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Why Didn't the United States Establish a Central Bank until after the Panic of 1907?

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Abstract: Monetary historians conventionally trace the establishment of the Federal Reserve System in 1913 to the turbulence of the Panic of 1907. But why did the successful movement for creating a U.S. central bank follow the Panic of 1907 and not any earlier National Banking Era panic? The 1907 panic displayed a less severe output contraction than other national banking era panics, and national bank deposit and loan data suggest only a limited impairment to intermediation through these institutions.

We argue that the Panic of 1907 was substantially different from earlier National Banking Era panics. The 1907 financial crisis focused on New York City trust companies, a relatively unregulated intermediary outside the control of the New York Clearinghouse. Yet trusts comprised a large proportion of New York City intermediary assets in 1907. Prior panics struck primarily national banks that were within the influence of the clearinghouses, and the private clearinghouses provided liquidity to member institutions that were perceived as solvent. Absent timely information on trusts, the New York Clearinghouse offered insufficient liquidity to the trust companies to quell the panic quickly.

In the aftermath of the 1907 panic, New York bankers saw heightened danger to the financial system arising from "riskier" institutions outside of their clearinghouse and beyond their direct influence. The reform proposals from New York banking interests advocated universal membership in a centralized reserve system to overcome the risk of financial panic arising from the observed isolation of some intermediaries. Serious consideration of federal legislation to reform the banking system took place because New York bankers changed in their attitude toward a system of reserves beyond their control.

JEL classification: N21, E59

Key words: central bank, banking panics, National Banking Era

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Please address questions regarding content to Jon R. Moen, University of Mississippi, School of Business Administration, Department of Economics and Finance, University, Mississippi 38677, 601/232-5467, jmoen@bus.ole.miss.edu; or Ellis W. Tallman, Federal Reserve Bank of Atlanta, Research Department, 104 Marietta Street, NW, Atlanta, Georgia 30303-2713, 404/521-8915, ellis.tallman@atl.frb.org.

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Why Didn't the United States Establish a Central Bank until after the Panic of 1907?

I. Introduction

The establishment of the Federal Reserve System in 1913 is conventionally viewed as the inevitable outcome of the turmoil surrounding the Panic of 1907. Before 1907, there had been support from bankers and politicians for a central bank (or system of centralized reserves -- terms we shall use interchangeably), and there had been severe financial crises and bank panics before 1907. Yet these earlier panics had not led to the establishment of a central bank. So what made the Panic of 1907 different from earlier National Banking Era panics? We believe there are two main reasons why 1907 was a turning point in the effort to establish a US central bank.

The first reason is that the Panic of 1907 struck primarily the New York City trust companies. Moen and Tallman (1992) show how New York City trust companies were much more affected by panic withdrawals in 1907 than were New York City national banks. During the Panic of 1907, loans at New York City trust companies fell precipitously by nearly 37 percent. In contrast, loans at New York City national banks increased by over 8 percent. It is notable that New York City trust companies were not members of the New York Clearinghouse.

Timberlake (1984) and Gorton (1985) describe how the private clearinghouses employed specific mechanisms to stem panics during National Banking Era panics. In panics prior to 1907, the New York Clearinghouse addressed runs on member institutions by providing adequate reserves to solvent member banks. The clearinghouse had timely information on member balance sheets, and so could make quick evaluations of the solvency of member banks. During the 1907 panic, the Clearinghouse lacked sufficient

timely information about the trust companies' balance sheets to make reliable inferences about the solvency of these institutions. Lacking this information on trust companies, the New York Clearinghouse was averse to lending to them. The historical record shows that the Clearinghouse delayed action toward trusts and failed to act as lender of last resort to that class of intermediary with any degree of certainty. Eventually, J.P. Morgan, whose efforts in quelling the 1907 panic are legendary, convinced a coalition of bankers to aid the trusts, presumably because letting the trusts go it alone posed a risk to the entire financial system.

The second reason is that there was a dramatic change in leadership and attitudes in the New York banking community. The creation of a central bank required the support of New York banking leaders; without their support there was little chance for congressional approval. Before 1907, there had been no obvious support arising from New York bankers to establish a central bank. As participants in the Panic of 1907, several younger bankers worked behind the scenes to quell the panic. For example, Benjamin Strong worked for JP Morgan and was actively engaged in the resolution of the crisis. The experience of panic provided clear evidence of the threat to the entire payments system posed by the growth of trusts and other intermediaries outside the clearinghouse. The Aldrich banking reform proposal was largely designed by the young, New York bankers who were apparently influenced by the Panic of 1907. The Aldrich Plan included compulsory membership in the system of centralized reserves to overcome the risks observed from having trusts, controlling a large proportion of intermediary assets in New York City, isolated from the New York Clearinghouse, the reserve providers, during the Panic of 1907.

