How J. P. Morgan Picked the Winners and Losers in the Panic of 1907: Resolving Adverse Selection and Restoring Surplus to a Frozen Deposit Market

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Abstract

By signaling which institutions merited emergency liquidity provision and which did not, Morgan could resolve depositors' adverse selection problems in shadow banks by either confirming that an institution was solvent or insolvent. Evidence for how Morgan decided which signals to give come from two sources: narratives provided by historians and his Syndicate Books. Four financial firms (Knickerbocker Trust, Trust Company of America, Lincoln Trust, and Moore & Schley brokerage house), one municipality (the City of New York) and one financial system utility (the New York Stock Exchange) requested emergency liquidity. Morgan's Syndicate Books provide evidence that all applicants for emergency liquidity had participated in his securities underwriting syndicates directly or indirectly. The single denial of aid was to an agent from an unprofitable syndicate, the Knickerbocker Trust. All of the approvals were made to agents from profitable syndicates or to agents who were instrumental in turning unprofitable syndicates into profitable ones.

1. Literature Review and Historiography

Information asymmetries are widely acknowledged as sources of market inefficiencies or of market failures (Akerlof, 1970). In the case of the market for bank deposits, adverse selection and moral hazard are two primary sources of information asymmetry between depositors (lenders) and banks (borrowers). When depositors cannot solve the adverse selection or moral hazard problems, often exacerbated in periods of high interest rates, they refrain from depositing funds with solvent banks in their effort to avoid depositing funds in insolvent ones. A rational response from depositors may even be to "run" a bank as a test of its solvency (Calomiris and Gorton, 1991). If runs emerge, the surpluses to both depositors and to banks that are present in well-functioning deposit markets disappear as the market for deposits freezes.

At least three surplus recovery mechanisms to resolve adverse selection problems have been identified in the literature: signaling to lenders (Connelly, et al., 2011), screening borrowers (Leland, 1979; Ghatak, 1999), and wielding reputational capital (Yamagishi and Matsuda, 2002; Sufi, 2007). Moral hazard problems can be overcome by monitoring borrowers' cash flows after a loan has been made. Each of the four mechanisms reduces asymmetric information between lenders and borrowers, allowing the deposit market to function again, thus restoring market surpluses to both depositors and to banks.

In the October 1907 setting, conditions existed for unresolvable adverse selection problems to emerge in the market for both bank deposits and for trust company deposits (shadow banks). First, rates in the money markets had been elevated since March of that year, in response to central bank tightening policy by the Bank of England. Rate increases accelerated in early October exacerbating the likelihood of adverse selection. Next, a boom-bust pattern in copper prices, perhaps representing a secondary channel for London's tight money policy, resulted in plunging prices of copper-related securities (Rodgers and Payne, 2018). Rumors spread that certain banks and trust companies had funded highly leveraged positions in those copper securities (Fohlin et al, 2016), adding to adverse selection problems for depositors who worried that some institutions were more exposed to plunging copper securities than others. Finally, distinct from the banks, trust companies paid higher rates on deposits, had lower reserve requirements and did not have a coordinated clearing house certification or screening system, all contributing to depositors' heightened suspicions regarding the vulnerability of the trust companies to the copper shock compared to banks. It should be no surprise that as a rational test of their suspicions, depositors "ran" the New York trusts in question. However, it may have been a surprise when depositors across the nation began to "run" banks and trust companies, precipitating a suspension of withdrawals, a frozen market for deposits and the loss of market surplus for all depositors and financial intermediaries.

2. Research Question and Data Analysis

The New York Clearinghouse was successful in resolving the bank runs in October of 1907, but not the runs on trust companies; trust companies were not members of the Clearinghouse. The research question addressed by this paper is "how does J. P. Morgan use three surplus recovery mechanisms to unfreeze the trust company deposit market?" First, evidence is provided that Morgan was indeed an informed agent whose signals, should he make them, would influence depositors' estimation about the solvency of financial institutions. Then, evidence is presented that Morgan's signals and screens could be amplified by a prodigious reputation endowment. Finally, evidence is uncovered regarding how he decided which signals to make, that is, how he decided which requests for liquidity provision would be granted in estimation that the institution was solvent and which requests would be denied, signaling that the institution was likely insolvent.

