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The Great Financial Crisis of 1914: What Can We Learn from Aldrich-Vreeland Emergency Currency?
(Forthcoming in American Economic Review Papers and Proceedings , May 2007)

William L. Silber*
Stern School of Business
New York University

At the outbreak of World War I, the biggest gold outflow in a generation posed a double-barreled threat to American finance: An internal drain of currency from the banking system and an external drain of gold to Europe. The Federal Reserve System, newly authorized by Congress on December 23, 1913, remained on the sidelines during the summer of 1914, a victim of political and administrative delays.

The absence of an operational central bank encouraged Treasury Secretary William G. McAdoo to improvise the modern principle of aiming an independent weapon at each policy target. He employed a form of capital controls to deal with the external threat, shutting the New York Stock Exchange (NYSE) for more than four months to prevent Europeans from selling their American securities and demanding gold in return. And he invoked the emergency currency provisions of the Aldrich-Vreeland Act to deal with the internal threat, allowing banks to issue national bank notes, an important form of currency in pre-Federal Reserve days, without the normal requirement that the currency be secured by U.S. goverment bonds.[1]

According to Friedman and Schwartz (1963, p.196), by November 1914 "the country had recovered from the immediate shock of the declaration of war in Europe, thanks in no small part to the availability of Aldrich-Vreeland emergency currency." Friedman and Schwartz (1963, p. 172) also suggest that emergency currency "would have been equally effective on the occasion of the next threat of an interconvertibility [sic] crisis which arose in late 1930."

*The author wishes to thank Ken Garbade, Anthony Saunders, Paul Wachtel and Larry White for their helpful comments. Special thanks go to Tom Sargent for comments and encouragement.
[1] Before Federal Reserve notes came into existence, U.S. paper currency consisted national bank notes issued by commercial banks and gold certificates, silver certificates and U.S. notes (greenbacks) issued by the U.S. Treasury.

This paper tests Friedman and Schwartz's conjecture about the power of Aldrich-Vreeland emergency currency and draws lessons for monetary policy. Proof of the potency of the Aldrich-Vreeland Act, passed in 1908 to avoid a replay of the Panic of 1907, comes from a little-known experiment conducted by William McAdoo in1913. Friedman and Schwartz's suggestion that the1930 banking crisis might have been nipped in the bud with an operational Aldrich-Vreeland Act gains credibility from a key characteristic of crisis control under the Act: liquidity flowed *automatically* to where it was needed most. I recommend that the Federal Reserve adopt the principles of the Aldrich-Vreeland Act in its administration of the discount window. This will help preserve the integrity of the banking system, especially under wartime conditions with impaired communications.

I. What happened in 1914?

Foreigners owned more than $4 billion U.S. railroad stocks and bonds at the outbreak of the Great War, with $3 billion of that in British hands.[2] These securities were liquid assets and could be sold quickly on the NYSE. Under the gold standard, foreign investors could then use their cash proceeds to acquire the precious metal from the American banking system. Fear that the United States would abandon the gold standard pushed the value of the dollar to unprecedented depths on world markets.

The magnitude of the problem forced America to defend itself: At the outbreak of the war, reserves at New York banks would have been cut in half if the British sold only five percent of their holdings.[3] People knew that the banks had tried to conserve reserves in 1907 by suspending the convertibility of deposits into currency. In 1914, the bankers worried that the gold outflow to Europe would "inspire fear" and trigger an added rush into cash before suspensions took effect.[4] Without an

[2] Lewis (1938, p. 531) cites George Paish's estimate of $2,996 million for British holdings as of December, 1913. Lewis (1938 p. 533) reports L.F. Loree's estimate of $4,170 million for all foreign holdings on June 30,1914
[3] Noyes (1916, p.94) puts reserves in New York banks at $308 million in August 1914. Five percent of $3 billion is $150 million. The burden of gold outflows would fall primarily on New York banks according to a memo by Benjamin Strong (Federal Reserve Bank of New York), Albert Wiggin (Chase National Bank), and James Brown (Brown Brothers), November 2, 1914, Board of Governors, Central Subject File, 1913-1954, Box 1470, National Archives, College Park, Maryland.
[4] The New York bankers worried especially about withdrawals of cash by country banks that held deposit balances in New York banks. See the memo by Strong, Wiggin, and Brown cited above.