The thesis of this paper follows: the panics of the National Banking Era before 1907 focused on clearinghouse member banks (national and some state banks). By starting amidst the trust companies, the Panic of 1907 was unique, leaving the clearinghouse with much less information about probable solvency of the institutions that were suffering runs on deposits. In the aftermath of the panic, the younger bankers in New York were freed from the constraining attitudes and influence of the older banking generation hostile towards the concept of establishing a central bank in the US. The movement for some type of central bank capable of preventing isolation of solvent institutions from available reserves was then able to proceed.

II. Background and Previous Research

There are many extensive studies on the evolution of the US financial system toward establishing a central bank (Livingston 1986, McCulley 1991, Broz 1997 are a few examples). Each takes a slightly different view of the key factors that eventually led to the general acceptance of the central bank idea. The political economy surrounding specific pieces of legislation are dealt with extensively in those studies. Our goal is different; we refine the analysis of how the Panic of 1907 was different from earlier panics, and then we indicate how such differences posed much greater risks for the financial system than the risks observed in earlier panics. Hence, the paper focuses on the specific economic motives of the New York bankers and how the Panic of 1907 influenced New York banker opinions to favor the creation of a central bank. We do not analyze the subsequent political maneuverings that led specifically to a central bank taking the form of the Federal Reserve System.

E.N. White's study of American banking regulation (White 1983) views the Panic of 1907 as the galvanizing force in forming a US central bank. His research focuses on the dual banking system, and his analysis at the national level shows that national banks were the dominant intermediary in the early part of the National Banking Era. The rapid growth of the state-chartered trusts and banks weakened the dominance of national banks and the influence of the clearinghouses over aggregate financial assets.[1] White noted that the effectiveness of the clearinghouses in combating panics declined as the proportion of assets outside the clearinghouse banks increased.[2] His conclusions are relevant to our narrower focus on the trusts and their "outsider" status in New York City, as they imposed risks on the financial system coming from outside the National Banking structure. Also, he noted how the circumscribed coverage of the clearinghouse was an observable flaw when, during the 1907 banking panic, the trusts were not able to get quick liquidity assistance from the New York Clearinghouse.[3] Because some state banks in New York were clearinghouse members and no New York trusts were members in 1907, the distinction between state banks and trusts appears warranted.[4]

Livingston (1986) suggests that the successful establishment of a central bank in the United States had its origins in the aftermath of the 1890s banking panics. Much attention in the debate over monetary reform focussed on the provision of an "elastic currency," one that could adjust more rapidly to the fluctuations in depositor demands than could national bank notes, diverting attention from establishing a central bank. The

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1 Note that White analyzes an aggregation of state banks and trusts as intermediaries outside the National Banking system and the clearinghouses. Our analysis focuses on trusts separately, noting that in prior research, Moen and Tallman (1992,1999) show that trusts suffered more extreme deposit losses than state banks in New York during the 1907 Panic. We infer that state banks did not involve the same "risks" as trusts.

2 White (1983), p 80.

3 White (1983) pp. 81-82.

movements clamoring for monetary reform typically originated in the mid-west. A main element of one reform faction was the idea of an "asset-backed currency" -- their goal was to eliminate the bond collateral requirement for National Bank notes as specified in the National Banking Act of 1863.[5] The concept of an asset-backed currency is somewhat related to the older idea known as the "real bills" doctrine.[6] The asset-backed currency became a key feature of the Baltimore Plan of 1894, an early vehicle to focus debate on monetary reform. No successful reform activity resulted from this initiative (see Selgin and White 1994). According to Sprague (1910) and Livingston (1986), the reform of the monetary system took a back seat to the issue of monetizing silver and bimetallism that dominated the political landscape from 1895 to 1900.

A later effort at monetary reform was the Indianapolis Monetary Commission (1897-1898), a longer-lived effort to re-evaluate the US monetary system. One notable feature of the composition of the commission is that there were no New York bankers represented, although J.P. Morgan was a financial contributor to the effort. Rather, the group was composed of businessmen and merchants. The first issue at their conference in 1897 was the maintenance of the Gold standard and the end to the battle over the bimetallic standard. While the eventual passage of the Gold Standard Act of 1900 was an important legislative outcome of the movement, not much movement towards a central bank occurred.

The apparent flaws of the US financial system were addressed in a variety of unsuccessful legislative proposals. The Indianapolis Monetary Commission had a plan

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[4] Moen and Tallman (1999).

[5] Champ, Smith and Williamson (1996) examine the contrast between the Canadian banking system and the US system around 1900. They conclude that the issuance of emergency currency in Canada backed by "general assets" of a bank allowed the elasticity necessary in that banking system.

for monetary reform that included both an asset-backed currency and nation-wide branch banking. The Fowler Bill, named for its legislative sponsor Representative Charles Fowler of New Jersey, proposed the changes suggested by the Commission and was debated in Congress during 1901 and 1902. Nelson Aldrich introduced alternative legislation to the Fowler Bill that would have given national banks the right to issue an emergency currency. Such currency would have required the deposit of state municipal or railroad bonds, hence negating the initiative of asset backed currency. Both legislative initiatives failed in 1902, but the inquiries led to increasing attention to financial system reform. Again, there was little participation from New York banking interests in these legislative endeavors.