The paper provides evidence from analyzing Morgan's Syndicate Books covering the thirty years before the 1907 Panic that he was likely perceived as an informed agent having achieved almost systemic omniscience by including hundreds of banks, shadow banks, insurance companies, investment banks, and wealthy individuals both from the US and from abroad in his securities underwriting syndicates. (See Figure 1.) Securities he underwrote changed over time according to prevailing liquidity conditions ranging from short term loans, to long term bonds to preferred and common equity. Further evidence that Morgan was an informed agent is supported by the finding that half his 1913 personal estate was held in shares of financial intermediaries that together placed 341 directors in 112 corporations with $22 billion in resources.[1] (See Table 1.)

By signaling which institutions merited emergency liquidity provision and which did not, Morgan could resolve depositors' adverse selection problems by either confirming that an institution was solvent or insolvent. Evidence for how Morgan decided which signals to give come from two sources: narratives provided by historians and his Syndicate Books. Four financial firms (Knickerbocker Trust, Trust Company of America, Lincoln Trust, and Moore & Schley brokerage house), one municipality (the City of New York) and one financial system utility (the New York Stock Exchange) requested emergency liquidity.

[1] Pujo hearings, 1912.

Historians chronicle Morgan’s formation of at least six screening committees to ascertain the solvency of the five institutions (Bruner and Carr, 2007; Satterlee, 1940), but no screening committee was apparently convened to examine the New York Stock Exchange. Historians also note that in two cases (Knickerbocker Trust and Moore & Schley), time constraints imposed by a fast-evolving crisis did not permit thorough solvency tests.

Evidence of Morgan’s reputation endowment includes estimates of his growing share of the railroad bond underwriting market (See Table 2.), his appointment as the fiscal agent of the United States, and his well-known roles in the successful resolution of the US Gold crisis of 1895 and in the 1890 emergency Barings’ facility organized by the Bank of England. Finally, the dynastic aspect of his firm may have enhanced his reputation with the expectation that agents will seek to preserve economic rents over future generations’ life spans and not squander rents for short-term gain. Jack Morgan, Jr. was already prominent in Morgan’s firm by 1907.

The literature on decision-making during a crisis finds that agents rely upon experience rather than on data mined during the crisis when making pivotal judgment calls (Snowden & Boone, 2007). For Morgan in 1907, that indicates an analysis of his pre-crisis interactions with the five petitioners should be useful.

In general, this literature finds that leaders learn to define the crisis framework with examples from their own organization’s history and when information is incomplete, they assess the facts of the situation categorize them and then base their response on established practice. (Snowden and Boone, 2007). The syndicate mechanism was one with which Morgan had considerable experience, having honed its apparatus for over fifty years.

Complicated crisis contexts, unlike simple ones, may contain multiple right answers; Morgan and others could have configured any number of responses to the crisis. Because the complicated context calls for investigation of several options, many of which may be excellent, good practice as opposed to best practice is what is implemented. During a shock, none of the actors know a priori what problems would emerge or which solutions would be best. (Snowden and Boone, 2007). Oh, Hanna, et al (2016) find that decision making is bounded by uncertain information, limitations in cognitive resources and a lack of time to allocate to the decision process. It is thought that humans overcome these limitations through satisficing, that is, a fast but good enough heuristic decision making process that prioritizes some sources of information (cues) while ignoring others. They found that under high time pressure decision makers systematically discount a subset of the cue information by dropping the least informative cues and instead consider the most diagnostic cue information, thus maintaining good enough accuracy.