operational Federal Reserve System, the currency shortage would spawn bank runs like "those experienced in the fall of 1907" -- only worse.[5]

The crisis began on July 27, 1914. The sale of dollars for pounds sterling in the foreign exchange market, and the increase in the exchange rate to $4.92 per pound, four cents above the gold export point, provoked gold shipments. On July 31, 1914, after the price of sterling failed to decline in response to record gold exports, Treasury Secretary McAdoo asked the NYSE to close.[6] If foreigners could not sell their U.S. stocks, they could not raise dollars and demand gold in exchange. McAdoo had rejected the direct approach, suspending the gold standard, as too costly to American credibility.

The NYSE remained shut through December 12, 1914, mitigating sales of American securities by foreigners and hampering their demand for gold. But the threat of a run on America's bank reserves did not disappear. American debts denominated in British pounds matured during this period, and U.S. borrowers would need sterling or gold to meet their obligations. Moreover, precautionary withdrawals of currency from the banks threatened to exacerbate the loss in reserves from the gold outflow.

Under the National Banking laws then in existence, commercial banks could create additional currency only by depositing U.S. Government bonds with the Office of the Comptroller of the Currency in the U.S. Treasury. The Treasury's Bureau of Engraving and Printing would then ship newly printed national bank notes to the banks to meet depositor withdrawals. In the summer of 1914, national bank notes outstanding had already reached its maximum based on the outstanding supply of government securities.[7]

Beginning August 4, 1914, after McAdoo invoked the Aldrich-Vreeland Act, banks could create currency, either by depositing municipal bonds directly with the Office of the Comptroller of the Currency or by depositing other securities or commercial paper with a local group of banks that had

[5] See the Strong, Wiggin, and Brown memo.
[6] See Silber [2007], especially Chapter Two, for an explanation of why gold exports failed to contain the exchange rate within the gold export points.
[7] The chronic inflexibility in the supply of currency had spawned earlier panics under the National Banking System, including the panics of 1873, 1893 and 1907.

formed a National Currency Association under the Act.[8] Thus a bank facing a sudden withdrawal of currency could create national bank notes to meet the demand, thanks to the emergency currency provisions of the Aldrich-Vreeland Act.

McAdoo recognized the potential danger of his policies – closing the stock exchange left the capital markets without a rudder and flooding the country with emergency currency tempted inflation. McAdoo's recipe for smothering the crisis included an exit strategy. He organized the Bureau of War Risk Insurance on September 3, 1914 to promote exports of cotton and wheat to Europe. Exports would generate gold inflows in payment for American goods, which could then settle foreign obligations.

McAdoo's policies prevented a panic. Banks never suspended their promise to convert deposits into currency and the U.S. Treasury never left the gold standard during the summer and fall of 1914. On November 11, 1914, less than four months after the onset of the crisis, and four days before the opening of the Federal Reserve Banks, the exchange rate of the dollar relative to the pound sterling fell below the gold export point, and gold exports ceased. The threat to the American financial system disappeared.[9]

Friedman and Schwartz (1963, p.196) are reasonably accurate in saying "by November 1914 the country had recovered from the immediate shock of the declaration of war in Europe," but with so many components to McAdoo's plan, perhaps they overreached when adding, "thanks in no small part to the availability of Aldrich-Vreeland emergency currency."

The contrast between 1914 and 1907 supports Friedman and Schwartz's interpretation. The growth in emergency currency between August 1, 1914 and its peak at the end of October 1914,

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[8] Under the second method, the National Currency Association applied to the Comptroller on behalf of the bank for emergency national bank notes, with the bank's assets serving as collateral. A National Currency Association functioned like a local bank clearing house that issued clearing house loan certificates to facilitate the settlement of inter-bank transactions during financial crises. Clearing house loan certificates had been issued during the great financial panics of 1873, 1893, and 1907 (see Sprague [1910, pp. 45, 170, 314]). The key distinction was that emergency currency issued under the Aldrich-Vreeland Act was, by design, indistinguishable from other circulating national bank notes, hence served as a generally acceptable medium of exchange throughout the country, and not just at the local clearing house.