The currency committee of the New York Chamber of Commerce followed on the heels of the Indianapolis Monetary Commission, and Frank Vanderlip (a rising star banker and vice-president at New York City's National City Bank) was an important committee member. Charles Conant, a leading banking historian at the turn of the century, viewed consensus among New York bankers as essential to successful monetary reform, and stated that

> No important financial measure will receive favorable consideration in Congress unless it has the endorsement of representative bankers. Such being the case we are of [the] opinion that the bankers of New York City ought to take up this question and reach an agreement upon some satisfactory measure (untitled Conant memorandum, August 22, 1906, Vanderlip papers).

Separately, the American Bankers Association formed a commission to study a plan to establish an "elastic currency," and the communication between the ABA and the New York group was generally receptive. Over time, however, the New York financial

[6] Real bills doctrine proponents argue that self-liquidating, short-term loans or commercial paper were the proper backing for a currency, as opposed to government bonds or other longer-term assets.

interests became skeptical of an "asset-backed" currency. Jacob Schiff stated "Personally, I hold strongly to the opinion that it will prove unwise, if not dangerous, to cloth six thousand banks or more with the privilege to issue independently a purely credit currency, no matter how complete the safeguards may appear" (Livingston 1986, p. 169). Paul Warburg also criticized the idea of an assets currency. Summarizing his views in his recollections on the creation of the Federal Reserve System, Paul Warburg noted

> There were other groups in Congress, which advocated so-called "asset-currency" plans. Representatives of this school of thought were moving on sound lines, when proposing to make commercial assets the basis of circulation. They were preaching unsound doctrines, however, when they urged that individual commercial banks should be authorized to issue notes against their own assets, and that they should be permitted to do so without providing a safe machinery for securing such notes and redeeming them in gold (Warburg 1930, p. 19).

The general opinion turned against asset-backed currency so much that *Bankers Magazine* observed that reformers were abandoning that idea for monetary reform (see also McCulley 1992, p. 130).

Sprague observed that the events during the panic of 1893 did little to increase sentiment for a central bank, particularly among New York bankers. Indeed, he argues that it probably damped it:

> The experience derived from this crisis (of 1893) led to no changes whatever either in banking methods or in legislation. The silver question drew away men's minds from any consideration of the questions raised by earlier crises. Whether the banks through their own efforts might not place themselves in a better position to meet future emergencies does not seem to have been discussed. Both bankers and the public seem to have been well satisfied with the showing made by the banks, especially those of New York; and indeed if comparison be made with the policy adopted by the Chicago banks (of not issuing clearinghouse certificates quickly), the banks of the metropolis met the situation in a creditable fashion (Sprague 1910, p. 210).

Until 1907, New York national banks handled financial crises adequately on their own, at least in terms of protecting the clearinghouse member banks. It is possible that they may have even profited from crises (Donaldson 1992, 1993). Under such circumstances, one would expect little enthusiasm for the institution of a central bank in the US coming from New York banking forces.

III. Theoretical Models of Banking Panics – Motivations for a Central Bank

The seminal literature describing theoretical models of bank runs beginning with Bryant (1980) and Diamond and Dybvig (1983) has recently been extended to the analysis of the propagation of runs into widespread banking panics. The recent papers on banking panics have implications regarding whether key financial market participants would support the establishment of a central bank. We focus on three particular models, showing that our hypothesis about the establishment of a central bank can resolve some inconsistencies in the implications of each model, implications concerning the motives for establishing a central bank.

Timberlake (1984) and Gorton (1985) discuss the role of private clearinghouse behavior during the National Banking Era (1863-1913). These papers emphasize the quasi-regulatory role of clearinghouses and the specific mechanisms used to combat widespread runs on deposits during banking panics. These papers provide a sense in which the existing clearinghouse system may have been sufficient to quell panics, and that the establishment of the Federal Reserve System may have been unnecessary.

Donaldson (1992, 1993) presents a model of banking panics that implies a more controversial view of clearinghouse behavior. Donaldson argues that the evidence favors

a monopolistic model of the cash reserves market in the National Banking Era. Donaldson suggests that the large New York banks, especially the members of the New York Clearinghouse, were able to earn risk-adjusted excess rates of return from loans of cash during the banking panics. This model, if correct, presents a problem with respect to the eventual establishment of a central bank. Why would the large New York banks that earned excess profits have been in favor of establishing a central bank, when this new institution would remove the monopoly on cash reserves from the New York Clearinghouse?

McAndrew and Roberds (1995) present a model of banking in which optimal private clearinghouse behavior allows for the possibility of bank panics. The abnormal returns to clearinghouse member banks during panics allow member institutions to coexist with nonmember institutions that bear a lower reserve tax by holding fewer reserves. In the model, the existence of banking panics is a mechanism to punish nonmember financial institutions for holding lower than optimal reserves while benefiting clearinghouse members that hold a higher level of reserves. Nonmember institutions free ride on the reserve holdings of the clearinghouse in this model, but the clearinghouse lacks the power to enforce any direct penalty on nonmember institutions for holding lower reserves. In the model, if the lower reserve holding of nonmember institutions persists without fear of penalty, the nonmember institutions would dominate the clearinghouse member institutions because of the lower reserve tax. During panics, the clearinghouse alleviates the ill effects of banking panics for clearinghouse members, but nonmember institutions are penalized for holding too few reserves by being forced to liquidate some assets prematurely, contract in size, or even shut down.