Morgan’s Syndicate Books provide evidence that all applicants for emergency liquidity, except the New York Stock Exchange, participated in his securities underwriting syndicates. The single denial of aid was to an agent from an unprofitable syndicate, the Knickerbocker Trust. All of the approvals were made to agents from profitable syndicates or to agents who were instrumental in turning unprofitable syndicates into profitable ones. Only ten syndicates were unprofitable among the almost 200 from 1901 to 1907. Despite an estimated profit of $25,000,000 between 1901 and 1906 across more than 135 transactions, Morgan experienced losses on ten of them. The losses totaled $896,978. Five were railroads and five were industrial corporations. Twenty-four percent of the losses, or $217,184, were on a Pacific Packing and Navigation syndicate led by Charles T. Barney from Knickerbocker Trust. Twenty-nine percent of the losses, or $261,304.00, were on a New York, New Haven Railroad bond, a firm experiencing stiff competition from Charles Morse’s Consolidated Steamship line that ran from Maine to New York City. Morse was a close business partner with Barney. With over half Morgan’s syndicate losses coming from transactions involving Barney and Morse, it is not surprising that Morgan refused to even meet with Barney when Barney arrived at Morgan’s home on Sunday, October 20, 1907.

Radke (2002) and Newell (1989) inform about the Pacific Packing and Navigation securities origination underwritten by Knickerbocker Trust led by Charles Barney. The new firm was intended to amalgamate several independent Pacific coast salmon canning operations. Once a monopoly on the trade was secured Pacific Packing could drive out marginal players and raise prices to compensate for the risk that had plagued the industry of uncertain catch sizes. Radke notes that even though the operation was well-financed with the $3,000,000 proceeds of the debenture underwriting, it was forced into receivership in March of 1903 after only two years. The organizers had failed to convince Alaska Packers Association to join the amalgamation. Alaska Packers initiated a "Salmon War" to deliberately drive Pacific Packing out of business and succeeded. Pacific Packing's properties were sold at "ridiculously low prices" at bankruptcy auctions in late 1904 and early 1905, leaving bond holders with significant losses on their investment. Morgan had pledged $500,000 of the $3,000,000 total issue and lost 43% of it, $217,184.

A primary purpose of the New York, New Haven railroad was to carry freight that travelled south from Boston to New Haven and then on to New York City (Carosso, 1987) But Charles Morse's steamships that dominated traffic between Boston and New York, provided troublesome competition to the New York New Haven Hartford Railroad. The New Haven also owned the Fall River steamship line that offered passengers luxury travel accommodations. In 1905 Morse set out to expand his Maine steamship line to compete head on with Fall River line by commissioning the construction of two new steamships, the Harvard and the Yale, named for schools his son attended. Indeed, Woods (2011) notes that in February 1907 Morgan, through the New York, New Haven line, bought several small steamship companies to counter Morse's lines that dominated traffic between Boston and New York. Adding the steamship business to the New York New Haven's operations proved costly and contributed to the 1905 bond issue being unprofitable. (Carosso, 1987)

Morgan approved the request for aid from Oakleigh Thorne, president of Trust Company of America and linked to Lincoln Trust, when no other trust company or bank would. Thorne was involved with Morgan on the New Haven's successful and somewhat secretive acquisition of an integral link between New York City and Hartford, improving the competitive position of the railroad, and improving the likelihood that Morgan could make back the $261,000 he had lost on it.(Staples and Mason, 1947)

Morgan arranged liquidity for two other applicants: Mayor McClellan of the City of New York, the underwriting syndicates for which had generated profits for Morgan on two separate transactions and Grant B. Schley, principal of Moore & Schley, the firm that had participated in profitable underwritings with Morgan over many years and whose securities underwriting for Tennessee Coal and Iron included participants in successful Morgan underwritings for American Tobacco Trust. (See Table 4.)

