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Innovations in US Banking Practices and the Credit Boom of the 1920s

The 1920s were important for the development of banking in the United States because new lending practices strongly favored credit expansion. Those innovations pertained to the measurement of credit risk and to new sales methods for banks. In particular, I describe the development of scientific credit analysis and so-called credit barometrics. Credit barometrics indicated credit worthiness based on statistical analysis and replaced old rules of thumb. These indicators were flawed and induced an erroneous belief in a future with rational and safe credit management. By studying the course of major New York banks as well as aggregate data, I show how the innovations in banking methods contributed to the credit boom that ended with the crash in 1929.

Economic analysts have extensively documented and discussed times of strong credit growth followed by banks' large losses on loan defaults and a decline in credit supply.[1] Whereas modern theorists tend to favor explanations of credit cycles that build on rational decision

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[1] Lincoln W. Hall, *Banking Cycles* (Philadelphia, 1927). Allyn Young, *An Analysis of Bank Statistics for the United States* (Cambridge, Mass., 1928). Charles Kindleberger, *Manias, Panics, and Crashes: A History of Financial Crises* (New York, 1978). Otto Eckstein and Allan Sinai, "The Mechanics of the Business Cycle in the Postwar Era," in *The American Business Cycle: Continuity and Change,* ed. R. J. Gordon (Chicago, 1986). A prominent theoretical analysis of credit cycles was proposed by Nobuhiro Kiyotaki and John Moore, "Credit Cycles," *Journal of Political Economy* 105, no. 2 (1997): 211–48.

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making, economic historians like Charles Kindleberger are inclined to point out elements of irrational or boundedly rational behavior. This article is based on the premise that, for an understanding of banks' decision making and its possible flaws, it is important to study the development of banking practices. Hence, studying their evolution holds promise for an improved understanding of the credit cycle. Banking practices can be researched by studying manuals for the education of young bankers, statistics used in credit decisions, data of individual banks, and through the accounts of individual bankers and analysts. In this article I analyze a particularly revealing historical episode (the United States before and during the credit boom of the 1920s) to illustrate important forces coming from the side of lenders that act on the credit cycle. The 1920s illustrate how the coevolution of business knowledge (i.e., banking practices) and competitive forces contributed to a credit boom that ended in a crisis. The developments described here pertained to the US banking scene. Nothing comparable happened in London at the time. While the London Stock Exchange dominated its international competitors in innovation and openness in the nineteenth and early twentieth centuries, a few families led British banking. By the 1920s, "big five" banks (Midland, Westminster, National Provincial, Barclays, and Lloyds) had formed a cartel effectively reducing competition and innovation. To note just one difference between the US and UK, novice bankers in New York typically went through a structured four-year apprenticeship. In the early 1920s, the training manual of the National City Bank of New York described in detail its forty departments and subdepartments and their functions.[2] In contrast, Barclays did not introduce a formal, bank-wide training scheme until 1946.[3]

In records of the early decades of the twentieth century, we see traditional values and methods meeting innovations in the banking business. Textbooks of the time summarized the established procedures of lending, as described below. Innovations in banking practices largely occurred over a period of thirty years in conjunction with the increase in both the number and size of banks' commercial credit clients. "Scientific management" reached the bankers' world, and systematical analysis of financial data, in particular, became established in banks' credit departments. The promoters of these innovations saw great promise in statistical analysis and scientific judgment and expected them to

[2] The National City Bank of New York, *The Banking Apprenticeship Plan* (New York, 1917) and *The Work of Number Eight* (New York, 1921).

[3] Leslie Hannah, "London as the Global Market for Corporate Securities before 1914," in *Financial Centres and International Capital Flows in the Nineteenth and Twentieth Centuries*, ed. Laure Quennouëlle-Corre and Youssef Cassis (Oxford, 2011). Margaret Ackrill and Leslie Hannah, *Barclays: The Business of Banking, 1690–1996* (Cambridge, UK, 2001).

prevent excesses and failures in banking that had occurred previously.[4] Contrary to these expectations, I show that "scientific credit analysis" failed to give early warning signals in the second part of the 1920s. Instead, the measures developed by scientific analysis indicated a safe environment for credit expansion. Furthermore, the staff resources needed for new credit departments intensified scale-effects in banking and thus favored bank expansion.[5] Finally, new ideas of salesmanship that made their entry into banking amplified this expansion.

Section one of this article outlines the development of banking practices and common ways to deal with credit risk up to the 1920s. The three Cs of bank credit (character, capacity, and capital of the borrower) were cornerstones of credit analysis in the period. Section two documents the new developments in the scientific management of credit risk. The most important development in the credit-granting process of the 1920s was the use of so-called credit barometrics. These indicators promised a reliable measurement of credit worthiness. The widely disseminated credit barometrics suggested to credit specialists (called credit men) and to general management that credit risks were under scientific control, and indicated that these risks were generally not increasing. In section three I describe the growing role of marketing in banking at the time. Section four illustrates the credit policies of major New York banks in this setting. While the same methodological innovations in scientific risk management affected banks, they differed in their opportunities and their assessment regarding their individual growth/risk profile. Hence, it would be a misguided effort to look for a rigid link between innovations in credit analysis and any individual bank's credit supply. Important determinants of a bank's supply of credit, such as acquisitions, differed from bank to bank. Hence, I illustrate the similarities and differences among banks by describing the concrete choices of several key players. Section five describes the credit boom of the 1920s through the lenses of old and new empirical analyses, as well as through aggregated data. This section connects banks' behavior with economy-wide developments. In conclusion, section six indicates that the setback of the Stock Market Crash of 1929 and the Great Depression did little to weaken the hopes that rational banking would overcome the tendencies for credit booms and busts.