Our evidence provides a resolution to the implications widespread in the literature. In contrast to Timberlake and Gorton, this paper argues that the participants in the quelling of the Banking Panic of 1907 were unsatisfied that the clearinghouse system, with its circumscribed membership, could deal effectively with the increasing risks arising outside the clearinghouse system. Donaldson's model appears appropriate for the national banking era panics before 1907, in which the banks struck by runs on deposits were typically members of the clearinghouse. In 1907, the banking panic affected mainly the New York City trusts and posed a risk to the payments system that the clearinghouse was unable to monitor effectively.

We view our evidence as supportive of the implications in McAndrew and Roberds (1995), in which panics provided a mechanism to penalize fringe intermediaries that held too few reserves. This result could co-exist with a monopoly of reserves as presented in Donaldson. By 1907, however, the New York City trusts had grown in total assets and had become comparable in size to national banks. Hence, the focus of the Panic of 1907 on trust companies posed new risks to the entire payments system arising from outside the traditional payments arena. The trust panic was a more serious threat to the clearinghouse system than would have been predicted in the McAndrews and Roberds model. As a result, we argue that following the Panic of 1907 the large New York City clearinghouse banks, even if they had made excess returns from earlier panics, recognized the exacerbated risks presented by the trusts in the Panic of 1907. Thus, the New York City bankers changed their perspective on the efficacy of establishing a central bank; allowing competition to be checked through periodic panics had become less desirable.

IV. Trust Companies and the New York Money Market

The assets of trust companies grew tremendously after 1896; by 1907 total assets of trust companies and of national banks in New York City were about the same. Table 1 presents the volume of assets held by national banks and by trust companies in New York City in 1896 and 1907; while both types of intermediaries grew rapidly, trust companies grew more rapidly than the clearinghouse member national banks -- 204% compared to 135% (Moen and Tallman 1992, p.612). In terms of annual average growth rates, national bank assets grew at about 7.5 percent a year, whereas trusts assets grew at a rate closer to 10 percent a year.

Table 1 Total Assets of National Banks and Trust Companies in New York City

	National Banks, NYC	**Trust Companies**
1896	577,924,838	396,700,000 (New York State)
1907	1,364,729,602	1,205,019,000 (New York City)

Initially trust companies were rather conservative institutions, designed to manage trust funds and estates, and to serve as a place to park short term accounts. Because of their lower risk activities, trusts were less regulated, had lower capital requirements, and also had lower cash reserve requirements than national or state banks in New York (Moen and Tallman 1992, 1999). Trusts evolved into more speculative institutions, however, as their owners became aware of the broad range of investments open to trusts; for example, trusts were able to invest in real estate and stock market assets, whereas national banks were prohibited from such investments. Trusts generally offered higher

returns to their depositors because they held fewer reserves (and hence paid a lower reserve tax) than national banks and because of their freedom to invest in a broader array of assets than the national banks.

Trust company deposits were generally less crucial in payments transactions, for example, trust check volume was only 7 percent of the check volume of national banks in New York City.[7] Still, trust deposits were demandable debt contracts, demand deposits with comparable characteristics to demand deposits at national banks. Hence, when struck with a panic, trusts were faced with the same dilemma implicit in any fractional reserve banking system – not all demands for liquidation of deposits could be satisfied. As a result, the possibility of panic-induced, wholesale withdrawal of trust deposits always existed. Nevertheless, banking interests in New York may have failed to recognize the increased risk to the payments system arising from the rapid growth of trust companies in New York City, as most of the growth had occurred between 1896 and 1907, a period of without major financial panics.

Furthermore, trusts and national banks in New York had had a contentious relationship in the years leading up to the 1907 panic. Competitive rivalry was only one element of the mistrust. Before 1903, the New York Clearinghouse had extended clearing privileges to New York City trusts. The trusts left the clearinghouse in 1903 after the clearinghouse passed a resolution that required nonmember institutions to hold no less than 10 percent cash reserves by 1904 (Cannon 1910, p. 178)). Trusts apparently perceived the benefits of the clearing privileges as not worth the additional costs of the reserve tax.

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[7] Barnett (1910), p. 133.

In 1906, in response to the complaints of the national banking interests, New York State imposed a 15 percent reserve requirement on trusts, but only one third of reserves had to be in the form of currency in the vault. The rest could be on deposit as banker's balances or as specified bonds (Barnett 1910, p. 129). In contrast, the national banks were required by the National Bank Acts to keep a 25 percent reserve in the form of non-interest bearing specie or legal tender, a much more severe constraint than that faced by the trusts. Even after the panic of 1907, New York City national banks were unable to enforce higher reserve requirements on New York City trusts (and state chartered institutions generally) owing to the strong, local political support held by these state institutions. New York City national banks were unable to get support for additional state legislation to force the competing trusts (and other state chartered institutions) to hold higher reserves as cash held at the clearinghouse (McCulley 1992, pp. 206-11). In essence, the trusts were perceived to be free riding on the reserve positions of the national banks and the clearinghouse. National bank attempts to get the trusts to shoulder their own liquidity burden failed. The option of national legislation for a system of reserves appeared to have been the only alternative.

