Was the Panic of 1907 a Global Crisis? Testing the Noyes Hypothesis

First Version of Study October 19, 2014

Mary Tone Rodgers, SUNY-Oswego
James E. Payne, University College of Georgia

Introduction

We examine international linkages during the 1907 financial crisis. We revisit the hypothesis of Alexander Noyes, contemporary financial market observer, that the causes of the 1907 crisis were international in scope, not domestic. We find support for the notion that two commodity price shocks, cotton and copper, may have rippled through the global financial system affecting vulnerable banks in many countries. Dislocations in the affected banking systems may vary because of varying institutional settings. We find evidence that systems responded similarly, however, to the Bank of France’s announcement to provide liquidity to America, with long-term bond prices rallying and yields dropping, meaning that common international liquidity elements to the crisis may have existed.

The paper is organized as follows. Section One describes Noyes’ hypothesis, how he researched it and what conclusions he drew. Section Two traces how his interpretation of his test results supported his argument in the essay he wrote for the National Monetary Commission in 1910, in which he makes the case for a new US currency system. Section Three analyzes the banking crises in each of the six international locations, identifying the collateral upon which the failing banks had relied. We present our exploratory data in Section Four and suggest that preliminary findings warrant further examination. Sharp drops in copper prices seem to precede drops in the mining-related securities used as collateral by the banks in question. We relate long-term bond yields to the announcement by the Bank of France. We draw conclusions in Section Five.
Section One: The Noyes Hypothesis

Noyes states his hypothesis as follows: If we find that the shock was felt in localities in which American finance has no connection, then it would follow that the cause was something not peculiar to America.\(^1\) Noyes cites the three most popular 1908 explanations for the 1907 crisis: Roosevelt’s activities in restraint of the great corporations, reckless trust company banking and a defects in the American currency system.\(^2\) He argues that each of those so-called causes is only an aspect of the American institutional setting, the environment in which banking and finance systems operate. He discredits each of the causality arguments by using a timeline analysis, pointing out that none were triggers to the stock-market collapse or to the runs on the trust companies. Roosevelt’s anti-trust behavior had started well before the panic and was well-known and discussed. Reckless trust company loans and reckless lending in New York had been revealed all during the 1904-1905 Armstrong hearings. Self-dealing and favorable lending among members of interlocking directorates at financial firms was not a new concept in 1907. Finally, the shortcomings of the currency system had been debated for decades, and yet the system had supported tremendous economic growth during the national banking era. The shortcomings of the currency system offered no surprises in 1907 either.

Instead, Noyes points to the timeline of commodity price increases and increases in asset prices of stocks and real estate related to those commodities as the instigators of global banking crises in 1907. The inflated collateral was used to back large, speculative loan expansions in each city that experienced a banking crisis: Santiago, Chile; Alexandria, Egypt; Tokyo, Japan; Hamburg, Germany; Amsterdam, Holland. He argues that two cities had banking panics that were unrelated to the commodity price increases: Genoa, Italy and Copenhagen, Denmark. He argues that those two crises there were related to idiosyncratic malfeasance in each bank. He also argues that the exogenous shocks of earthquakes in San

\(^1\) Noyes, p. 189.
\(^2\) Ibid., p. 190.
Francisco and Santiago, Chile provided disruptions to global liquidity that strained the system even further than the commodity price shocks.

Noyes presents data to support his claims: rising and volatile commodity and security prices, new equity issuance at record levels and high money rates at central bank discount windows. He notes that price increases had been apparent over a year before the panic, using a general index of commodity prices published by The Economist. While Noyes does not cite his source, he provides data for net new securities offered in London and in New York in 1905 and 1906, comparing them to the 1900-1901 “extravagant period.” Finally, he uses year-end discount rates at seven money centers for 1904-1907 to demonstrate that short-term rates had risen consistently through the period.³

Next, he describes the timeline over which banking crises erupted in the seven cities other than New York and provides a brief background narrative for each instance. He draws his conclusion by making a time-line argument: since the crises in other countries happened before or coincident with the one in New York, the causes were more likely found in lending problems related to the run-up in commodity prices.