Several notes of caution are in order here. First, by focusing on the historical process of change in lending procedures, this study makes

[4] This development can be seen as part of a more general trend to reduce the influence of personal idiosyncrasy and subjective elements in decision making, as detailed by Theodore Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton, 1995).

[5] John Chapman, *Concentration of Banking: The Changing Structure and Control of Banking in the United States* (New York, 1934).

the case of causality running from innovations in banking methods to bank lending. In some cases, as with Alexander Wall's credit barometrics, it is possible to track how a single piece of writing affected practice.[6] In other cases, we see important developments in the 1920s that began earlier. As an example, the introduction of credit departments had started in the 1890s. In these cases I document the increasing role (and popularity) of an innovation and show how it interacted with other advances to exert upward pressure on lending.[7] On another note, the argument supporting a causal role of banks' changing credit practices of the 1920s does not deny the importance of credit demand as a major factor determining credit growth. In fact, the expanding economy's demand for credit and the credit supply both generated the credit boom of the time. The novel point argued here is that banks largely accommodated the growth in credit demand because they relied on instruments (i.e. indicators) that suggested that there was no increase in credit risk.

Lending Practices

Granting or denying credit has always been a central business task. "Whom to trust has been the problem of business since men began to trade, and the science of credit decides this question. The art of banking consists in lending money and getting it back again. And it is an art, learned by few in its completeness, yet practiced by all in its incompleteness."[8] While the focus of this article is on banks, it is important to begin here with an innovation that happened outside of banks: the establishment of credit agencies in the nineteenth century. Lewis Tappan with his Mercantile Agency in New York City was the first to collect and sell borrower information systematically. At the same time, manufacturers who sold commodities and permitted customers to make delayed payments also developed important methods and institutions for the assessment of creditworthiness.[9] These firms employed so-called credit men whose job was to gather information on customers' creditworthiness and to help to set credit limits. In 1896, the credit specialists formed a national association (National Association of Credit Men, NACM) and

[6] Alexander Wall, "Credit Barometrics," *Federal Reserve Bulletin* 5, no. 3 (1919): 229–43.

[7] A forceful argument for such a connecting of "the dots of all relevant historical events with causal links" has recently been made by Randall Morck and Bernard Yeung, "Economics, History, and Causation," *Business History Review* 85 (Spring 2011): 39–63.

[8] William Kniffin, *American Banking Practice* (New York, 1921), 147.

[9] James Norris, *R. G. Dun & Co., 1841–1900: The Development of Credit-Reporting in the Nineteenth Century* (Westport, Conn., 1978). Dun & Bradstreet Corporation, *Dun and Bradstreet and the Rise of Modern Business: A History of the Dun & Bradstreet Corporation* (New York, 1991). Rowena Olegario, *A Culture of Credit* (Cambridge, Mass., 2006).

led the way in the training and organizing of credit specialists in banks.[10] NACM started publishing a monthly bulletin in 1898 and organized training of credit professionals in 1918.

The following details on credit procedures largely pertain to banks' commercial lending. Bank lending consisted predominantly of unsecured loans; that is, of loans for which no collateral was pledged. Hence, the assessment of credit or default risk was of key importance to banks. Credit-risk assessment is important even when collateral is pledged because, in case of default, collateral is typically not sufficient to cover the entire loss. The operations and procedures for assessing credit risk are extensively covered in educational banking texts of the time.[11] The central elements in these accounts of credit risk are the so-called three Cs of banking credit: character, capacity, and capital. The characteristics of potential borrowers along these three dimensions were seen as key conditions for a successful credit relationship. The earliest source describing the use of the three Cs is the Mercantile Agency Annual for 1871. For a more detailed view of the three Cs, I draw on an exposition by Glenn Munn, a bank practitioner and educator at the Chase National Bank.[12] The first of the three dimensions of debtor quality, "character," (also called moral risk), centers on the honesty and integrity of the prospective borrower, which, in turn, consist of a number of factors like the reputation for business honesty, the attitude towards obligations, the standing in the community, and the record in previous business connections. Furthermore, credit analysts must take into account an applicant's bankruptcy, fire, police, and civil court records.

Credit-risk assessment became even more complex when considering the second of the Cs, "capacity." A number of inquiries and appraisals are necessary to qualify a borrower's ability to service his debt. One key issue here is whether the banker judges the borrower's business as sound and legitimate. Further important points pertain to the prospective volume of the borrower's business, the existence of an effective system of cost controls, and—particularly for firms in the chemical or electrical industry—the existence of a research department. Turning to

[10] David Sellers Smith, "The Elimination of the Unworthy: Credit Men and Small Retailers in Progressive Era Capitalism," *Journal of Gilded Age and Progressive Era* 9, no. 2 (2010): 197–220.

[11] John Ebersole, *Banking for Beginners* (New York, 1917). Major Foster, *Banking* (New York, 1917). Alexander Wall, *The Banker's Credit Manual* (Indianapolis, 1919). Chester Phillips, *Bank Credit* (New York, 1920). Thomas Kavanaugh, *Bank Credit Methods and Practice* (New York, 1921). William Kniffin, *American Banking* (New York, 1921). Ray Westerfield, *Banking Principles and Practice* (New York, 1924).