Many financial structures present during the 1907 panic had also been present in earlier panics and can be ruled out as the immediate causes of the panic and for establishing a central bank. For example, the pyramiding of reserves across central reserve city, reserve city, and country national banks existed in 1907 and earlier. Also, branch banking was still pretty much nonexistent. Clearinghouse loan certificates, IOUs used between clearinghouse member banks in lieu of cash to settle clearing balances and therefore to free up cash to pay depositors during panics, had also been used in earlier

panics.   The problem with the inelastic currency also remained (Friedman and Schwartz 1963, pp. 168-73).

While financial institutions and structures remained similar across the panics of the National Banking Era, the behavior of balance sheet items (loans and deposits) was different in 1907. Sprague notes that loans and deposits at New York national banks contracted somewhat in August during the Panic of 1893 (Sprague 1910, p. 190). Loans and deposits increased at the New York national banks as depositors fled the trusts during the Panic of 1907 (Moen and Tallman 1992).

We examine the loans, net deposits and reserves of national banks from the weekly statements of clearinghouse banks in New York City during the most severe National Banking Panics of 1873, 1893 and 1907. In Graph 1 we present the three series for national banks in New York City for each of the three panic years. Loans are defined as total loans, deposits are defined as net deposits, and reserves are defined as specie and legal tender, and each series is the aggregate of clearinghouse member banks in New York City (in A.P. Andrew, *Statistics for the United States 1867-1909*). What we find in those figures is that the deposits, loans and reserves all contract during 1873 and 1893 when the panic strikes. In contrast, we observe that in 1907 national bank loans and deposits increase while reserves decline. We interpret the decline in the reserves as an indication that there was some form of disintermediation taking place. The increase in loans and deposits, however, is also an indication that the national banks were not the focus of the Panic of 1907.

We suggest that the panic-related withdrawals from trusts forced the trusts to find additional sources of reserves because the trusts held a low proportion of reserves to

deposits. During the panic, deposits at New York City trusts contracted by nearly 40 percent. The deposit withdrawals from trusts caused a drain on the trust reserves. The increase in national bank deposits may reflect partly a redeposit of formerly trust deposits into national banks. Trusts likely borrowed reserves from the Clearinghouse member banks or acquired them by selling assets. In either case, the drain on trust deposits reduced the level of reserves among New York City national banks and contributed to the increased level of loans held by national banks.

Donaldson's monopoly of cash reserves may adequately describe the National Banking Era panics and the attitude that prevailed among New York City bankers toward panics through 1893, namely, that panics were profitable for clearinghouse banks with adequate cash reserves. However, by 1907 the New York City intermediation industry was substantially different, with a much larger proportion of total assets beyond the quasi-regulatory influence of the clearinghouse. The opportunity for a New York national bank to make a profit from a panic, while perhaps still present in 1907, was clearly now more risky. To a large extent, the main components of bank-like assets outside the Clearinghouse were those in New York City trust companies. The increase in deposits and loans at the national banks that took place during the Panic of 1907, while puzzling at first, can be seen as scramble by the banks to maintain intermediation rather than to simply profit off of the misfortune of the trusts.

Extending Clearinghouse loans to member institutions suffering runs on deposits, that is, putting Clearinghouse assets at risk for other Clearinghouse members, was not controversial. For example, in the middle of October 1907, when there were runs on national banks associated with the Heinze copper corner caper, the New York

Clearinghouse took prompt action to close or reorganize those banks, replacing management and paying off depositors of closed institutions at par (Moen and Tallman 1990). The runs on national bank deposits ceased. The subsequent panic apparently did not spill over to other national banks, perhaps because of the effective actions taken with regard to the Heinze banks. In panics before 1907, runs on deposits in New York had taken place mainly at national banks, members of the clearinghouse for the most part.

In contrast, extending Clearinghouse loans and risking national bank assets for a class of intermediary that was less regulated and outside the influence of the Clearinghouse was controversial. By 1907, the increased size of the trusts left a significant proportion of financial assets held by intermediaries beyond the examining authority of the Clearinghouse. The New York Clearinghouse had virtually no examining authority over trust companies and conflicting incentives for aiding them. Thus, unlike in earlier panics the Clearinghouse was an unreliable candidate to provide liquidity in 1907 to the troubled nonmember institutions, namely trusts.