We will approach the data somewhat differently than Noyes. We will trace each banking failure to the collateral upon which the bank loan was most likely based, a step not taken by Noyes. While he uses a general commodity price index, we will use a copper price index and collect data on prices of copper stocks. Using an event study framework, we will examine whether commodity price shocks precede banking crises. We also will examine whether the affected cities managed their crises differently depending on their unique institutional settings. Specifically, we will ask whether the degree to which their systems were fragmented posed different challenges for crisis resolution.⁴ We will use available data for bank accounts per capita and number of banks and size of deposits compared to GDP to estimate fragmentation. Finally, we will examine whether the November 22, 1907 announcement by the Bank of

³ Ibid., p. 201.
⁴ We will use the framework from Calomiris and Haber, Fragile by Design, 2014, for analysis.
France to release sterilized gold eagles to New York is associated with a bottom in global bond prices. If so, that might indicate that the high money rates observed by Noyes eased around the world when market agents came to know that France would re-liquefy the system. We know from work done by Neal and Weidenmier (2003) that evidence exists to support the notion that international short-term interest rates were generally more correlated after the New York crisis than they were before it. If our hypothesis that liquidity conditions in global markets differed according to how exposed banks were to commodity price shocks, that would be consistent with the Neal Weidenmier findings. If countries were differentially affected by the commodity price shocks, short-term country interest rates would be expected to behave differentially.

**Section Two: Who was Alexander Noyes? Why did his hypothesis and findings matter?**

Noyes was a journalist who covered Wall Street and financial issues for several newspapers including the Commercial Advertiser, the New York Evening Post and the New York Times. Born in 1862 in Montclair New Jersey in a politically conservative family, he was among a group of amateur writers who began to study social issues with a scientific line of inquiry in which hypotheses and systematic consideration of issues emerged. These were some of the first contributors to the nascent scholarly journals such as the Quarterly Journal of Economics. So even though Noyes was not a trained scientist, he wrote the paper we review in this study during the Progressive Era trend toward framing social issues of economics, politics and history in scientific forms of inquiry.

In his memoir, he declares his political sympathies as lying with the Republican Party Reformers. In the late 1890’s, both Republicans and Democrats called for reforming the banking and political establishment. Each group wanted more transparency in the relationship between Wall Street and politicians, but Republican Reformers wanted to maintain the gold standard and “sound money,” while

---

the Democrats supported the silver agitation from the western farmers who struggled during the deflation of the 1890’s.

During the time Noyes wrote for the New York Evening Post, the newspaper’s editorial posture had changed to Reformer Republican from a more laissez-faire policy that traced back to its founder, Alexander Hamilton. Horace White, an editor of the Post while Noyes was there, was an early supporter of the 1894 Baltimore Plan, a proposal for altering the collateral of the US banking system from government bonds to other high quality assets.

Noyes’ paper about global causes of the 1907 financial crisis supported his argument in the essay he was invited to write for the National Monetary Commission in 1910. Consistent with Horace White’s views expounded in the Baltimore Plan, Noyes argued in “The History of National Bank Currency” that the American currency should not be based on government bonds. From his understanding of the business expansion that preceded the 1907 crisis and from his understanding of prior crises, he was able to argue that when business conditions expanded the banking system was constrained by the lack of expanding collateral upon which to issue notes.

Section Three: Triggers for Banking Crises in other Countries

This section begins our review of Noyes’ hypothesis that the source of the panic in New York was rooted in broad, global conditions. Since the trigger to the American panic was the failure of a brokerage house heavily levered to copper securities, we start by exploring whether sharp drops in the prices of commodities and commodity-related securities are associated with bank failures in the countries that experienced banking failures. We explore the collateral behind the loan expansions in Alexandria, Japan, Hamburg and Genoa with the study of Copenhagen and Amsterdam waiting for future drafts of this paper. We find all failed banks were exposed to at least one large customer in the cotton or copper sector. Contrary to Noyes’ assertion that the Genoa crisis was brought about by idiosyncratic governance issues at the Genoa stock exchange, we find that it, too, was related to the collapse in copper prices.
A timeline of the crises under review is provided here.

