The Genesis of Financial Development: The Case of Bankers' Acceptance, 1914-1934

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> The importance of the Money Market does not lie in its size, because the total amount of funds in the market is small in comparison with the total banking funds of the country. The importance lies rather in the liquidity of the market, it its capacity for furnishing cash at a few hours' notice.
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> -- W. Randolph Burgess, 1926

I. Introduction

Unlike Europe, the United States did not have a market for bankers' acceptances at the start of the twentieth century. Rather, the U.S. market was given birth by the Federal Reserve Act of 1914, which allowed the new Federal Reserve Banks to rediscount acceptances. By giving the Reserve Banks the power to rediscount, it was hoped that the "discount market" would become more liquid and bankers' acceptances would be an attractive investment vehicle.

The framers of the Federal Reserve Act were motivated by three broad goals. First, they wanted to build a market for bankers' acceptances so that the U.S. could become a banker to the world. Second, a U.S. market for bankers' acceptances would stimulate foreign trade by lowering the costs of financing imports and exports. Finally, with the financial turmoil of 1907 fresh in their minds the framers believed that a more liquid money market would act as a "prophylactic against panics."[1]

This paper explores the development of the discount market for bankers' acceptances between 1914 and 1934. We address three questions. First, did the liquidity of the discount market rise over the first twenty years? Second, what were the institutional and cyclical factors that influenced liquidity? Third, was liquidity priced? That is, was the cost of acceptances financing affected by the willingness of dealers to "make the market"?

II. Overview of the Market

Figure 1 shows the volume of bankers' acceptances outstanding on a monthly basis between 1917 and 1933.[2] Figure 2 classifies bankers' acceptances by the different transactions they financed.

Growth of bankers' acceptances was fostered by several liberalizations in the "rules of the game" that governed the market. The original Federal Reserve Act only granted permission for National Banks to create acceptances used to finance the importation and exportation of goods. As Figure 2 shows, the majority of bankers' acceptances were used for this purpose even as late as 1924. By 1917 the Act had been amended to allow banks to create acceptances for domestic shipment of goods and holding marketable stables in inventories in the United States.

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[1]Hackley (1973), p. 10.

[2]Monthly values for 1920 and 1924 were interpolated using April and December observations (the only ones available) from these years. Monthly values for 1917 through 1919 were interpolated using December observations.

Development of the acceptance market was further promoted in 1919 when the Federal Reserve Board approved an amendment making it possible for member banks to accept up to 100 percent of their capital. In 1921 the Board permitted Federal Reserve banks to purchase six-month import and export bills. In 1926, the American Acceptance Council helped get legislation passed in New York State that made acceptances a legal investment for life insurance companies.

In the early 1920s when banks were allowed to create acceptances to finance imports and exports between foreign countries and storage of readily marketable staples in foreign countries. The first recorded use of American bankers' acceptances for this purpose occurred in February 1925. By the end of 1930, this category accounted for $561,000,000 of acceptance financing. While the initial growth was made possible by "regulations and legislative authority," the rapid rise observed in the late 1920s was due largely to the "extremely low and stable market rate in the United States" relative to those that existed in London.[3]

To support the market, the Reserve Banks set buying rates for acceptances and bought eligible bills offered at those rates. During the crop moving months (August to December), acceptances outstanding rose. As market rates increased relative to those set by the Reserve Banks, investors had an incentive to rediscount bills at the Reserve Banks. As a consequence, acceptances held in Reserve Bank portfolios displayed a strong seasonal pattern (see Figure 1). The Federal Reserve's bill buying policy also caused market interest rates to gravitate around the buying rate set by the Reserve Banks (see in Figure 3).

Market support extended by the Federal Reserve clearly decreased in the latter years. Often over one-half of all outstanding acceptances were held by Reserve Banks during the first decade of the market's operation. In contrast, by 1929 less than one-sixth of all acceptances were held by the Reserve Banks.