When the 1907 panic began and spread throughout the New York trust companies, the Clearinghouse was slow to act. The legendary efforts of JP Morgan and other bankers eventually quelled the panic, although Wicker (1999) makes a compelling argument that the eventual solution to the 1907 panic was not as effective as the Clearinghouse actions implemented in earlier panics. Wicker's complaint regarding clearinghouse behavior in 1907 is that the clearinghouse delayed the issuance of clearinghouse loan certificates. The timely issuance of clearinghouse loan certificates may have alleviated somewhat the perceived liquidity shortage. In addition, Wicker argues that the Clearinghouse should have mobilized a collective action in support of the

trust companies prior to the closing of the Knickerbocker Trust. In retrospect, this prescription appears superior to what actually unfolded during the panic. However, it is our point that the Panic of 1907, being centered on trust companies, represented a discrete break from previous panic experiences. Hence, it is not surprising to us that the clearinghouse hesitated to aid trusts, an intermediary outside the clearinghouse system, and with no observable stringencies at national banks, delayed issuance of clearinghouse loan certificates.

The "rogue" status of the trust companies left them without access to emergency loans, giving the Clearinghouse little effective influence over the risk profile of the trust assets. It was this source of the panic, rather than the size of the economic disruption caused by the panic that was crucial for the movement towards a central bank, because the Clearinghouse had demonstrated an ability to handle effectively earlier panics originating within its membership.

Such a dichotomy between participants in the financial system was not important in the other central reserve cities in 1907, most notably Chicago (Moen and Tallman 1999). There, the coverage of the clearinghouse was much broader, including trust companies and state banks as members. Given the broader coverage of the clearinghouse, Chicago national bankers saw less danger in having several classes of intermediaries, as the larger trust companies there were members of the clearinghouse. Certainly there were competitive tensions between banks and trusts in Chicago, but they were not viewed as "outsiders" posing a threat to the stability of the payments system as trusts were viewed in New York. Chicago trusts generally held higher cash reserve ratios than New York trusts, thus reducing the reserve tax differential between Chicago national

banks and trusts (see Moen and Tallman 1999). Thus, reform proposals coming from the Chicago bankers continued to take the form of extending the existing clearinghouse functions to a wider geographic scale rather than creating a central bank. JB Forgan, president of the First National Bank of Chicago, consistently held such views before and after the Panic of 1907.

While the coverage of the clearinghouse in Chicago was broader, revealing the mitigating influence of a more inclusive source of centralized reserves, events in New York were far more important in shaping the movement towards a central bank. As by far the largest of the three central reserve cities, perceptions of risk to the payments system in New York City would ultimately translate into more effective political pressure for a central bank than would pressure coming from smaller markets. The potential for losses was simply much greater in New York. National banks in New York had $825 million in deposits compared to $262 million in Chicago and $116 million in St. Louis, the two other central reserve cities (Sprague 1910, pp. 220-21).

V. New York Bankers and the Panic of 1907

A. Changing Attitudes in the Old Guard.

A change in attitudes within in the New York banking community helps explain why the events of 1907 were so influential in spurring the creation of the Fed. In the wake of the panic, the New York banking forces perceived the trusts as much riskier institutions, "the major sources of instability at the nation's financial center" (McCulley 1991, p. 201). And the risk posed by the trust companies to the payments system had not gone unnoticed by several rising bankers even before the panic. In this group of bankers

we include men like Paul Warburg, Frank Vanderlip, Benjamin Strong, and Henry Davison. More established bankers like James Stillman and JP Morgan had been relatively uninterested in the idea of a central bank before 1907. A fundamental change in attitudes on the part of these older bankers was key in allowing the movement towards a central bank under the guidance of these younger bankers to finally proceed.

It is well known that Paul Warburg had suggested the idea of a US central bank as early as 1903. In a revealing passage in his memoirs, Warburg describes how James Stillman, President of National City Bank of New York, chided him in 1903 for his paper on central banking reform. Stillman went as far as to suggest that the US banking system would be the model for the European banking systems. In 1907, Stillman, presumably worried about the future ability of New York national banks to deal with financial crises, requested a copy of a paper Warburg had written several years earlier outlining a central banking plan for the US. The following extended quote from Warburg's memoirs outlines these changing attitudes clearly:

> This memorandum was shown to Mr. Jacob Schiff, then the senior partner of the banking firm Kuhn, Loeb & Company, of which I had lately become a member. Mr. Schiff read the paper with interest and told me, what afterwards he often repeated, that, while theoretically he agreed with most of the thoughts expressed, he believed that I was misjudging the psychology of the American people, who would never, he said, accept any system approaching a central bank. But since he always appreciated earnest efforts on the part of his juniors and never missed an opportunity for encouraging them, he suggested that I let him show the paper confidentially to two friends. One of these was James A. Stillman, president of the National City Bank of New York. It was significant, however, of the atmosphere in which we were living that Mr. Schiff warned me to be careful not to have the memorandum go any further, lest, having just arrived from Europe, I might impair my standing in the banking community by creating the impression that I was urging a system which, in the final analysis, would have to be built around a central bank organization. I gladly accepted Mr. Schiff's suggestion, and a few days afterwards I found Mr. Stillman standing over my desk. He looked at me silently, as was his wont, through his half-closed, heavy dark eyes.