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexandria, Egypt</td>
<td>January 1907 through April 1907</td>
</tr>
<tr>
<td>Tokyo and many other Japanese cities</td>
<td>April 1907 through April 1908</td>
</tr>
<tr>
<td>Genoa Italy</td>
<td>September 1907</td>
</tr>
<tr>
<td>Hamburg, Germany</td>
<td>October 1907</td>
</tr>
<tr>
<td>New York</td>
<td>October and November 1907</td>
</tr>
<tr>
<td>Santiago, Chile</td>
<td>November 1907 through January 1908</td>
</tr>
<tr>
<td>Amsterdam, Holland</td>
<td>November 1907</td>
</tr>
<tr>
<td>Copenhagen, Denmark</td>
<td>December 1907 through June 1908</td>
</tr>
</tbody>
</table>

**Alexandria, Egypt**

London credit markets began to feel stress long before the American Panic began in October, 1907. Despite receiving 28% more gold from her gold producing colonies in each of 1906 and 1907 compared to 1905, London still found it necessary to draw gold in from the European continent to supply the unusual demands for gold from the US and Egypt. While the American demand for London gold may be partially understood by the need to satisfy claims on British insurance companies arising from the San Francisco earthquake in 1906 and to meet the extraordinary needs of the American credit markets to come late in 1907, less well understood phenomena are the unusual Egyptian demands upon London for gold in 1906 and 1907. In Egypt, the movement of two larger than normal cotton crops, the construction of large port and rail projects and an associated boom in land and stock prices are discussed next as factors which may have drained the £13,600,000 gold from London to Alexandria beginning in 1906.

---

6 See Odell and Weidenmier for a thorough study of the effects of the San Francisco earthquake in setting conditions for the Panic of 1907.
Britain had developed a commercial chain by 1900 in which raw cotton was imported from American and colonial growers, processed into cotton cloth in the Lancashire region, and then exported to international markets. On May 7, 1902, the British Cotton Growing Association (BCGA) was formed in response to a severe cotton shortage that occurred in Lancashire between 1901 and 1902. While the shortage was initially attributed to speculative activities of cotton dealers on the Manchester and Liverpool cotton exchanges, the cause of the shortage was eventually attributed to the realization that the United States was beginning to consume more of its own raw cotton than it had in the past, now as much as half its crop, or 5,000,000 bales, leaving only the balance, 5,000,000 of the 10,000,000 crop for export. The cotton cloth manufacturing industry in Britain needed approximately 4,000,000 bales each year to supply the spindles and looms that employed about 500,000 workers in and around the Lancashire region. The purpose of the BCGA was to reduce dependence on the American cotton growers by promoting the development of cotton growers in various parts of the British Empire, most importantly in Africa. The Association evaluated potential cotton growing regions, built irrigation systems, storage facilities and transportation infrastructure to support the cultivation of cotton, and provided capital for a price support system to aid the development of colonial cotton markets. Egypt and other African colonies, rather than India, were the focus of Association’s efforts.

By 1906 and 1907, the efforts of the BCGA to increase the production of cotton in Egypt began to be realized. The harvest increased from about 1,200,000 bales in 1905 to almost 1,300,000 bales in 1906 and to about 1,500,000 bales in 1907. The seasonal movement of the cotton crop from Alexandria to Lancashire required payment in gold from British cotton buyers to Egyptian sellers. The 1905 and 1906...
Egyptian cotton crops were about 20% greater than they had been in 1904, requiring more shipments of gold than usual from London. Some research finds that the National Bank of Egypt discounted cotton bills for large farmers,\textsuperscript{13} while other research indicates little discounting was provided: “Egyptian producers only sell cotton for actual gold; to them no paper representative of the yellow metal is acceptable they know not credit nor bank-notes nor bills of exchange hence gold must be sent out, just as in the US cash alone can be used to move the crops at certain stages.”\textsuperscript{14} Unlike the flow of agriculture funds in America in which proceeds from the sale of crops eventually circulated back to Europe to buy European goods, that was not the case in Egypt. “The further fact that the greater part of the yellow metal so acquired is practically withdrawn from monetary use; a large amount has annually gone into hoards. Egypt has become a place for the secretion of a substantial part of the world’s annual gold product diverting it from availability for monetary purposes.”\textsuperscript{15}

Along with extra shipments of gold to support the seasonal cotton harvest, British infrastructure spending to support the cotton crop was booming in 1905 and 1906. The BCGA supported the prevailing strategy of the British government to build public goods that could facilitate the cultivation and shipment of cotton from Egypt to England.\textsuperscript{16} The irrigation of the Gezeira plain in Anglo-Egyptian Sudan (overseen by the Egyptians and funded through the Bank of Egypt) was estimated to have cost £1 million.\textsuperscript{17} The Aswan Dam’s height was raised in 1906 and 1907 in order to store more water to expand irrigation for the