[12] Glenn Munn, *Bank Credit Principles and Operating Procedure* (New York, 1925). Munn's text presents material developed and used in a business environment. The (Chicago) *University Journal of Business* in its book review section in January 1927 (p. 107) gave high praise to his book for its clarity, organization, and value to bankers. Glenn Munn also wrote the *Encyclopedia of Banking and Finance*, which went through seven editions.

quantifiable matters, the capacity of the borrower can be assessed based on data over a chosen period of years, of returns relative to gross sales, of uncollectible accounts relative to net sales, of profits relative to invested capital, and the range of fluctuations of gross profits.

Information on the third of the three Cs, "capital," also comes in quantitative form. This focuses on the financial resources of borrowers. Here, the main requirement for a credit-seeking business is that it is endowed with enough permanent capital to finance its fixed assets. This criterion addresses the requirement that commercial banking should not replace investment banking. Only where permanent capital is sufficient are the interests of the owners sufficiently oriented toward faithful and efficient management, and thus they may contain the danger of insolvency. The central information on "capacity" and "capital" came from the analysis of the credit statement of a credit customer. The credit statement consisted of the firm's balance sheet, that is, its assets and liabilities, and the firm's income sheet, which showed its revenues and expenses. It was understood that independent public accountants should have audited a well-prepared statement.[13]

The process of collecting information on the three Cs and the organizing of this information came to be centered in banks' so-called credit departments. The earliest such departments in banks were organized in the 1890s, and these units quickly grew in size and number. The rapid growth of the commercial paper market was an important impulse for the development of credit departments. In order to make money on the commercial paper market, banks needed to be able to make quick judgments of credit risk for an increasing number of debtors.[14] The first function of such a department consisted of the credit investigation. This process involved the systematical, multilayered checking of borrowers' records and the gathering of outside information to check the information offered by potential credit clients. Outside information sources were business clients, suppliers, mercantile and credit reporting agencies, other banks, or even investigators. Further functions of credit departments were the classifying, filing, and analysis of credit information. Credit analysis meant making the overall assessment of credit risk and giving recommendations for credit decisions. James Cannon, president of NACM and a leader in the introduction of credit departments, emphasized the credit department's role as a headquarters for credit analysis and as clearinghouse of credit information. Cannon stressed the need to staff a credit department with the bank's "most faithful, reliable,

[13] Davis Dewey and Martin Shugrue, *Banking and Credit: A Textbook for Colleges and Schools of Business Administration* (New York, 1922), 212.

[14] Freas Snyder, "The Development of the Credit Department of the Bank," *Bulletin, National Association of Credit Men* 19 (1917): 946–52.

intelligent, tactful men, who must be capable of infinite pains, of inexhaustible patience, and of absolute loyalty. Their eyes and ears must be open to every contingency that no sign may go unheeded."[15] An organization addressing the special needs of credit men working in banks formed in 1915 as the Robert Morris Club and later became the Robert Morris Associates.[16]

Credit Barometrics

The information gathered on the three Cs give a complex description of borrower quality. So, how did credit departments of the 1920s condense this information to form the basis of a credit judgment? The first point to note here is that the information regarding the three Cs may be divided into data from the financial statement and from other sources. Based on interviews with credit men, Alexander Wall estimated that between 40 and 60 percent of the credit decision was made based on data from the financial statement.[17] Hence, while general knowledge of the borrower and his business was still considered relevant, there was a growing tendency at the time toward an "algorithmic" or statistical assessment of credit risk.[18] There were two important players driving this development: one was an individual, Alexander Wall, and the other was a trade organization, the Robert Morris Associates, where Wall, one of the founders, was secretary and treasurer, a frequent contributing author, and, by 1923, editor of the organization's monthly bulletin. Wall offered scientific analysis of credit ratios, and the association of bank credit men institutionalized the dissemination of this approach.

Since the Federal Reserve in its early years had few research resources, Wall (then at the National Bank of Commerce in Michigan) was commissioned by the Federal Reserve Board to apply statistical methods to financial data from firms across the US economy to devise measures to assess credit risk. For a long time, banks had used heuristics like the so-called "two-for-one rule," which proposed that a good credit risk must show assets twice as large in dollar terms compared to current liabilities (the "current ratio"). Wall built his project on the growing persuasion that statistical analysis could provide the foundation for a more rational choice regarding appropriate values for important ratios derived from financial-statement data. With his 1919

[15] James Cannon, "Bank Credits," *Bankers' Magazine* 70, no. 5 (1905): 596–92.

[16] Freas Snyder, "Why the Robert Morris Associates?" *Robert Morris Associates Bulletin* 5, no. 1 (1921): 4–8.

[17] Wall, "Credit Barometrics," 230.

[18] The extensive discussion of case studies concerning the assessment of balance sheet information illustrates the relevance of "soft" information in Mahlon Miller, *Bank Loans on Statement and Character* (New York, 1927), 415–71.

study on credit barometrics, Alexander Wall laid such a foundation and opened the door to scientific credit analysis.[19] He described the ruling practice thus:

> These proportions have become accepted only by common practice, and there is a question as to whether the two-for-one or the 200 per cent ratio is right, too large, or too little. It provides a substantial margin, and has on that account become rather generally acknowledged as safe. The establishment of any such ratio is not a matter of theory, but has been a matter of experimentation.[20]

Wall went on to argue that while establishing the appropriate value of a ratio could not be a matter of pure mathematics, a study like his could apply a well-tried principle to find reliable standards. This principle was the law of averages used by insurance actuaries. Taking the average of, say, peoples' life spans or the frequency of fire had transformed the assessment of risk to an almost exact science. Accordingly, based on a large data set, Wall documented the average values (as well as the distributions) of important credit ratios. These average values of, among others, the current ratio of net worth to fixed assets, sales to receivables, sales to net worth, or total debt to net worth thus gained a normative status.[21] Wall's study on credit barometrics had two direct consequences. First, his work put credit ratios on a scientific basis using a broad database and statistical technique. This approach helped ratios lose their appeal of being simply rules of thumb. Second, documenting these averages of ratios over different industries offered a way for differentiated risk assessments. These two innovations went a long way to making credit analysis based on credit barometrics the state of the art in banks. Yet, there is a further important implication of this statistical work on credit ratios. Updating these ratios over time gave an assessment of the trend of credit risk in an industry or in the overall economy.