[9] I have argued (Silber [2007]) that William McAdoo's triumph over the 1914 crisis launched the United States as a world monetary power. He honored America's commitment to the gold standard, while every other country, except for Britain (the reigning financial superpower), abandoned it at the outbreak of the Great War.

produced a seven percent increase in the monetary base.[10] The money supply grew at an annual rate of 9.8 percent over the same period.[11] By way of contrast, in 1907 the public's obsession with currency beginning the week of October 22, 1907, when the Knickerbocker Trust Company suspended payments, triggered a decline in the money supply at an annual rate of 11.6 percent during the final three months of the year.[12]

The 1914 versus 1907 experience is suggestive but not conclusive. More direct evidence of the power of Aldrich-Vreeland emergency currency comes from a little-known experiment that McAdoo conducted a year before the European war erupted.

II. The Lesson of 1913

McAdoo flirted with Aldrich-Vreeland currency during the spring of 1913. The newly-elected President, Woodrow Wilson, had proposed tariff reduction legislation that provoked considerable opposition in the business community. Wilson pushed for prompt passage of the Federal Reserve Act, in part because he expected that the new currency system could supply easy money during the first few months of reduced protection from foreign competition. When Wilson suspected that Republican Senators wanted to block currency revision for the simple purpose of precipitating a financial panic and blaming the Administration's new tariff policies, he turned to McAdoo for help.[13]

In the evening of June 11, 1913, McAdoo announced that "he would not hesitate to issue emergency currency to any banks making application and qualifying under the [Aldrich-Vreeland] Act."[14] When McAdoo was asked whether any applications had been made he simply said: "No." The press noted that: "The only explanation obtainable as to Mr. McAdoo's purpose…is that it is intended

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[10]Based on Table B-3, Friedman and Schwartz (1963, p. 800).
[11] On October 31, 1914 the money supply (consisting of currency held by the public plus total bank deposits) totaled $16,532 million versus $16,135 million outstanding on July 31, 1914. See Table A-1, Friedman and Schwartz (1963 p. 708).
[12] According to Table A-1, Friedman and Schwartz (1963, p. 706), the money supply measured $11,044 on December 31, 1907 versus $11,374 million on September 30, 1907. Friedman and Schwartz (1963 p.158) say: "The decline in the money stock from September 1907 to February 1908 has all the earmarks of a scramble for liquidity on the part of both the public and the banks." The monetary base actually rose over this interval, in part, because of the massive gold inflows from Europe that began in November 1907. Bank deposits declined, however, because the public increased its currency holdings and banks increased their holdings of reserves.
[13] New York Times, June 12, 1913.
[14] Washington Post, June 12, 1913.

to give assurance…that the Wilson Administration will do its utmost to overcome any financial embarrassment that may come."[15]

Would Aldrich-Vreeland currency succeed in calming the business community? Opponents of the original legislation had argued that, instead of preventing a panic, the provision of emergency currency might backfire and provoke one. The then Comptroller of the Currency, William Ridgely, said:[16] "The issue of so-called emergency notes…would at once be a confession of weakness and a danger signal that no bank would dare make until in desperate condition." Perhaps that is why no emergency currency had ever been requested since the Aldrich-Vreeland Act had been passed in May 1908. How did the business world respond to McAdoo's June 11, 1913 invitation?

McAdoo released his statement invoking the Aldrich-Vreeland Act on the evening of June 11, after the stock market had closed. Thus, if McAdoo's announcement had a material impact, for better or worse, it should have been reflected in stock price movements on June 12. Chart 1 shows the daily returns on the Wall Street Journal's index of railroad stocks for the first half of 1913. The return of more than 2.5 percent on June 12 stands out as the largest significant positive return during the first six months of 1913. Industrial stocks recorded a similar outsized positive return of more than 3 percent on June 12.[17]

McAdoo's offer of emergency currency during 1913 found no takers. Perhaps Comptroller of the Currency Ridgley was right – accepting the offer would shatter a bank's reputation. But Wall Street's vote of confidence on June 12, 1913 demonstrated the potential power of the Aldrich-Vreeland Act. The record during the summer of 1914 confirmed it.