III. Liquidity Creation in the Discount Market

Acceptances dealers and discount houses "made the market" by holding inventories of bills and standing ready to buy and sell them on a moment's notice. Figure 4 shows weekly spreads between buying and selling rates set by dealers for acceptances with 30, 90, 120 and 180 days to maturity. This section examines the behavior of the spreads and their influence on interest rate levels.

During the early years of the bill market, dealers financed inventory holdings by borrowing funds in the call market. As the call rate rose, so did the cost of financing inventory holdings. Dealers responded by raising bid and ask rates to shrink inventories, thus transmitting changes in the call rate to bill rates.

Modern inventory models of dealer behavior suggest that increases in trading volume lower the spread by reducing the dealer's expected holding period and making it more likely the dealer can

[3] Facts and Figures Relating to the American Money Market (1931), p. 14.

reverse his position (Tinic (1972)). Economies of scale can also play a role: increases in balanced transaction volume raise profits and this induces market entry that drives the bid-ask spread down (Shen (1993)). An increase in asset return volatility leads to higher spread because it raises the risk borne by dealers. As Stoll (1978) has shown, dealer risk aversion should also influence the spread. Finally, the spread should rise as dealer wealth deteriorates (Tinic (1972) and Stoll (1978)).

III.A. The Historical Record

The number and financial strength of dealers varied a great deal between 1914 and 1934. It was not until 1918 that the first substantial discount house, one with adequate capital and strong bank support, appeared on the scene. Other finance houses entered the market and several large banks opened acceptance departments shortly thereafter. By 1924 there were "seven or eight reliable firms and corporations performing the functions of discount houses."[4] By 1930 there were ten.[5]

The relatively high spreads for both 30- and 90-day bills in 1917 and 1918 likely reflected monopoly pricing of the few dealers who made the market in the early years. Low dealer wealth could have also made it more costly for them to borrow funds to carry inventory and less willing and able to bear risk.

Spreads for 30- and 90-day bills fell toward the end of 1918 and throughout much of 1919. The spread on 90-day acceptances remained at 1/16th of one point—levels not reached again until late in 1934—for much of 1919. One explanation for these thin spreads is that that the rapid rise in transaction volume (see Figure 1) raised dealer profits and induced market entry. As the number of dealers rose, spreads were driven down to or below cost.

The volume of acceptances stagnated and spreads jumped to _ of a point on numerous occasions in 1920. Clearly, the tightening of monetary policy that began in December 1919 and the decline in trade took its toll on the market. Also, Federal Reserve holdings of bills fell during the second half of 1920 when acceptances outstanding increased. It is likely that their withdrawal from the market increased the perceived risk of making markets. Moreover, as Figure 5 shows, the conditional standard deviation of the call rate reached very high levels in early 1920. Finally, note that market rates for acceptances rose above the official discount rate for several weeks in 1920 (see Figure 3). This meant that investors could buy bills in the open market at prices below those being offered by the Reserve banks and make large profits. The fact that they did not suggests that market illiquidity prevented arbitrage from taking place.

The bill rate declined and spreads for both 30- and 90-day bills hit _ of one point often during 1921. It appears that the higher spreads reflected the decrease in volume of bills traded and interest rate instability. In addition, dealers were "adverse to loading up their portfolios, for the

[4]Acceptance Bulletin (May 1924), p. 5.