\textsuperscript{13} Hansen, p. 876 finds that the cotton was delivered to the warehouses of the National Bank of Egypt as security and usually sold forward as well as for merchants who purchased cotton for export with the discount rate applied in individual cases without the announcement of an official discount rate.
\textsuperscript{15} Muhleman, Maurice, p. 594.
\textsuperscript{16} Hansen maintains that the large public investments were fully financed from the current trade surplus. P. 869.
\textsuperscript{17} Onyeiwu, p. 111.
cotton crop in the lower Nile river delta. The construction of Port Sudan began in 1904 and continued through 1909 as an export point for the Anglo-Egyptian Sudanese cotton crop, comprising an investment of £9,400,000.\textsuperscript{18} The Nile Valley-Red Sea Railway, its associated railroad originating in Khartoum, opened 26 January, 1906, with a completed cost of £1,375,000.\textsuperscript{19} The BCGA was successful in persuading the Union Castle Line to have ships on its East African runs make monthly calls at Port Sudan.\textsuperscript{20}

An extraordinary cotton-related land boom in 1905 and 1906 precipitated a surge of gold inflows to Egypt from London. The confluence of lower real interest rates, a spurt in cotton prices, and new land available for sale from the government liquidation of old royal estates may have led to a tripling in mortgage loans outstanding between 1903 and 1906. Europe’s increasing confidence in Egypt since the late 1890’s was reflected in generally declining rates on its public debt. A reliably balanced fiscal budget attributed to the management of the British governor, Sir Evelyn Baring, now Lord Cromer, resulted in the steadily improving perception of the credit quality of Egyptian bonds with the spread over British consols dropping from 300 basis points in the 1881-1885 period to 90 basis points in the 1906-1910 period.\textsuperscript{21} Seeking to capitalize on the improving situation, the bulk of foreign capital invested in Egyptian companies before World War I went into mortgage loan companies, with the leading institution being Credit Foncier Egyptien.\textsuperscript{22} The institution raised its capital mainly through sales of bonds abroad and concentrated its lending almost exclusively on mortgage loans, about 90% of which were against land in rural areas to big cotton farmers.\textsuperscript{23} After moving from 11.5 cents to 16.375 cents per pound in 1903-1905,

\textsuperscript{19} Perkins, p. 293.
\textsuperscript{20} Perkins, p. 296.
\textsuperscript{22} Credit Foncier had capitalization of approximately £30 million and was founded in 1880 by the French. Its credit standing was fully comparable to that of the Egyptian government throughout the 1881-1913 period., Hansen, p. 871 and 875.
\textsuperscript{23} Big cotton farmers had over 50 acres under cultivation, Hansen, p. 872.
cotton prices surged to a peak of 21.625 cents per pound in 1906\textsuperscript{24}, prompting an explosion in land prices as farm income dramatically increased.\textsuperscript{25} Mortgage loans outstanding to large farmers at Credit Foncier rose from about £7,000,000 in 1903 to £23,000,000 in 1907, funded by increased sales of bonds abroad.\textsuperscript{26}

Finally, speculation also appears to have occurred in the Egyptian stock market alongside the land market. Leading experts on the Egyptian situation noted, “The gambling spirit had been in land and in shares; people were apparently mad; I do not know what other word to use; they seemed to think that every company that comes out was worth double its value before it had even started business.”\textsuperscript{27} After acute strains in the stock market began to show up in January, 1907, the market fell into a panic in April. The Economist describes the situation in Alexandria as one in which “piles of shares were waiting to be sold, though the market was so satiated with paper that the offer of threescore shares in any security sent down quotations whole points.”\textsuperscript{28} When one of the investment houses suspended payments a “hoarding panic followed, which was broken only by instantaneous shipment of $3,000,000 (£600,000) gold from London.”\textsuperscript{29}

While the story of the Egyptian episode has been presented in some detail, only highlights of the Japanese, Hamburg and Genoa banking crises are presented for now. Copenhagen and Amsterdam await study.

Japan

Bank failures in Japan occurred in regions that produced cotton and copper. The region of Aichi, located in central Japan, was one of the top cotton textile production areas in Japan, accounting for about

\begin{flushleft}
\textsuperscript{24} Muhleman, p. 599.  \\
\textsuperscript{25} Hansen, p. 881.  \\
\textsuperscript{26} Hansen, p. 883.  \\
\textsuperscript{28} Noyes, p. 202.  \\
\textsuperscript{29} Noyes, p. 202.
\end{flushleft}
20% of the national total. The cotton thread industry dominated the Nagoya economy, the prefectural seat of Aichi. The run on the Nagoya bank occurs coincident with the troubles in Alexandria, Egypt.