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[15] Ibid.
[16] Comptroller of the Currency, Annual Report, December 1907, p.74.
[17] The price movements in both indices on June 12, 1913 are statistically significant. During the first half of 1913 the daily standard deviation of returns equaled 0.61 percent for railroad stocks and 0.78 percent for the industrials. The industrial index is currently called the Dow Jones Industrial Average and the railroad index is currently called the Dow Jones Transportation Average.

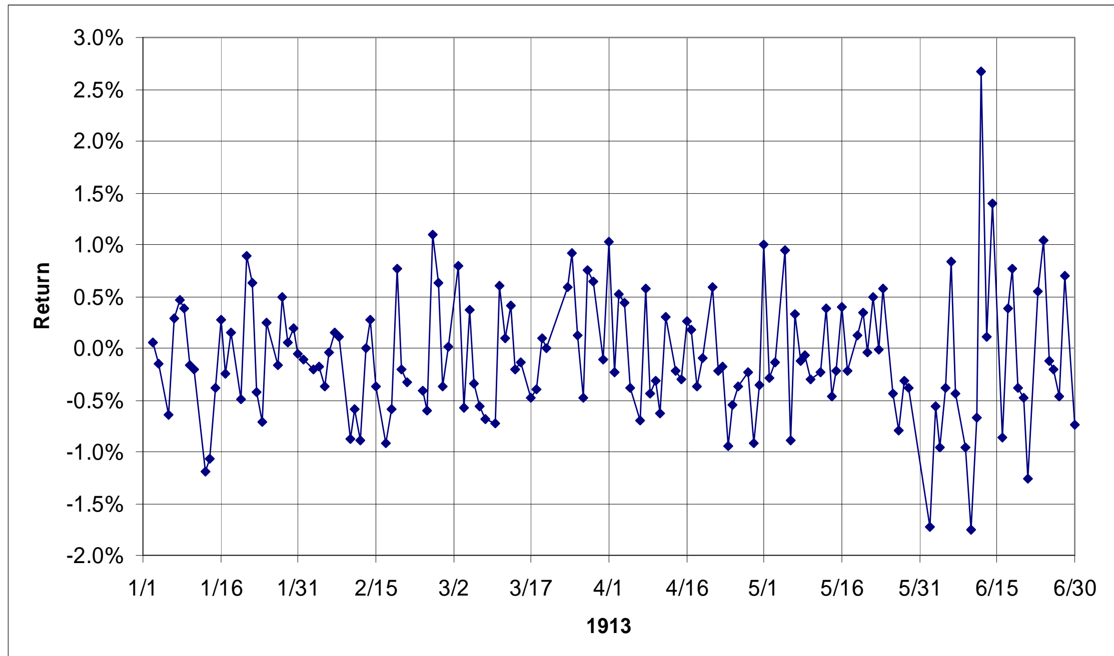

Chart 1: Daily Returns for Railroad Stocks, January 1, 1913 to June 30, 1913

III. Liquidity in Wartime

An important characteristic of the Aldrich-Vreeland Act was that once the Treasury Secretary declared a financial crisis under the Act, a bank could decide the timing and magnitude of securities to deposit as collateral for additional currency. Thus high-powered money expanded endogenously to meet a shortage of liquidity. According to Sprague (1915, p. 517) this feature of the Aldrich-Vreeland Act accounted for its success: "For the first time since the establishment of the national banking system the banks exercising the powers conferred upon them by the Aldrich Vreeland Act of 1908 were able to issue bank notes freely in coping with a crisis."

Direct aid to individual banks needing liquidity may be the best way to combat a panic under wartime conditions. Interruptions in communications facilities, caused by total war or by terrorist attacks, can precipitate liquidity shortages at specific financial institutions. McAndrews and Potter (2002, p.72) cite the importance of the Federal Reserve's lending at the discount window to individual banks as the key to mitigating the financial consequences of the terrorist attacks of September 11, 2001. Open market operations, the preferred method of injecting funds in the modern banking system, may

not have accomplished its objective. Impaired funds transfer prevented some banks that needed cash from borrowing it in the interbank market.