3. Proposed Data and Test

Next to find reasons why other institutions were saved, those in which Morgan did NOT have a vested interest such as Moore & Schley, syndicate membership from 1880 to 1907 is analyzed to find instances of interaction with network members that requested assistance during the crisis. While this work is not yet completed, preliminary findings are that Moore & Schley participated in profitable syndicates going back to 1880. The data will limit our testing methodology. The Syndicate Books only reveal Morgan's interactions with other network members; they do not reveal the interactions of other network members with each other. Therefore, ranking the frequency of interactions of members with Morgan is the way we will analyze the data, with the hypothesis being those firms that ranked highest in syndicates with positive outcomes would be most likely to be awarded assistance in 1907.

Another hypothesis that could be explored is whether profits earned during the crisis were concentrated in the financial firms in which Morgan had a vested interest: were firms included in bailout syndicates most likely to be firms in which his estate held shares? If so, an argument might be supported that Morgan profited from the crisis resolution.

4. Discussion and Policy Implications

Morgan's signals to depositors began on October 20 when he refused to even meet with Charles Barney regarding aid to the Knickerbocker, thereby firmly placing his seal of disapproval on that trust company, and ended on November 6 with the formation of a syndicate to aid to Moore & Schley and of a permanent syndicate to aid the Trust Company of America and Lincoln Trust. At that point, the deposit market gradually started to unfreeze when runs ended. Persistent hoarding by depositors of withdrawn funds, however, remained a sign that the deposit market had not returned to normal. By late December and early January, 1908, though, that practice diminished, providing evidence that the adverse selection problems were being resolved and the surplus recovery mechanisms used by Morgan were having the desired effect.

If Morgan relied upon his negative experience with Barney and Morse to inform his decision to deny aid to the Knickerbocker, such reliance might have been misplaced. A solvent Knickerbocker re-opened on March 26, 1908 after undergoing a period of receivership. Morgan may have had other disappointments by relying upon past experiences as he navigated the crisis: he was unable to convince the trusts early enough to support Trust Company of America and he was unable to convince the Banque de France to lend gold to a private syndicate to reliquify the US the way he had been able to construct a syndicated loan of European gold for the country in 1895. However, his experience in dealing with the US Treasury served the financial system well in that Treasury Secretary Cortelyou immediately responded to Morgan's request for help and President Roosevelt provided an implicit bailout to Moore & Schley by foregoing action on the US Steel acquisition of Tennessee Coal & Iron. In total, Morgan's efforts may not have been optimal but were adequate to prevent an even-longer disruption to the payment mechanism and the concomitant reduction in 1908 economic activity.

Morgan's challenges and decisions help inform recent policy debate about the Dodd-Frank legislation, the remedial prescriptions that address the perceived shortcomings of the financial system in the wake of the 2008 crisis. As it is re-examined, it might prove wise to retain the sometimes-controversial Financial Stability Oversight Committee. While FSOC is technically a committee of regulators, it has the scope to identify systemically important financial institutions and to screen them especially rigorously. Perhaps Morgan's greatest strength in 1907 was his systemic omniscience brought about through decades of forming securities underwritings syndicates. Absent a sprawling intermediary today such as Morgan, FSOC may produce systemic information that Morgan produced in his firm.

5. Help I hope to get at the Rutgers Conference:

The number of requests for aid from liquidity constrained institutions (five) are too few to use in meaningful regression estimations. The number of unprofitable securities underwriting syndicates (ten) are too few to use in regression equations. The lack of regression estimations makes the work seem unsatisfying. Yet, the pattern of Morgan's experiences with Barney and Morse appears inescapable; the men are involved with half the losses that Morgan experienced in the six years leading up to the Panic. Oakleigh Thorne at Trust Company of America is key to resolving a huge loss for Morgan. Both New York City and Moore & Schley were reliably profitable syndicate partners, too. The paper would benefit greatly from commentary on this dilemma.