Because Wall's work became the base of scientific credit analysis practiced in the 1920s, it is important to analyze a key weakness in his approach. The law of averages taken from actuarial science was wrongly adapted by Wall to the credit-risk problem. His use of the logic of insurance mathematics was deficient. With the law of averages, or more

[19] This trend of collecting data and applying statistical methods fits into a broader development of the time toward scientific management. With respect to establishing departments for statistical analysis, railroad companies had led the way, as described by William Cunningham, "Scientific Management in the Operation of Railroads," *Quarterly Journal of Economics* 25, no. 3 (1911): 539–62. For a broader account, see Horace Drury, *Scientific Management: A History and Criticism* (New York, 1918).

[20] Wall, "Credit Barometrics," 230.

[21] A general treatment of financial ratios used in banking is provided by C. Hardy and S. Meech, "Analysis of Financial Statements," *University Journal of Business* 3, no. 4 (1925): 378–96.

correctly the law of large numbers, insurance mathematics counts on the insight offered by probability theory that, with a large number of similar (casualty) risks, the fraction of casualties in the total population becomes predictable (i.e., its variance decreases). In Wall's ratio analysis, however, there was no grouping of risk classes but only an intuitive (and unfounded) transfer of the method of averaging to financial ratios. This critical present-day assessment is in stark contrast to the popularity of this new instrument at the time. Banks received Wall's work enthusiastically and praised him for its broad and successful implementation.[22] It became the approach that banking scholars and banking professionals of the time saw as the prescription for a safe credit policy for banks, and they relied on this approach to prevent the excesses of recurrent credit cycles in the future. Banks judged their ability to navigate through economic tides and risks to be better controlled than ever. They believed that the measurement of business conditions and risks would reduce

> deviations from straight and prosperous progress, just as a great liner, equipped with powerful engines, its rudder steadied by mechanically true steering apparatus and navigated in full knowledge of ocean currents and impending weather, can make a truer course than the ancient sailing vessel subject to the uncertainties of unknown winds and tides and lacking strong driving powers of its own. I think our bankers and business men of to-day are inclined to avail themselves of the opportunity to pursue a wiser, steadier business course than ever before.[23]

Hence, banks and banking specialists showed great enthusiasm regarding the new methods and their promise of safe profits from bank lending.

How did the new concepts of credit barometrics permeate banks? The aforementioned Robert Morris Associates, the national association of bank credit men, put the new approach into large-scale practice. Robert Morris Associates used Wall's methodology to gather and analyze data and distributed their findings to all organized credit specialists in banks. The association published a monthly bulletin, held meetings, encouraged members to send in questions regarding methods, and collected data and case studies from individual members to share with other members. The bulletin offered lively exchanges on interpreting

[22] William Steiner, "Development of American Bank Credit Methods," *University Journal of Business* 1, no. 4 (1923): 441–50.

[23] Elmer Youngman, "The Banking and Financial Situation in the United States," *The Banker*, special section on Banking in America, no. 2 (1 Feb. 1926): 203. Similarly Mahlon Miller, in *Bank Loans on Statement and Character*, maintains that the new methods of scientific control made for more stability and safer credit.

individual ratios and on resolving situations where different ratios gave conflicting signals. However, for making general assessments, it became customary to solve this problem of multidimensionality of ratio information by summing weighted ratios. After years of experimenting with various weights, the Robert Morris Associates indicated as most common the weighting of seven key ratios as follows: Current ratio (25 percent), net worth to non-current assets (15 percent), worth to total debt (25 percent), sales to receivables (10 percent), sales to merchandise (10 percent), sales to fixed assets (10 percent), and sales to net worth (5 percent).[24] The association gathered data to calculate averages of these seven ratios by surveying a minimum of 1,687 (1924) and a maximum of 4,404 (1929) firms nationally. These derived average ratios were broadly used as guidelines to assess credit risk. Note that for the purpose of unambiguous interpretation of ratios and particularly for the computation of weighted measures, all ratios became defined alike: a higher value indicates a higher level of credit worthiness. So, when historically information regarding a borrower's obligations was often displayed as a ratio of debt to worth, this ratio was now inverted to make it the ratio of worth to debt.

As noted before, an additional important aspect of studying credit barometrics was the detection and interpretation of trends in the ratios. Two studies will serve as examples here.[25] The first is based on a nationwide survey of grocery wholesalers and analyzes seven credit ratios over three years from 1918 to 1920. Based on a positive time trend in almost all ratios, it was inferred that the business situation and the credit standing of this industry was improving. In an article on dry-goods wholesalers, Alexander Wall took the argument even further and calculated ratio values for seven years (1914 to 1920) and documented the trend by displaying the seven annual values for the index of weighted ratios. However, there were dangers that came with reading elevated credit barometrics as improved credit worthiness. These dangers, which were unseen at the time, become clearly visible when we look at the course of an encompassing credit barometric. In addition to industry ratios, the Robert Morris Associates also published credit ratios annually in tabulated form under the heading "Combined Industry Study." This information allowed an economy-wide assessment of creditworthiness based on a large sample of US manufacturers. In order to condense and display this information, the most commonly used weights of the

[24] *Robert Morris Associates Bulletin* 8, no. 3 (1925): 92–99.