However, unlike the Egyptian situation that was resolved by the summer of 1907, the Japanese banking crisis continued well into 1908. After the cotton price shock subsided in Japan, the copper shock begins.

Yabushita and Inoue (1993) provide a succinct timeline of events in Japan.

| February 1907 | Run on Nagoya Bank.  |
| March 1907 | Suspension at One Hundred Thirty-Eighth Bank (Shizuoka). |
| April 1907 | Several bank closings in Tokyo and other areas. |
| November 1907 | Runs and suspensions at small banks in Tokyo and Fukui. |
| February–July 1908 | Runs on 42 banks, 23 of which are suspended. |

Sharp increase in loans to banks.

Today we think of Japan as a nation poor in natural resources, but copper, gold and silver were crucial exports. By 1885 the Ashio copper mine, 75 miles north of Tokyo, was producing 4,131 tons annually of 39% of Japan’s total copper output. In 1906, as the largest mine in the nation, it produced 6,787 tons, 18% of Japan’s total and employed 11,000 men. That compares to total Japanese copper production of 34,000 tons, about 1/10 the size of US production. A famous riot happened at the mine in February 1907, sparked by poor working conditions. The locations of many failed Japanese banks occur in regions that were significant copper producers, like the Ashio copper mine.30

The reduction in aggregate demand in New York for Japan’s exports of silk, copper and cotton yarn has also been mentioned as a reason for the extension of the financial crises in Japan.31 In May of 1908, however, signals emerged in the copper market that the liquidation phase of the Japanese banking crisis was unfolding. In May 1908 “fairly large quantities of copper were pressed on the market by

31 Ono, Giichi, War and Armament Expenditures of Japan
Japanese holders owing to a severe financial crisis then existing the Far East and tended to unsettle prices which declined toward the middle of the month.”

Hamburg, Germany

On October 18, 1907 newspapers in North America reported the biggest German banking failure since the breakdown of the Leipziger Bank in June 1901. Haller, Soehler & Co. failed with liabilities reaching $7.5 million and partners’ capital of $2.25 million. The failure was linked to one of its largest customers, a mining concern in Teplitz, Bohemia, exposed to declining metal and coal prices. Haller, Soehle & Co. seems not to only have been over-exposed to mining securities, but also to have been saddled with the settlement with the heirs of a recently deceased partner. Rumors also circulated that the bank was heavily hit the by the fall in coppers and affected by the difficulties of Otto Heinze in New York.

Genoa, Italy

By 1906, Italy was well on its way to developing a universal banking system not unlike that of Germany. Like the German banks, the two Italian universal banks, Banca Commerciale and Credito Italiano, forged close ties with their client companies. Societa Bancaria Italiana (SBI) had expanded to become the “third credit pillar” of the rapidly industrializing northwestern region of Italy. However, by 1907 SBI was controlled by a group of Genoese business men that speculated heavily in stocks on the Geneoese exchange. The insolvency of one of its important client companies, Ramifera, the largest copper works in Italy highlighted the vulnerability of SBI. In September, 1907, with a drop in the stock market and especially the shares of Ramifera, corporate clients, pressed for liquidity drew on their deposits as did

32 Engineering and Mining Journal, January 9, 1909. Volume 87, p. 58
33 Montreal Gazette, Oct 18, 1907, p. 5.
34 Ibid, p. 6.
35 Gigliobianco p. 10.
36 Bonelli, 1971, p. 32.
members of the general public. It became clear that SMT was in urgent need of a liquidity injection. The Bank of Italy coordinated capital injections from new investors to SBI. Lax regulation at the Genoa Stock Exchange is also cited as part of the Italian institutional setting that may have contributed to the volatility in stock prices there. By late spring 1908, the crisis had passed.

Santiago, Chile

The Chilean economy was largely comprised of copper extraction in 1907 and remains so today. The failed bank Mobilarrio Bank in Santiago suspended payments to depositors on December 7, 1907. The bank’s trouble was tied to the failure of one of its largest customers, a copper nitrates producer. Stock prices related to the copper industry had generally collapsed across the board. Additionally, the Chileans experienced an earthquake shock in Valparaíso on August 18, 1906, only four months after the great San Francisco quake. The damage from the Chilean quake was estimated at only about $20 million, much less than the $200 million in estimated losses from the San Francisco quake, but was still thought to have negatively impacted liquidity conditions in Chile throughout 1907. Similar to the Italian experience, the central bank, in this case the Bank of Chile, stepped in to “take charge of the institution (Mobilarrio Bank).” It is not yet clear if the Bank of Chile organized a capital infusion or simply supervised an orderly liquidation of the failed bank. The Parliament authorized and immediate issue of $30 million of new paper money to relieve tight monetary conditions.