[5]They included: American Securities Company, The Discount Corporation of New York, The First National Old Colony Corporation, First National Bank of Dallas, Forth Worth National Company, M. & T. Securities Corporation, Salomon Brothers & Hutzler, The Shawmut Corporation of Boston, and Alexander T. Stephens, Inc.

slightly easier conditions in the general money market…. were not regarded by them as indicated such stability as to warrant them keeping more paper on hand than they were certain of marketing quickly."[6]

The market for acceptances contracted further in 1922 with outstanding issues shrinking to 1917 levels. Trading volume also declined precipitously reducing discount market liquidity:

> For many months past the open market for bank acceptances has virtually been in a state of suspended animation. The daily volume of transactions has fallen to its smallest totals for years and the transactions of the discount houses have not been sufficient to constitute what might properly be termed an open market.[7]

The market deteriorated further in September 1922, leading to what was described by one observer as "the darkest period—for the dealer—in the history of our discount market."[8] In a period of 40 days between September 14 and October 25 the selling rate on bills rose from 4 to 5 percent and dealers suffered massive losses on their portfolios holdings. After dropping to 1/8 of one point toward the end of 1921, bid-ask spreads rose to _ of one point during much of 1922.

By the second half of 1923 the volume of acceptances began to increase, interest rates stabilized, and bid-ask spreads on 30- and 90-day bills returned to the normal level of 1/8 of one point. The spreads remained at this level for the next five years. Commentary in 1925 suggests that the market's depth had increased substantially:

> The ease with which $800,000,000 in bankers acceptances are handled by the discount houses and dealers who constitute the 'Exchange' in the Acceptance Market, shows conclusively that we now have a real discount market with sufficient capacity to absorb and distribute prime bankers acceptances to a still further increased volume.[9]

To stem stock market speculation, the Fed raised the discount rate in a series of steps beginning February 3, 1928. Both the level and volatility of the call renewal rate rose dramatically, though volatility did not approach levels reached in 1920. Liquidity in the long end of the bill market fell in response. Spreads on 120- and 180-day bills remained at _ of one point between December 14, 1928 and August 30, 1929. By contrast, spreads for the 30- and 90-day bills rose to _ only briefly in 1928 and 1929.

Another shock hit the bill market in the fall of 1931 when the Federal Reserve raised its discount rate to prevent capital outflows following Britain's departure from the gold standard. Once again liquidity in the market fell:

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[6]Acceptance Bulletin (February 1921), p. 6.
[7]Fry (November 1922), p. 9.
[8]Acceptance Bulletin (June 1924), p. 14.
[9]Report issued by the American Acceptance Council as quoted in Thralls (1925), p. 5.

> Very Seldom does the bill market come to the standstill condition of the past two weeks… Heretofore there has been an ebb and flow of bills that has kept the wheels moving but on this occasion nearly all the bills are in the Federal Reserve Banks and as the Federal buys from but never sells to the market the total bill volume is therefore locked up to be held to maturity.[10]

Spreads on 120- and 180-day bills remained at _ of one point between October 16, 1931 and January 8, 1932. In contrast, the increase in bid-ask spreads for 30- and 90-day bills was temporary, only rising to _ for one week in October. It appears that the short end of the discount market had become much more resilient and less susceptible to liquidity withdrawals by the early 1930s.

III.B. Econometric Evidence

Table 1 provides results from regressions used to explain variation in bid-ask spreads. The explanatory variables are the level of the call loan rate and the conditional standard deviation of call rate changes. Unfortunately, we do not have weekly data on trading volume. However, the variation in acceptances outstanding over the year suggests that trading volume follows a seasonal pattern. Thus we test for volume effects by including dummy variables for the months of January through November in the regressions. The month of December, which typically has the highest level of acceptances outstanding (and presumably the greatest trading volume), is reflected in the constant term.

The results in Table 1 suggest that the call rate exhibits a weak relationship with the spreads. Only in the case of the 30-day bill is the call rate coefficient positive and significantly different from zero at the five percent level. In contrast, the volatility of the call rate has a positive and significant relationship for five of the six spreads. Also, note the size of the coefficients for the long-term bills are three to four times the size of those for short-term bills. These findings suggest that increases in return volatility created greater risk for dealers making markets in bills with more than 90 days to maturity. Finally, the month dummies, though typically negative, are insignificant in models for 30-, 60- and 90-day bills. In contrast, coefficients on month dummies are negative and significantly different from zero more frequently in the regressions for the longer-term acceptances. The months with the largest negative coefficients are January (120-day bills), August (150-day), and April (180-day bills). These findings are consistent with the hypothesis that liquidity in the long end of the discount market was influenced by seasonal variations in trading volume.