In 1914, the threat of an external drain of gold forced McAdoo to close the NYSE. Call loans secured by stock exchange collateral, which normally would have been the primary source of liquidity to an individual bank, disappeared. The New York City Clearing House permitted its member banks to settle claims among themselves with clearing house loan certificates, just as they did in 1907. But clearing house loan certificates could not settle accounts among banks in different cities and normally did not circulate among the public (see footnote 8). Under the Aldrich-Vreeland Act banks turned their asssets into emergency national bank notes, which served both as currency for the public and could also satisfy inter-city clearings among banks. Like Federal Reserve lending at the discount window during the Septemeber 11, 2001 crisis, Aldrich-Vreeland currency provided a universally accepted domestic medium of exchange directly to the banks needing it.[18]

IV. 1930

The two key characteristics of currency creation under the Aldrich-Vreeland Act -- (1) direct aid to an individual bank, and (2) at the discretion of the bank -- support Friedman and Schwartz's (1963, p. 172) conjecture that emergency currency "would have been equally effective on the occasion of the next threat of an interconvertibility [sic] crisis which arose in late 1930."

During the Great Depression the Federal Reserve knew of Walter Bagehot's principle of lending freely to stem an internal drain of currency, but it did not implement it consistently and automatically (see Meltzer [2003, p.282]). The Aldrich-Vreeland Act would have eliminated discretionary delays by allowing banks under liquidity pressure to exchange assets for currency

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[18] Borrowing at the discount window, even under the recently relaxed guidelines for primary credit, differs from credit creation under the Aldrich-Vreeland Act in at least one key respect: discount borrowing, *especially for more than one day*, is subject to discretion of the Federal Reserve while banks could acquire funds under the Aldrich-Vreeland Act indefinitely, as a matter of right, as long as they were willing to incur the statutory tax. See the Federal Reserve's Regulation A (revised January 9, 2003), which governs the administration of the extensions of credit by Federal Reserve Banks (available at www.frbdiscountwindow.org/regulationa.cfm?hdrlD=14&dtllD=77), especially paragraph 201.4, which reads: "Such primary credit *ordinarily* is extended with minimal administrative burden on the borrower. A Federal Reserve Bank may extend primary credit with maturities up to a few weeks …if, in the *judgment* of the Reserve Bank, the depository institution…cannot obtain such credit in the market on reasonable terms [italics added]."

automatically, had the Act not expired by Congressional design.[19] Although banks that were members of the Federal Reserve System could initiate a demand for reserves at the discount window in 1930, the Federal Reserve banks exercised considerable discretion (see Chandler, 1971, pp. 225-239).

Open market operations suffered from discretionary delays plus the potential for reserves to accumulate in banks that did not need funds. Unwarranted mistrust of otherwise sound institutions during the 1930s (some mistrust was warranted, but some was not), meant that open market purchases might not channel the funds to banks under depositor attack, similar to the breakdown of communications on September 11, 2001 described by McAndrews and Potter (2002, p.72). The mechanism for currency creation under the Aldrich-Vreeland Act would have provided credit at the bank's initiative directly to banks needing it most.[20]

V. A Concluding Recommendation for Current Federal Reserve Policy

The emergency currency provisions of the Aldrich Vreeland Act helped William G. McAdoo triumph over the financial crisis during the summer of 1914. Two key characteristics of the process -- direct aid to an individual bank, at the initiative of the bank -- suggest that the Aldrich Vreeland mechanism would be especially appropriate in avoiding discretionary delays in liquidity provision and in circumventing problems associated with funds transfers among financial institutions. The Federal Reserve's January 2003 revised guidelines for extending primary credit at the discount window moved in the direction of the Aldrich-Vreeland Act by limiting discretionary delays, but still falls short (see footnote 18). I suggest that the Federal Reserve complete the recent progress it has made towards incorporating the1908 emergency currency legislation in its operating procedures.

[19] The Aldrich-Vreeland Act expired on June 30 1915. Congress had extended the life of the original 1908 legislation for one year, from June 30, 1914 to June 30, 1915, as part of the Federal Reserve Act of December 23, 1913. The Federal Reserve System was designed to replace the emergency currency provisions of the Aldrich-Vreeland Act.
[20] The potential for some discretionary delay existed even under the Aldrich-Vreeland Act. The Treasury Secretary had to declare an emergency to permit the creation of emergency currency.

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