Section Four: Data and Analysis

All data is taken from weekly editions of The Economist, 1904 through 1908, unless otherwise noted. Severe drops in the price of copper and the prices of copper stocks are gathered. Severe drops in

---

37 Gigliobianco, p. 12
38 Tusset, p. 8.
41 Briones, p. 7.
42 New York Times, December 8, 1907.
copper securities seem to precede banking crises in several regions that experienced banking crises. We will discuss the potential reasons for the run-up and subsequent sharp decline in copper prices in future versions of this study. A global bond index is created that measures patterns in global interest rates. Global bond prices seem to bottom at the end of November when the Bank of France announces it will release sterilized gold reserves to relieve stringent liquidity conditions. Eventually, data will also be collected to estimate whether those banking systems that were most fragmented also proved to be the ones, in which the banking crisis was most difficult to contain.

Figure One. Copper prices peak in January 1907

![Price per Ton of Copper in Pounds Sterling](chart.png)
Figure Two. Anaconda Stock price peaks in February 1907, with sharpest decline in the first week of October 1907.
Figure Three: Performance of the main stocks listed at Genoa Stock Exchange between January 1905 and 1907 from Tusset.
Figure Four. Index of Global sovereign bonds bottoms November 23, 1907

![Index of Long-term Sovereign Bond Prices](chart_image)
Section Five: Discussion and Preliminary Conclusions

Global shocks in cotton and copper prices may have translated to solvency and liquidity problems at banks that were especially exposed to cotton and copper, no matter the nation. In this sense, the 1907 crisis may be similar to the recent 1973 OPEC oil price shock. A similar price shock is registered by many countries, but the shock is translated into different experiences based on the banking institutions that exist in each country. From preliminary data, tests seem warranted to determine whether commodity price shocks to bank collateral consistently occur prior to banking system disruptions in seven regions during 1906-1907. While cotton prices may have been important in the Egyptian case, copper prices appear to play a role in the Chilean, New York, and Italian cases. Cotton and copper shocks appear to have had separate ramifications in the Japanese case.

Liquidity provision to resolve the bank runs may be related to how fragmented respective banking systems were and how difficult it was to coordinate information within each system. The most fragmented system facing the most difficult coordination problems may have been the American system. We will explore the degree to which each banking system was fragmented in future stages of this project.

Release of sterilized reserves by the Bank of France appears to have relieved the upward pressure on interest rates almost everywhere in the world simultaneously.

While Noyes’ suggests that different banking systems experienced commodity price shocks, he does not suggest the common commodity to have been copper. We find some support to the notion that copper was associated with the collateral at failed banks. Noyes suggests that the Genoa crisis is idiosyncratic, but we find evidence that it, too, may have been related to copper. Even though Noyes does not cite the coincident upturn in global bond prices as evidence that the monetary stringency had been
global in nature, we present it here as support of his hypothesis that more was afoot in 1907 than simply the problems observed in America.

References:

Bader, Louis, British colonial competition for the American Cotton Belt,” Economic geography, vol 3 No 2, April 1927

Bonelli, F. 1971, La crisi del 1907. Una tappa dello sviluppo industrial in Italia Troino, Fondazione Eniaudi, 1971

Briones, Ignacio and Villela, Andre. European Bank Penetration During the First Wave of Globalization”: Lessons from Brazil and Chile 1878-1913,


Economist Magazine

Engineering and Mining Journal, January 9, 1909, Volume 87, published at 505 Pearl Street New York NY.


Montreal Gazette

Neal Larry D and Weidenmier, Marc D. Crises in the Global Economy from Tulips to Today. 2003, NBER Globalization in Historical Perspective, editors Bordo, Michael, Taylor, Alan and Williamson Jeffery, University of Chicago Press conference May 3-6 2001

New York Times

Noyes, Alexander D. “A Year After the Panic of 1907” Quarterly Journal of Economics Vol 23 #2, Feb 1909, pp. 185-212


Tusset, Gianfranco “Speculation by the next-door neighbor: The 1907 Italian financial crisis, working paper Padua University, 2011