[25] "The Wholesale Grocery Barometric for 1920," *Robert Morris Associates Bulletin* 4, no. 4 (1921): 101–3. "Dry Goods Study," *Robert Morris Associates Bulletin* 4, no. 8 (1922): 262–65.

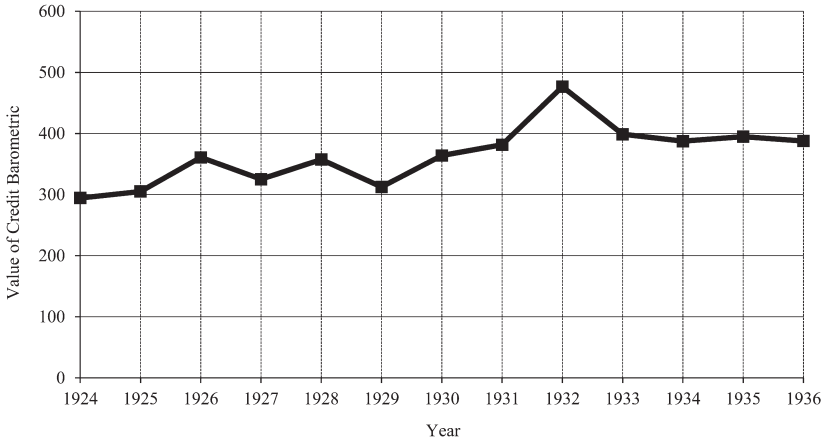

Figure 1. The Robert Morris aggregative credit barometric. (Computations are based on data from the Robert Morris Associates Bulletin, Aug. 1937, and the weighting scheme in the same Bulletin published in the August issue, 1925.)

ratios given above were applied to compute and report a national credit barometric.

Figure 1 shows the evolution of this key statistic that banks used to assess credit risks in the 1920s and 1930s.[26] These were the data available during the years of the credit boom in the late 1920s. The important conclusion to be taken from this series is that this aggregate credit barometric did little or nothing to warn banks of the rising credit risks during these years. Instead, this key credit statistic shows improvement in the credit outlook and merely a modest deterioration in 1929. This decline in 1929, however, was well within the range of fluctuations of previous years. As the economy went into depression, the statistic even suggested a continuing optimistic assessment regarding credit risk.[27] It has to be noted that the series displayed in Figure 1 has never before been published in the form presented here. Still, the computed ratios and the weighting scheme were common knowledge in banks and a key

[26] The data used here are from the August 1937 issue of the *Robert Morris Associates Bulletin*. It is worthwhile pointing out that over the years the *Bulletin* reported different numbers regarding the underlying ratios. Also, in several issues in the early 1930s the numbers were wrongly attributed to years. Moreover, there were revisions in numbers. As regards the numbers in Figure 1, all annual data up to 1929 were the numbers also published in earlier publications (e.g., issue 1930, p. 92).

[27] One possible reason for this course of the series may be gleaned from the number of firms surveyed. This number grew until 1929 to its maximum of 4,404 and shrank to 4,328 in 1931, 3,697 in 1932, and 3,315 in 1933. Hence, it is possible that a survival effect boosted the value of the credit ratios in the Depression years.

basis for lending decisions. Tracking the course of this aggregate credit barometric reveals its failure to assess credit risk properly; instead of warning banks, this key indicator signaled basically no change in credit riskiness as the credit boom rolled on.

The Increasing Role of Salesmanship

Bankers at the beginning of the twentieth century saw themselves as selecting among credit applicants and forging long-term relationships with borrowers. Looking back, bankers' attitude of that period was characterized as sitting behind their mahogany desks and waiting for business.[28] To most bankers before the 1920s, the notion of banks actively selling credit would have sounded strange. New ways of doing business arrived with the introduction of the instruments of marketing, notably with the study of customer psychology and the structuring of sales processes. These new instruments were innovated in the marketing of consumer goods.[29] With some delay these ideas became incorporated into banking practices. In a book on marketing for bankers George Knapp describes the temperament of the "Ideal Type" of a "New Business Manager" in banks.[30] This ideal sales-oriented banker should be: 1) inquiring, 2) decisive, 3) aggressive, 4) likable, 5) imaginative, 6) expressive, and 7) practical. His primary responsibility would be "improving the service and selling efforts of the bank until they are equal to, or better than, the service and selling efforts of its competitors. To do this he will have to make a close comparative survey of his bank and its customers from the inside, and of its prospects and competitors from the outside."[31]

A crucial development supporting this trend was the introduction of "business departments" in banks geared to coordinating all efforts to increase the customer base of the bank. The National City Bank and the Guaranty Trust Company of New York—two banks that will concern us later—were among the key innovators in this process introducing

[28] Theodore MacGregor, *The New Business Department: Its Organization and Operation in a Modern Bank* (New York, 1920), 15.

[29] Various analyses of selling processes and prescriptions are reported in Ralph Butler, Herbert Debower, and John Jones, *Marketing Methods and Salesmanship* (New York, 1916); John Stevenson, "Psychology in Salesmanship," *Annals of the American Academy of Political and Social Science* 110 (special issue on psychology in business) (1923): 144–55; and Ben Vardaman and Griffin Lovelace, *Salesmanship* (Scranton, 1926). Applications in actual sales organizations are documented for the Welch Grape Juice Company, *Sales Manual Westfield* (Buffalo, 1921), and Standard Varnish Works, *Quick Sales and Steady Profits* (New York, 1923).