To the extent that the discount market was less developed in its early years (i.e., dealer wealth was low and they were less able or willing to bear risk), we should see return volatility exert a more powerful influence on bid-ask spreads during this time period. To test this hypothesis,

[10] Acceptance Bulletin (October 1931), p. 1-2.

Table 2 reports bid-ask spread regressions for 30-, 60- and 90-day acceptances estimated over two sample periods: February 1919 to December 1926 and January 1927 to November 1934. The results clearly show that changes in return risk affected spreads in a more powerful manner in the early sample period. This finding suggests that the bill market became deeper and more resilient over time.

The final issue we address is whether liquidity was priced. That is, did changes in liquidity of the bill market affect the level of the bill rate?[11] This is an important question. There is a great deal of evidence from cross-country studies that economic growth and financial development are highly correlated (see Levine (1996)). However, it is very difficult to determine the direction of causality. If exogenous forces (i.e., the purposeful activities of the Federal Reserve and the American Acceptance Council) caused bill market liquidity to rise over time and greater liquidity lead to lower costs of financing production and trade, then there is evidence that causality runs from financial development to economic growth.

To examine the extent to which liquidity is priced, we estimated regressions for weekly changes in the bill rate on: a) the level of the bill rate lagged one week, BA(T-1); b) the weekly change in the discount rate set by the Federal Reserve, DISRATED; c) the bid-ask spread, SPREAD; and d) dummy variables for January through November. If bill rates are mean reverting, the coefficient on the lagged bill rate level should be negative. Changes in the Federal Reserve's discount rate should have a positive influence on the market rate for obvious reasons.

The results are reported in Table 3. The coefficient on the lagged bill rate is negative in each of the six regressions, but is marginally significant. Thus there is some evidence of mean-reversion. As expected the discount rate set by the Federal Reserve has a positive and highly significant impact on the bill rate. However, note that coefficients are well below one suggesting that other forces are influencing the bill rate. The coefficients on the month dummies are generally negative with the coefficient on the April dummy often taking on the largest negative value. Thus there does appear to be some seasonal variation in the bill rate. Most importantly, the bid-ask spread has a positive and statistically significant impact on the bill rate for maturities of 90 days and less. While the coefficients on the spread in regressions for longer-term rates are positive they are not significant. Thus there is somewhat mixed evidence regarding the link between liquidity and interest rates.

IV. Conclusion

The market for bankers' acceptances grew dramatically between 1914 and 1929 partly because the Federal Reserve Board liberalized the "rules of the game" that governed market activity. The Federal Reserve also acted as the market maker of last resort by rediscounting paper and this activity reduced the risk borne by private dealers and induced them to make the market.

[11]There is considerable empirical evidence from the post-WWII period that liquidity affects asset prices (see Amihud and Mendelson (1986, 1991), Kamara (1994), Shen and Starr (1998)).

The American Acceptance Council also played a key role by publishing the monthly Acceptance Bulletin, a vehicle used to educate banks and investors on the benefits of bankers' acceptances. The editorial pages of the Bulletin appealed for banks to be guided by more than self-interest: "There can be no question of the duty of the big banks in the large centers… nevertheless, their [smaller banks'] duty as well as their profit lies in the direction of carrying as a secondary reserve acceptances of American banks."[12] Clearly, there was a sense that private profit motives would not suffice to overcome the coordination problem that exists when market participation and liquidity drive one another (see Pagano (1989)).

In the end, these efforts paid off. By the late 1920s the size of the market had grown dramatically and the United States was becoming a banker to the world. Increasing liquidity of the discount market played an important role in this process.

[12] Acceptance Bulletin (July 1919), p. 4.