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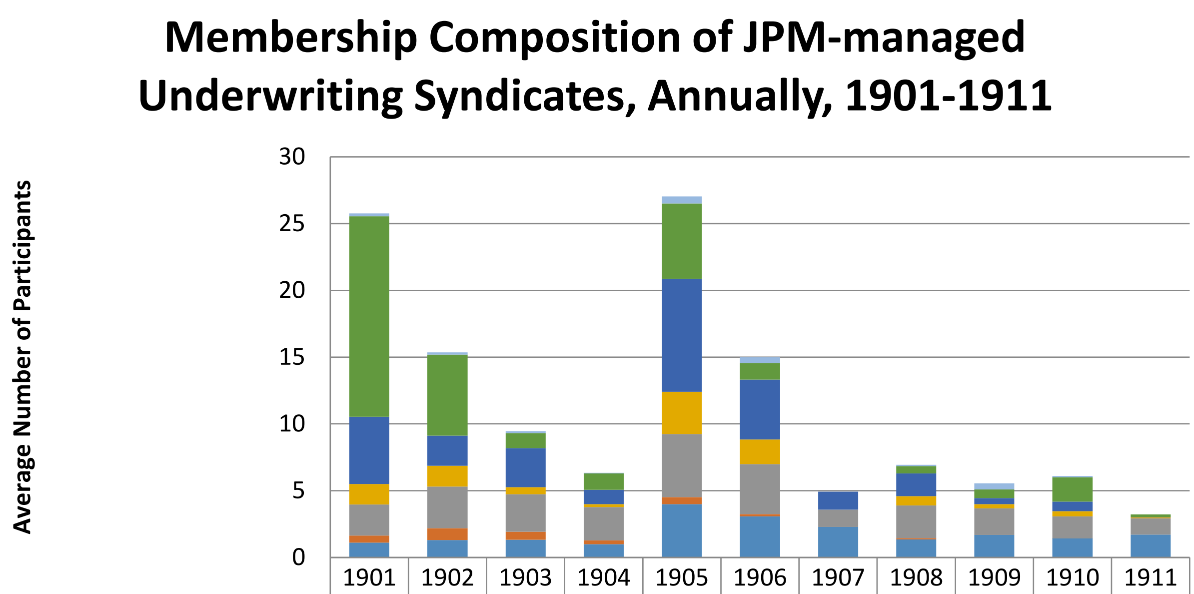
Figure 1. Composition of Morgan-led Underwriting Syndicates, 1901-1911



	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
Corporations	0.22	0.1875	0.133	0.07	0.529	0.416	0	0.1	0.45	0.083	0
Individuals	15	6.06	1.13	1.214	5.64	1.25	0	0.55	0.636	1.83	0.185
Brokers (Non-originators)	5.03	2.25	2.93	1.07	8.47	4.5	1.35	1.7	0.454	0.722	0.037
Trusts	1.55	1.56	0.533	0.214	3.176	1.83	0	0.7	0.318	0.388	0.074
Investment Bankers	2.32	3.125	2.8	2.5	4.705	3.75	1.294	2.45	2	1.638	1.222
Insurance Companies	0.535	0.875	0.602	0.286	0.529	0.166	0	0.1	0	0.02	0
Commercial Banks	1.107	1.312	1.33	1	4	3.08	2.294	1.35	1.682	1.416	1.703

Sources: J. P. Morgan & Co. Syndicate Books, The Pierpont Morgan Library and Museum, New York NY

Table 1. Estate holdings of J. Pierpont Morgan

Issue	Shares or Face Value	Price per share	Dollars	Subtotals	Percentage of Total	Asset Allocation
First Natl Bank	3500	900	$ 3,150,000.00		0.27	
Natl City Bank	1500	400	$ 600,000.00			
Natl Bank of Commerce	2000	172	$ 344,000.00			
Bankers Trust	1000	425	$ 425,000.00			
Guaranty Trust	1000	375	$ 375,000.00	$4,894,000.00	0.41	Financials
Atchison Topeka & Santa Fe	2000	99.5	$ 199,000.00			
NY Central	4000	106	$ 424,000.00	$5,517,000.00	0.47	Stocks
NY Central	$ 500,000.00	101	$ 555,000.00			
NY Central Deb 6%	$ 500,000.00	93	$ 470,625.00			
Anglo French	$ 1,000,000.00	95.25	$ 963,056.00			
Morgan Building Corp deb 5%	$ 2,500,000.00	100	$ 2,500,000.00		0.21	JPM & Co. asset
Interboro RT 5%	$ 1,000,000.00	96	$ 985,000.00			
Southern Railway deb 4%	$ 500,000.00	68	$ 345,000.00			
Southern Railway 5%	$ 500,000.00	101	$ 517,500.00	$6,336,181.00	0.53	Bonds
			$ 11,853,181.00		1.00	