[30] George Knapp, *How Banks Increase Their Business* (Chicago, 1926), 3–4.

[31] Ibid., 4.

business departments in 1917 and 1918, respectively.[32] As a result of these developments, competition among banks intensified. At a meeting of the American Institute of Banking, one banker stated: "Once the banks threw off their cloak of reserve and their 'you-come-to-us' attitude, they took a complete about-face and in some localities now have gone to the other extreme in their attitude toward new business and their method of getting it."[33]

Major Banks during the Credit Boom

Summing up, the banking situation in the mid-1920s can be described as follows. The development of scientific credit analysis promised safe profits from lending, and the new sales techniques gave banks additional tools for expanding the loan business more effectively. In this setting banks faced two strategic alternatives: A) The bank increased lending in order to be able to justify the costs of departments for credit analysis and marketing and thereby gained the opportunity to outgrow and take over competitors, or B) The bank curbed expansion in times of diminishing lending margins at the cost of shrinking in size relative to competitors. Believers in credit barometrics saw no dangers in accepting lower lending margins because they saw no need for substantial (or even rising) credit risk premiums. Hence, it is not surprising that the largest US banks of the time, all of them New York banks, opted for strategy A.[34]

The three banks discussed here were among the leaders in introducing and propagating new methods of credit analysis and salesmanship. These banks, in the order of their size in 1926, were the First National City Bank of New York (1.4 billion in assets), the Chase National Bank of New York (968 million dollars), and the Guaranty Trust Company of New York (739 million dollars).[35] Relative to the aggregate

[32] Theodore MacGregor, *The New Business Department* (New York, 1920). Richard Germain, *Dollars Through the Doors: A Pre-1930 History of Bank Marketing in America* (Westport, Conn., 1996).

[33] Quoted in the *New York Times*, 15 July 1927, 28.

[34] That strategy B was not just a theoretical possibility is documented by the course of the Bank of New York and Trust Company. Allan Nevins in his *History of the Bank of New York and Trust Company: 1784 to 1934* (New York, 1934), 145, describes how this oldest of New York banks lived through the boom period: "An extravagant and often reckless expansion of banking set in during the post-war period and was continued until the latter half of 1929." And further down (same page): "The Bank of New York and Trust Company, whose officers regarded these tendencies with distrust, meanwhile followed the old and conservative paths in which it had always trod. Yet its growth continued steady."

[35] For a ranking of large US banks see *American Banker*, 13 Jan. 1928, 7. A ranking of New York banks is possible based on banks' aggregate-deposits data in Noble & Corwin, *26 Year Record of New York Banks* (New York, 1928). The numbers in the figures that follow are from *Moody's Manual of Investments*, 1928–1937.

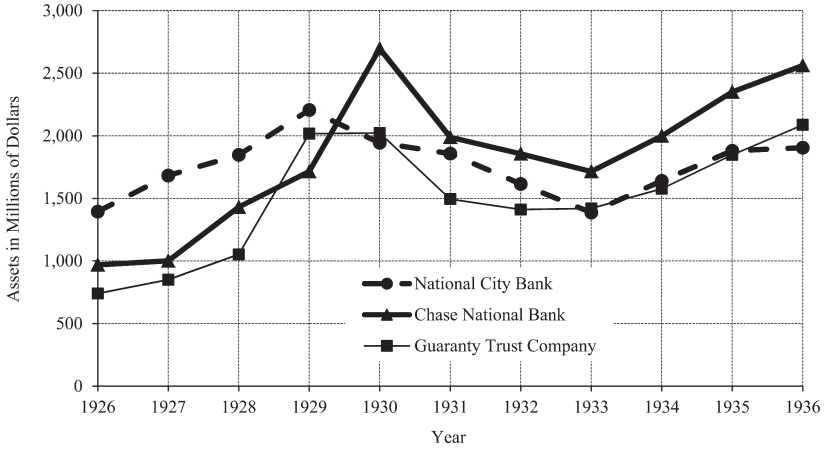

Figure 2. Total assets of the three largest New York banks (in millions of dollars). (Source: Moody's Manual of Investments, 1928–1937.)

supply of loans in the US, the lending of these three banks made up 3.8 percent, 2.6 percent, and 2.0 percent, respectively. Figure 2 shows the course of total assets for each of these three banks from 1926 through 1936. All of the three banks grew strongly up to 1929, and all of the three shrank as the American economy went more deeply into the Depression from 1931 till 1933. In the recovery Chase emerged as the largest institution, whereas National City Bank had lost ground.

The development of these three banks may be attributed to their expansionary acquisitions and to their lending policies. Table 1 shows which other banks the three largest New York banks acquired between 1926 and 1936.[36] The acquisitions of National City Bank were moderate in dollar terms compared to the acquisitions of its competitors. In 1929 Guaranty Trust Company took over the Bank of Commerce in New York, which had assets totaling 791 million dollars (at the end of 1928) and loans and discounts of 467 million dollars. Chase increased its size markedly in 1929 by acquiring the National Park Bank of New York, which held assets of 312 million dollars (loans and discounts of 191 million dollars), and increased further in 1930 buying Equitable Trust Company of New York with a total of assets of over 1 billion dollars (loans and discounts of 553 million dollars).