Data Appendix

1. Bankers' Acceptances Outstanding (end-of-December from 1917 to 1919, end-of-April and end-of-December from 1920 to 1924, and end-of-month from 1925 to 1933). Source: Facts and Figures Relating to the American Money Market (1931) and various issues of the Acceptance Bulletin (1931-1933). Data not seasonally adjusted.

2. Bankers' Acceptances Bought in the Open Market by Federal Reserve Banks (Wednesday figures for each week from 1919 to 1933). Source: Banking and Monetary Statistics (1946), Table No. 103. Data not seasonally adjusted.

3. Classification of Bankers Acceptances Outstanding (end-of-month from 1925-1933). Source: Facts and Figures Relating to the American Money Market (1925-1930) and various issues of the Acceptance Bulletin (1931-1933). Data not seasonally adjusted.

4. Bid and ask rates for Bankers' Acceptances (closing rates reported by dealers on various days of the week from 1917 to 1923 and Fridays from 1924-1934). Source: various issues of the Acceptance Bulletin.

5. Interest Rate on Stock Exchange Renewal Call Loans in New York City (weekly average of daily renewal rates from 1919-1934). Source: Banking and Monetary Statistics (1946), Table No. 121. Data not seasonally adjusted.

References

The American Acceptance Council. Acceptance Bulletin, various issues 1919-34.

The American Acceptance Council. Facts and Figures Relating to the American Money Market,
New York: The American Acceptance Council, 1931.

Amihud, Yakov and Haim Mendelson. "Asset Pricing and the Bid-Ask Spread," Journal of Financial Economics 17 (1986), 223-249.

Amihud, Yakov and Haim Mendelson. "Liquidity, Maturity, and the Yields on U.S. Treasury Securities," The Journal of Finance XLVI (Sept. 1991), 1411-26.

Burgess, W. Randolph. The Reserve Banks and the Money Market, New York and London: Harper & Brothers Publishers, 1946.

Demsetz, Harold. "The Cost of Transacting," Quarterly Journal of Economics (1968), 33-53.

Fry, Morton. "The Future of the Acceptance Market," Acceptance Bulletin (Nov. 1922), p. 9.

Hackley, Howard H. Lending Functions of the Federal Reserve Banks: A History, Washington: Board of Governors of the Federal Reserve System, 1973.

Jacobs, Lawrence Merton. Bank Acceptances, Washington: Government Printing Office, 1910.

Kamara, A. "Liquidity, Taxes, and Short-Term Treasury Yields," Journal of Financial and Quantitative Analysis 29(3) (1994), 403-17.

Levine, Ross. "Financial Development and Economic Growth: View and Agenda," Journal of Economic Literature XXXV (June 1997), 688-726.

Melton, William C. and Jean M. Mahr. "Bankers' Acceptances," Federal Reserve Bank of New York Quarterly Review (Summer 1981), 39-55.

O'Hara, Maureen. Market Microstructure Theory, Malden Mass.:Blackwell Publishers Inc., 1997.

Pagano, Marco. "Endogenous Market Thinnes and Stock Price Volatility," Review of Economic Studies 56 (1989), 269-288.

Shen, Pu. "Bid-Ask Spreads: A Theoretical Model with Tests on the Treasury Bill Market," Manuscript, Federal Reserve Bank of Kansas City, (July 1993).

Shen, Pu and Ross Starr. "Liquidity of the Treasury Bill Market and the Term Structure of Interest Rates," Journal of Economics and Business 50 (1998), 401-417.

Stoll, Hans R. "The Theory of Dealer Services in Securities Markets," The Journal of Finance 33(4) (September 1978), 1133-1151.

Thralls, Jerome. "The American Discount Market," Acceptance Bulletin (February 1925), 5-8.

Tinic, Seha M. "The Economics of Liquidity Services," Quarterly Journal of Economics (1972), 79-93.