Source: JPM General Ledger II, Syndicate Books, The Pierpont Morgan Library and Museum, New York NY

Table 2. Estimated market share of railroad bond offerings by JPM-led syndicates, 1901-1911

	Railroad bond syndicates led by J. P. Morgan & Co. in dollars	Total Railroad bond offerings in dollars	Share of Railroad bond new railroad bond offerings
1901	152,772,000.00	758,600,000.00	0.20
1902	108,654,000.00	624,900,000.00	0.17
1903	106,892,000.00	453,800,000.00	0.23
1904	74,236,000.00	554,500,000.00	0.13
1905	178,770,000.00	803,400,000.00	0.22
1906	92,100,000.00	508,200,000.00	0.18
1907	32,476,000.00	645,500,000.00	0.05
1908	129,427,000.00	619,100,000.00	0.21
1909	137,943,274.00	762,800,000.00	0.18
1910	216,620,000.00	549,000,000.00	0.39
1911	93,115,000.00	597,500,000.00	0.16

The average market share in the pre-Panic period 1901-1907 was 17.1%. The average market share in the post-Panic period through 1911 was 23.5%. Source of total railroad bond offerings: Hickman, 1953 and the Syndicate Books of J. P. Morgan & Co., The Pierpont Morgan Library and Museum, New York NY

Table 3. Loss producing syndicates of J. P. Morgan & Co. 1901-1911

Money losing syndicates	Date	Size in $	JPM share in $	Loss in $	Led by	Industry	Loss as % of funds committed
Pacific Packing & Navigation	12/3/1901	7,000,000.00	500,000.00	217,184.00	Knickerbocker	Salmon canning	0.43
Susquehanna Power	3/25/1905	20,000,000.00	250,000.00	106,760.00	Harvey Fisk	Electricity	0.43
NY, New Haven & Hartford Rr	9/14/1905	1,874,315.00	937,157.50	261,304.00	JPM	railroad	0.28
Colorado & Southern RR	7/4/1905	1,700,000.00	250,000.00	27,744.00	Hallgarten	railroad	0.11
American Woolen Co	11/12/1906	10,000,000.00	1,000,000.00	80,635.00	Brown Bros	Wool	0.08
Lakeshore & Michigan Southern	2/15/1906	35,000,000.00	600,000.00	32,755.00	?	railroad	0.05
San Francisco Street Railway	2/17/1902		250,000.00	9,427.00	Brown Bros	Street Railway	0.04
American Smelters	1/5/1905	25,500,000.00	1,000,000.00	33,303.00	Kuhn Loeb	Copper	0.03
Louisville & Nashville	5/2/1906	10,000,000.00	7,500,000.00	123,000.00	JPM	railroad	0.02
Michigan Central	11/27/1901	10,000,000.00	5,000,000.00	4,866.00	JPM	railroad	0.00
				896,978.00			

Source: Syndicate Books, J. P. Morgan & Co., The Pierpont Morgan Museum and Library, New York NY

Table 4. Morgan's Pre-Crisis Syndicate Experience with Firms that were Aided

Firm	Experience
Trust Company of America, Lincoln Trust through Oakley Thorne	New York New Haven Hartford rail segment purchase
New York City	Two profitable bond underwritings,
Moore & Schley	American Tobacco Trust profitable underwriting. Same participants were underwriters of Tennessee Coal & Iron including James Buchanan Duke and Grant Schley