[36] Merger activity declined during the Depression. One of the few examples among the New York City banks is the merger of the Chatham and Phenix National Bank to the State Manufacturers Trust Company in 1932. For data and explanations, see Eugene White, "The Merger Movement in Banking, 1919–1933," *Journal of Economic History* 45, no. 2 (1985): 285–91; and Mark Carlson, "Alternatives for Distressed Banks during the Great Depression," *Journal of Money, Credit and Banking* 42, no. 2/3 (2010): 421–41.

Table 1
Acquisition of the Three Largest New York Banks, 1926–1936

National City Bank of New York	
	1926 Acquires by merger Peoples Trust Company of Brooklyn N.A. of New York
	1929 Acquires by merger Farmers' Loan State Bank
	1931 Acquires by merger Long Island National Bank of New York
	1931 Acquires by merger Bank of America National Association
Chase National Bank of the City of New York	
	1926 Acquires by merger Mechanics & Metals National Bank of the City of New York
	1927 Acquires by merger Mutual National Bank of the City of New York
	1929 Acquires by merger Garfield National Bank of the City of New York
	1929 Acquires by merger National Park Bank of New York
	1930 Acquires by merger Equitable Trust Company of New York
	1930 Acquires by merger Interstate Trust Company
	1931 Purchases Banking American Express Bank and Trust Company
Guaranty Trust Company of New York	
	1929 Acquires by merger Bank of Commerce in New York

Source: New York State Banking Department, *The History of Banking in New York State* (http://www.dfs.ny.gov/about/auhistory.htm).

Although relatively guarded with respect to acquisitions, City Bank opted for an aggressive lending policy. Measured by the loan ratio (the ratio of the balance sheet entry "loans, discounts and acceptances" relative to "total liabilities"), City Bank led the group during the three years leading up to the crash. Figure 3 indicates that Chase opted for a more cautious lending policy. In particular, in 1928, the year before the crash, Chase National Bank held only about 40 percent of its assets in loans, whereas City Bank had 55 percent and Guaranty Trust Company around 50 percent. Just before the peak of the boom statements by the respective leaders reflected this difference between Chase and City Bank. In January 1928, Albert H. Wiggin, the chairman of Chase National Bank, voiced concerns about the expansion of credit relative to business volume.[37] By contrast, even ten months later, Charles E. Mitchell, the president of the National City Bank, saw no signs of "credit inflation."[38] After the boom had crashed, even Mitchell acknowledged excesses on the part of banks. In testimony to the Senate Committee on Manufacturers in December 1931, he commented on banks' policies in the late 1920s: "[L]ooking backward, their policy was undoubtedly too liberal. They were too ready to loan, too ready to meet the competition of neighbors too willing to cut down their margins to a point of encouraging

[37] "A. H. Wiggin Warns on Loan Expansion," *Wall Street Journal*, 9 Jan. 1928.
[38] "No Credit Inflation at the Present Time," *American Banker*, 27 Oct. 1928.

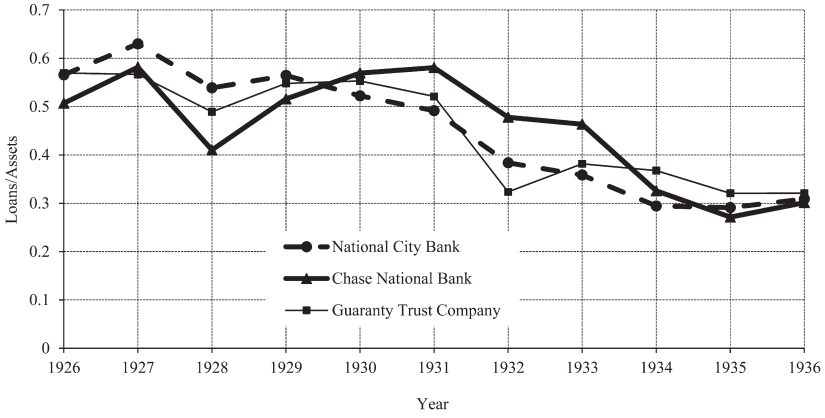

Figure 3. Ratio of loans to assets. (Source: Moody's Manual of Investments, 1928–1937.)

excessive borrowing."[39] In 1933, Mitchell was forced to resign and saw himself, perhaps justifiably, as a scapegoat for the excesses of an entire industry. The picture that thus emerges is that all market leaders opted for a strong expansionary course, and Chase outsmarted the others by lending somewhat more conservatively before the peak. This bank's caution paid off. Chase had to reduce lending to a lesser extent after the crash, and this course contributed to its subsequent success.

The Aggregate Perspective of the 1920s Credit Boom

This section gives a macro perspective of the credit boom of the 1920s and thereby makes the connection between the behavior of banks and economy-wide developments. The starting point here is an account of early analyses of credit growth during the relevant period. Analyses of aggregate data dating from 1930 provided statistical evidence of a marked upward deviation of bank credit from its long-run trend and a wave of credit expansion over the previous years.[40] Besides bank credit —notably urban real estate mortgages and commercial loans—consumer credit, which was only partially financed directly by banks, expanded strongly over the 1920s.[41] Work at the National Bureau of Economic

[39] Harold van Cleveland and Thomas Huertas, *Citibank, 1812–1970* (Cambridge, Mass., 1985), 174.

[40] Carl Snyder, "New Measures of the Relations of Credit and Trade," *Proceedings of the Academy of Political Science* 13, no. 4 (1930): 16–34. Charles Persons, "Credit Expansion, 1920 to 1929, and Its Lessons," *Quarterly Journal of Economics* 45, no. 1 (1930): 94–130.

[41] Philip Klein, *The Cyclical Timing of Consumer Credit, 1920–67* (New York, 1971).

