona	1674410	2790	0.0016663
7	San Diego, California	1268470	970	0.0007647
8	San Antonio, Texas	710990	900	0.0012658
9	Dallas, Texas	1900380	5880	0.0030941
10	San Jose, California	852510	2410	0.0028269
11	Detroit, Michigan	1991380	0	0
12	Indianapolis, Indiana	878710	1170	0.0013315
13	Jacksonville, Florida	553960	960	0.001733
14	**San Francisco, California ***	**951340**	**3290**	**0.0034583**
15	Columbus, Ohio	857600	890	0.0010378

and **bold** refers to financial center

Table 2: Ranking of Cities by Percentage of Financial Analysts

	City	Employment	# of Financial Analysts	Percentage of Employment
1	**New York City, New York***	**4005480**	**18980**	**0.0047385**
14	**San Francisco, California***	**951340**	**3290**	**0.0034583**
9	Dallas, Texas	1900380	5880	0.0030941
10	San Jose, California	852510	2410	0.0028269
3	**Chicago, Illinois***	**3994530**	**10160**	**0.0025435**
5	Philadelphia, Pennsylvania	2370110	5940	0.0025062
13	Jacksonville, Florida	553960	960	0.001733
6	Phoenix, Arizona	1674410	2790	0.0016663
4	Houston, Texas	2110410	2970	0.0014073
12	Indianapolis, Indiana	878710	1170	0.0013315
8	San Antonio, Texas	710990	900	0.0012658
2	Los Angeles, California	4002960	4800	0.0011991
15	Columbus, Ohio	857600	890	0.0010378
7	San Diego, California	1268470	970	0.0007647
11	Detroit, Michigan	1991380	0	0

and **bold** refers to financial center

Bibliography

Abdih, Yasser and Frederick Joutz. “Relating the Knowledge Production Function to Total Factor Productivity: An Endogenous Growth Puzzle.” 2006. George Washington University. 15 Mar. 2006. <http://home.gwu.edu/~bmark/Abdih-Joutz-Text-Flood.pdf>

Acemoglu, Daron, Philippe Aghion, and Fabrizio Zilibotti. “Distance to Frontier, Selection, and Economic Growth.” Discussion 2002. National Bureau of Economic Research. 15 Mar. 2006. <http://papers.nber.org/papers/W9066>

Aghion, Philippe and Rachel Griffith. Competition and Growth: Reconciling Theory and Evidence. Cambridge, MA. The MIT Press, 2005.

Andrews, Richard. Urban Growth and Development: A Problem Approach. New York. Simmons-Boardman Publishing Corporation, 1962.

Arthur, Lindsay. “San Francisco's Big Board Grew Out Of A Basement Meeting.” San Francisco Call Bulletin. Oct. 10, 1955

Belcher, Wyatt Winton. The Economic Rivalry Between St. Louis and Chicago: 1850 – 1880. New York, NY. Columbia University Press, 1947.

Bonadio, Felice A. A.P. Giannini: Banker of America. Berkeley. University of California Press, 1994.

Cameron, Gavin. “Innovation and Economic Growth.” Discussion Paper No. 277. 1996. Centre for Economic Performance. 15 Mar. 2006. <http://cep.lse.ac.uk/pubs/download/dp0277.pdf>

Cassis, Youssef. City bankers, 1890-1914. Cambridge, UK. Cambridge University Press, 1994

Chernow, Ron. The House of Morgan: An American Banking Dynasty and the Rise of Modern Finance. New York. Grove Press, 1990.

Clark, John G. The Grain Trade of the Old Northwest. Urbana, IL. University of Illinois Press, 1966.

Cleveland, Harold van B. and Thomas F. Huertas. Citibank: 1812-1970. Cambridge, MA. Harvard University Press, 1985.

Collins, Frederick. Money Town. New York. Van Rees Press, 1946.

Condon, Thomas. New York Beginnings:The Commercial Origins of New Netherland. New York. NYU Press, 1993.

James, F. Cyril. The Growth of Chicago Banks. New York, NY. Harper & Brothers

Publishers, 1938.

D'Eramo, Marco. The Pig and the Skyscraper: Chicago: A History Our Future. New York, NY. Verso, 2002.

Doti, Lynne P. and Larry Schweikart. Banking in the American West: From Gold Rush to Deregulation. Norman, OK and London. University of Oklahoma Press, 1991

Doti, Lynne P. and Larry Schweikart. "From Hard Money to Branch Banking: California Banking in the Gold-Rush Economy." A Golden State. Ed. James Rawls and Richard Orsi. Berkeley. University of California Press, 1999.

Duddy, Edward A. and David A. Revzan. "The Grain Supply Area of the Chicago Area." The Journal of Business of the University of Chicago. Vol. VII, No. 3. July, 1934.

Fogelson, Robert. The Fragmented Metropolis: Los Angeles, 1850-1930. Cambridge, MA. Harvard University Press, 1967.

Fradkin, Philip. Stagecoach: Wells Fargo and the American West. New York. Simon and Schuster, 2002.