> “How is the great international financier?” he asked with friendly sarcasm. He then added, “Warburg, don’t you think the City Bank has done pretty well?”
>
> I replied, “Yes Mr. Stillman, extraordinarily well.”
>
> He then said, “Why not leave things alone?”
>
> It was not without hesitation that I replied, “Your bank is so big and so powerful, Mr. Stillman, that when the next panic comes, you will wish your responsibilities were smaller.”
>
> At this, Mr. Stillman told me that I was entirely wrong, that I had the mistaken notion that Europe’s banking methods were the most advanced, while, as a matter of fact, American methods represented an improvement upon, and an evolution of, the European system, America having already discarded its central bank. He had no doubt that progress would have to be sought, not by copying European methods, but by elaborating our own.
>
> Four years later, in the midst of the panic (of 1907), I found Mr. Stillman once more standing over my desk; and when I looked up, he asked, “Warburg, where is your paper?”
>
> I said to him, “Too late now, Mr. Stillman. What has to be done cannot be done in a hurry. If reform is to be secured, it will take years of educational work to bring it about.”
>
> This incident is related for the sole purpose of showing the status of banking and business opinion in those far-off days. What Mr. Stillman had said was typical of the general attitude then prevailing (Warburg 1930, pp. 18-19).”

Clearly, the Panic of 1907 altered at least one influential banker’s opinion on the future organization of US banking. The influence of Stillman should not be underestimated, as one biographer recalls how Stillman had to convince a stubborn JP Morgan to aid the Trust Company of America after the Knickerbocker trust had suspended (Burr 1927, pp. 233-34). Morgan apparently believed that he shouldn’t have to risk his own assets to save an imprudent intermediary.

Frank Vanderlip clearly outlines the division between the old and new generations in the New York banking establishment:

> Henry Davison and Paul Warburg were others who had my deep respect after the panic. These two and Ben Strong and I were among the few men who, at that time, were fully persuaded that the remedy for the weakness in our banking system was the creation of some sort of a central institution to hold the reserves of the country. Only when such a common reservoir existed, we were convinced, would it be possible to use the reserves effectively.

> We were entirely right because, if the Federal Reserve System had been in existence in 1907, the thing that brought about the financial paralysis, the mad scramble for individual reserves, would not have occurred; there would have been no panic in 1907. However, even when the madness was over, and when their lesson should have been well-learned, many of the oldest, the most distinguished, and respected bankers of the country were still opposed to banking law reform. They understood the old, haphazard system. Consequently, they were disposed to reprove younger men, who wanted to change, by reminding them that the existing national banking system had served the nation through the years of expansion after the 'sixties; it should not, they insisted, become the plaything of tinkerers or theorists. Their minds were as little engaged by the obvious as are those of their successors by the weaknesses of the gold standard (Vanderlip 1935, pp. 180-81).

B. Awareness of the Risk Posed by Trust Companies

Many of the bankers who were involved in the movement for a central bank made specific references to the trusts and the problem of allocating reserves to solvent institutions in the absence of a centralized reserve mechanism. Centralized monitoring was not explicitly mentioned, but descriptions of the financing of the Panic, especially those that focus on the effort of Benjamin Strong to assess the financial condition of the Knickerbocker Trust, implicitly describe the lack of monitoring information on trusts at the Clearinghouse. Thus, the two related issues – how to monitor and how to allocate emergency reserves – centered on the relationship between the clearinghouse and the intermediaries outside the regulatory structure of the National Banking System.

James Stillman, in February of 190 7, displayed prescience with regard to the oncoming panic. In a letter responding to Frank Vanderlip's complaint that National City was holding too high a reserve ratio, Stillman wrote:

> I have felt for sometime that the next panic and low interest rates following would straighten out a good many things that have of latter years crept into banking. What impresses me as most important is to go into next Autumn (usually a time of financial stringency) ridiculously strong and liquid, and now is the time to begin and shape for it. … (I)f by able and judicious management we have money

> to help our dealers when trust companies have suspended, we will have all the business we want for many years.
> (Stillman to Vanderlip, February 12, 1907. In Cleveland and Huertas, 1983)

The quote reinforces the idea that the Stillman expected the trust companies to suffer in the next banking panic. What appeared to be excessive cash reserves at National City Bank was simply preparation for the next financial crisis, one in which Stillman thought the national banks would prevail. Having "all the business we want for many years" is consistent with McAndrews and Roberd's characterization of panics as a means to discipline competitors free-riding on the national bank's higher reserve position.