Research indicated that the course of credit expansion and the accompanying deterioration of credit quality and risk margins in the 1920s showed a general pattern. The reported statistical evidence indicated a cumulative deterioration in credit quality during times of prosperity leading to or at least deepening the ensuing recession. This development could be documented by declining loan-loss reserves and deteriorating examiners' appraisals in the upswing, and it was accounted for by the rapid speculative increases in asset prices and strenuous competition among lenders for new business. This analysis also uncovered a relaxation of credit standards and reductions in the risk premium obtained by lenders.[42] With respect to specific types of loans it was shown that both urban mortgage loans to homeowners and to businesses roughly doubled between the periods 1920–1924 and 1925–1929. Comparing the average percentage default rate on the two types of mortgages over the same two periods shows a factor of increase of 2.6. While these losses were realized ex post facto, that is, years after the respective loans had been granted, the magnitude of loan losses evidently had not been correctly anticipated.

Next, I compare economy-wide credit growth and regional New York credit growth. The data for New York covers banks from the State of New York and not just New York City banks. However, the development by the latter group tends to dominate given that the three largest banks alone made up 18 percent of lending, and credit supply by these banks roughly doubled over the four years leading up to the Crash. Over the four-year period of 1925–29, bank credit expanded nationwide with an annual average of 5 percent growth. Banks in the State of New York increased lending by an average 9.4 percent annually over that period.[43] For the rest of the nation this rate was a mere 2.5 percent. These numbers document that New York was indeed a center of the credit boom of the 1920s. With the crash on Wall Street the boom came to an end. Against all the forecasts of the time the downturn was not short-lived but led to a major depression. Between 1929 and 1936, aggregate bank lending dropped by 10.1 percent annually. Credit in the continental United States except the State of New York dropped by an annual average of over 11.1 percent, while lending by banks from the State of New York shrank by only 8.1 percent annually. This rate indicates that New York banks were driving the boom and that these banks emerged with a larger share of the national credit market toward the end of the Depression. Finally, I point to recent analyses that empirically substantiate the

[42] Geoffrey Moore, "The Quality of Credit in Booms and Depressions," *Journal of Finance* 11, no. 2 (1956): 288–300.

[43] Board of Governors of the Federal Reserve System, *All-Bank Statistics United States, 1896–1955* (Washington, D.C., 1959).

notion that the second half of the 1920s saw a credit boom in the US that contributed to the subsequent Great Depression.[44]

Conclusions

Looking at the banks' role driving the credit boom of the 1920s, I have identified the following factors:

1. Scientific credit analysis with increasing reliance on borrowers' financial data made large-scale credit assessments possible.
2. Credit barometrics hailed as the backbone of scientific credit management failed to signal increasing credit risks.
3. Credit analysis and credit departments offered scale effects. These innovations allowed for processing more credit applications, but they also induced a competitive pressure for banks to grow larger.
4. New marketing methods allowed for growth and further exacerbated the competition for size.

As well, the tendency to base credit judgments on data and formulas very likely induced an illusion of control.[45] This bias in judgment magnified the prevailing tendency to underestimate credit risks.

Did the Crash and the Depression lead the financial sector to question banking practices, in particular, to rethink scientific credit analysis? The answer has to be no. Nowhere in the banking literature do we find a critical discussion of the role of credit barometrics in the boom of the 1920s. Likewise, there is no acknowledgement that the arrival of new methods, data, and techniques in banking contributed to competitive pressures in the banking industry. But, in fact, this is an important lesson of the 1920s: Innovations in credit analysis and sales methods led to overconfidence in banks and an excessive growth orientation. These forces contributed to a credit boom that ended in collapse. Looking at the years that have passed, it appears that this historical account identifies elements relevant to a more general understanding of credit cycles.

[44] Barry Eichengreen and Kris Mitchener, "The Great Depression as a Credit Boom Gone Wrong," *Research in Economic History* 22 (2004): 183–237. Moritz Schularick and Alan Taylor, "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870–2008," *American Economic Review* 102, no. 2 (2012): 1029–61.

[45] Ellen Langer first experimentally studied the so-called illusion of control as a psychological tendency in "The Illusion of Control," *Journal of Personality and Social Psychology* 32, no. 2 (1975): 311–28. Langer's experiments showed that among other factors, the introduction of competition and involvement (in the form of time spent with available but irrelevant data) tends to generate an upward bias in confidence even when outcomes of decisions are completely random.

Authors like Charles Kindleberger have pointed to what today would be called "technology-shocks" that ignite credit booms. For the 1920s, the relevant developments were the rapid expansion of automobile production, the development of highways, the electrification of the country, and the spread of telephones. Technological advances leading to higher expected profits in a significant portion of the economy induce businesses to increase their borrowing and investment, which, in turn, feed a growing and spreading optimism. Milton Friedman and Anna Jacobson Schwartz add an expansionary stance of monetary policy to the list of drivers of a boom.[46] The present study points to yet another dimension: Innovations within the financial system contribute to the expansion of credit. The competitive dynamics unleashed by innovations in banking practices, their potential for misjudgments of risk, and a spreading illusion of control are the ingredients that lead to both an underpricing of credit risk and to excessive lending. These tendencies recur in history. In the most recent episode, the securitization of credit, the false promise of risk control by rating agencies and by credit insurance were among the developments emanating from the financial system that drove the credit boom ending in the crisis of 2007–2008.

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[46] Kindleberger, *Manias, Panics, and Crashes*, 25–26. Milton Friedman and Anna Jacobson Schwartz, *A Monetary History of the United States, 1867–1960* (Princeton, 1963), ch. 6.