Gehrig, Thomas. "Cities and the Geography of Financial Centers." University of Freiberg and the Centre for Economic Policy Research. Mar. 1998. < http://www.vwl.uni-freiburg.de/fakultaet/erwien/multimedia/centers.pdf>

Geisst, Charles R. Wall Street: A History. New York, Oxford. Oxford University Press, 1997.

Goodhart, C.A.E. The New York Money Market and the Finance of Trade, 1900-1913. Cambridge, MA. Harvard University Press, 1969.

Hulten, Charles. "Infrastructure Capital and Economic Growth: How Well You Use It May Be More Important Than How Much You Have." NBER Working Paper No. 5847. Dec 1996. National Bureau for Economic Research. 30 Mar. 2006. <http://papers.nber.org/papers/w5847>

"International banking: with more than 40 international banking agencies, only New York can vie with Miami as a center for Latin America banking—in trade finance, private wealth management or investment services." Latin CEO: Executive Strategies for the Americas. Aug - Sep 2002. Findarticle.com. April 5th, 2006. <http://www.findarticles.com/p/articles/mi_m0OQC/is_4_3/ai_100463063>

James, Bessie R. and Marquis James. Biography of a Bank: The Story of Bank of America N.T. & S.A. New York. Harper & Brothers, 1954.

Kindleberger, Charles. The Formation of Financial Centers: A Study in Comparative

Economic History. Princeton, NJ. International Finance Section, Department of Economics, Princeton University, 1974.

Loomis, Noel. Wells Fargo: An Illustrated History. New York. Crown Publishers, 1968.

Loosvelt, Derek. Vault Guide to the Top 50 Banking Employers. New York. Vault Inc. 2006

Lurie, Jonathan. The Chicago Board of Trade: 1859 – 1905. Urbana, IL. University of Illinois Press, 1979.

Mansfield, Edwin. “Basic Research and Productivity Increase in Manufacturing.” The American Economic Review. Vol. 70, No. 5. Dec. 1980, pp. 863-873

Maskell, Peter. “Towards a Knowledge-based Theory of the Geographical Center.” Industrial and Corporate Change. Vol. 10 No. 4. 2001. pp. 921 – 943

Miller, Donald L. City of the Century: The Epic of Chicago and the Making of America. New York, NY. Simon & Schuster, 1996.

Munnell, Alicia. “Policy Watch: Infrastructure Investment and Economic Growth.” The Journal of Economic Perspectives. Vol. 6, No. 4. Fall 1992. pp. 189 – 198

Myers, Margaret. The New York Money Market Volume 1: Origins and Development. New York. Columbia University Press, 1931.

Nickell, Stephen J. “Competition and Corporate Performance.” The Journal of Political Economy. Vol. 104, No. 4. 1996. pp. 724 – 746

NYSE Factbook: Annual Reported Volume, Turnover Rate, Reported Trades (mils. of shares) (1900-2003) <http://www.nysedata.com/nysedata/asp/factbook/viewer_edition.asp?mode=table&key=2206&category=4>

Port of Los Angeles: 2004 Statistics. April 11th, 2006 <http://www.portoflosangeles.org/factsfigures_Annual_2004.htm>

Port of Oakland: Current Container Statistics. April 11th, 2006 <http://www.portofoakland.com/maritime/facts_cargo.asp>

Porter, M. E. “Clusters and Competition: New Agendas for Companies, Governments, and Institutions,” *On Competition*. Boston. Harvard Business School Press, 1998.

Robbins, Sidney M. and Nestor E. Terleckyj. Money Metropolis: A Locational Study of Financial Activities in the New York Region. Cambridge, MA. Harvard University Press.

St. Clair, David. “The Gold Rush and the Beginnings of California Industry.” A Golden State. Ed. James Rawls and Richard Orsi. Berkeley. University of California Press, 1999.

Schmitz Jr., James A. “Imitation, Entrepreneurship, and Long-Run Growth.” The Journal of Political Economy. Vol. 97, No. 3. 1989. pp. 721 – 739.

Segerstrom, Paul. “Innovation, Imitation, and Economic Growth.” The Journal of Political Economy. Vol. 99, No. 4. 1991. pp. 807 – 827.

Sobel, Robert. The Big Board: A History of the New York Stock Market. New York, The Free Press, 1965.

Spinney, Robert. City of Big Shoulders: A History of Chicago. Dekalb, IL. Northern Illinois University Press, 2000.

Storper, Michael and Richard Walker. The Capitalist Imperative: Territory, Technology, and Industrial Growth. New York, NY. Basil Blackwell, 1989.

United States Census: California: Population of Counties by Decennial Census: 1900 to 1990. <http://www.census.gov/population/cencounts/ca190090.txt>

Wade, Louise Carroll. Chicago’s Pride: The Stockyard, Packingtown, and Environs in the Nineteenth Century. Urbana, IL. University of Illinois Press, 1987.

Winther, Oscar Osburn. Express and Stagecoach Days in California: From the Gold Rush to the Civil War. Stanford University. Stanford University Press, 1936.

Wright, Robert E. The First Wall Street: Chestnut Street, Philadelphia, and the Birth of American Finance. Chicago, London. The University of Chicago Press, 1997.