Frank Vanderlip, a key participant in the negotiations to design a central bank, argued that the clearinghouse had to find a way to get the trust companies under their supervision, and to deal effectively with poorly managed and risky institutions (McCulley 1992, p. 202).[8] "To go on as things are at present" – with the nation's financial center exposed to the indiscretions of the trust companies – "is obviously absurd." (Vanderlip to Stillman May 2, 1911 Vanderlip Papers). It was a major aim of the large banks at the Clearinghouse. Notably, Vanderlip argued that the existing "chronic state of disagreement between trusts and banks must end" (McCulley 1992, p. 202). In addition, the initial drafts of the Aldrich Plan intended to force all state banks and trusts to be under the central regulation of the National Reserve Association, an issue that mid-west bankers, most notably James Forgan, thought would be a controversial aspect of the legislation (McCulley 1992, p. 242). When this aspect of the legislation was dropped,

[8] White (1983) notes that broad coverage of the centralized reserves system was an important objective of reformers (pp. 81-83). Unfortunately, the final outcome of federal legislative negotiations, the Federal Reserve System, did not compel membership. White also discusses the failure of the Federal Reserve System to garner a large proportion of state banks and trusts as members (pp. 63-64).

Vanderlip was more than disappointed. The failure to force state banks and trusts into the system would leave unrepaired what was a key flaw in the National Banking System.

As noted above, McAndrew and Roberds (1995) propose that the existence of bank panics had provided national banks a mechanism to hinder the growth of fringe intermediaries that were less involved in the payments system. By the time the panic of 1907 took place, trusts in New York City were in the aggregate too large to have their growth checked through panics, at least without risking severe damage to the payments system.

From our viewpoint, the key element of monetary reform was to compel widespread membership in any clearinghouse arrangement. Simply providing broader access to reserves, without subjecting more intermediaries to the clearinghouse's (or some centralized controlling body) examination authority would leave the system at risk. As stated above, our thesis is similar to Eugene White's critique of the Federal Reserve System that arises from the split between state and nationally chartered intermediaries, members and nonmembers. But we are more specific – if membership in a clearinghouse or central banking system was voluntary, then the financial system would still be subject to the problem that a group of institutions could remain outside the clearinghouse. This set of intermediaries, less regulated and with potentially profitable opportunities unavailable to those within the regulatory structure, could remain a source of systemic risk. Without clearinghouse monitoring to go along with reliable access to reserves, these intermediaries would still pose a risk for the entire payments system.

The New York banking interests influenced the design of the central bank legislation that was initially introduced in Congress. Vanderlip (1935) describes the

infamous meeting of New York bankers and Senator Nelson Aldrich at JP Morgan's estate on Jekyll Island, Georgia in November of 1910. As noted above, the resulting Aldrich plan compelled membership in the National Reserve Association by all intermediaries. The plan failed to pass in that form, however, and the subsequent Federal Reserve Act did not compel universal membership. While that feature of the Federal Reserve Act may have been unsatisfactory to those New York banking interests involved in the formulation of the initial central bank legislation, once the process had been initiated it spread beyond the control of the New York banking interests. The absence of universal membership in the Federal Reserve System helps to explain the controversial performance of the Fed during the bank crises early in the Great Depression. The Fed acted like the private clearinghouses it had been modeled after. It tried to protect member banks while letting thousands of non-member state institutions fail in the early 1930s (Friedman and Schwartz 1963, pp. 358-59). The Fed's behavior during the Depression was strongly parallel to that of the New York national banks during the Panic of 1907.

VI. Conclusion

Economic historians typically view the recurrence of financial panics during the National Banking Era (1863-1913) as placing the entire payments system at risk, a risk comparable to the current concept of "systemic risk." Certain contemporary accounts and recent research suggest that the panics were focused and at times reasonably well-controlled by the large national banks and their clearinghouses in the central reserve cities. Using their pooled assets and "common law" powers, the national banks and the clearinghouses quelled the panics by putting their own assets at risk through some

established clearinghouse mechanisms. Established mechanisms for liquidity provision had been in place since the panic of 1873, and clearinghouses used their information on member institutions to decide on whether to aid or liquidate member institutions suffering withdrawals.

The Panic of 1907 threw a wrench into the machine. Trust companies were the focus of that panic, and they were not members of the New York Clearinghouse. Liquidity provision to the trusts took place grudgingly because the national banks in New York City had incomplete information and influence over the trust companies. JP Morgan orchestrated a resolution to the Banking Panic of 1907, but the next generation of New York bankers recognized a key difference in that panic relative to earlier National Banking Era panics. The risks to the payments system arose among the trusts, an intermediary perceived as outside the payments system and beyond the monitoring of the New York Clearinghouse. Despite their isolation, the risk of withdrawal of demand deposits from trusts posed systemic risks similar to those from runs on banks whose operations were more closely associated with the payments system.

Previous post-bellum attempts to establish a central bank in the US lacked the support of New York banking interests, a component key for any successful central banking legislation. In the aftermath of the Panic of 1907 the New York bankers recognized the growth of relatively unregulated intermediaries as a new and growing risk to the financial system. The fact that these intermediaries were beyond the influence of Clearinghouse monitoring contributed to the change in New York banker opinion that moved them toward finally supporting the creation of a central bank. This change in perspective explains the active role played by New York bankers in the formulation of

the initial Aldrich Plan, designed during the famous clandestine meeting on Jekyll Island, November 1910. While the Panic of 1907 convinced important New York bankers that the time for a system of centralized reserves had come, they nevertheless were unable to control the ultimate form that such a system took.

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