A Historical Primer on the Business of Credit Ratings

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When the business of bond credit ratings by independent rating agencies began in the United States early in the twentieth century, bond markets—and capital markets generally—had already existed for at least three centuries. Moreover, for at least two centuries, these old capital markets were to an extent even 'global.' That in itself indicates that agency credit ratings are hardly an integral part of capital market history. It also raises several questions. Why did credit rating agencies first appear when (1909) and where (the United States) they did in history? What has been the experience of capital market participants with agency credit ratings since they did appear? And what roles do agency ratings now play in those markets, which in recent decades have again become global, to an even greater extent than previously in history.

This essay explores the historical origins of agency bond ratings and the experience the capital markets have had with them in the twentieth century. The latter is pretty much a U.S. story until the 1970s, when the modern globalization of capital markets initiated a rerun of the U.S. story on a worldwide scale. Issues to be addressed include, in part 1, how and why the capital markets were able to function without agency bond ratings for so much their history, and why the agency rating business arose when it did. Part 2 examines the U.S. experience with agency ratings from their inception early in the century to the 1970s, with reference to the markets for both corporate and state and local governmental debt. Part 3 discusses the globalization of the agency bond rating business that has accompanied the globalization of capital markets since the 1970s, with some discussion of various rationales or explanations of continuing importance of agency ratings in U.S. and global capital markets.

1.Origins

John Moody is credited with initiating agency bond ratings, in the United States in 1909. Exactly three centuries earlier, in 1609, the Dutch revolutionized domestic and

international finance by inventing the common stock—that of the Dutch East India Company--and founding a proto-central bank, the Wisselbank or Bank of Amsterdam. In 1609, the Dutch had already had a government bond market for some decades.[1] Shortly thereafter, the Dutch Republic had in place, in one form or another, all of the key components of a modern financial system: a strong public credit, a stable money, elements of a banking system, a central bank of sorts, and securities markets. The Dutch Republic went on to become the leading economy of the seventeenth century.

In 1688, the English emulated the Dutch in the most flattering of ways, by inviting the Dutch leader, William of Orange, to be their king. William brought experienced Dutch financiers with him to England, and in short order England, too, had all the key components of a modern financial system—the Bank of England, for example, was founded in 1694. England, of course, went on to have the first industrial revolution and to become the leading economy of the world in the eighteenth and nineteenth centuries.[2]

A century later in the newly independent United States, Alexander Hamilton, the Founding Father most aware of the Dutch, English (and also French) financial precedents, worked to put in place, in even shorter order, a similarly modern financial system during his term as the first Secretary of the Treasury, 1789-1795. By 1795, the United States, essentially a bankrupt country before 1789, has strong public finances, a stable dollar based on specie, a banking system, a central bank, and bond and stock markets in several cities. And just as the English had succeeded the Dutch in economic and financial leadership, the Americans went on within a century to succeed the English as the world's pre-eminent national economy.[3]

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[1] Larry Neal, *The Rise of Financial Capitalism: International Capital Markets in the Age of Reason* (Cambridge: Cambridge University Press, 1990).
[2] Ibid, and P.G.M. Dickson, *The Financial Revolution in England: A Study in the Development of Public Credit, 1688-1756* (London: Macmillan, 1967).
[3] Richard Sylla, "U.S. Securities Markets and the Banking System, 1790-1840," *Federal Reserve Bank of St. Louis Review* 80 (May/June 1998), 83-98; and "Emerging Markets in History: The United States, Japan, and Argentina," in R. Sato, et al., eds., *Global Competition and Integration* (Boston: Kluwer Academic Publishers, 1999), 427-46.

This thumbnail sketch of the history of leading financial systems and capital markets indicates that bond ratings by independent agencies, an innovation of the twentieth century, came along rather late in that history. By the time of John Moody's bond rating innovation in 1909, Dutch investors had been buying bonds for three centuries, English investors for two, and American investors for one century, all the time without the benefit of agency ratings. Why?

To answer that question, we need to ask what the investors expected when they bought bonds. A bond is a contract. I, the bond investor, part with my money now. You, the borrower, pledge that in return for receiving my funds now, you will make specified, scheduled payments to me in the future. Bond rating agencies claim that their ratings provide me with an indication of your ability (and willingness) to live up to the terms of the contract. That might include a notion of the probability that the funds will be returned with interest according to the schedule, and also an indication, should the contract go into default, of how much of the funds lent will be returned, and when.

For much of the four-century history of modern capital markets, at least in the Dutch, English, and American cases, the question of a rating was likely moot. Most bond investing was in the public, or sovereign, debts of nations and governments that investors trusted as being willing and able to honor their commitments. In the eighteenth century, only a few countries with representative governments, notably the Dutch, the English, and the Americans, fell into that category. More joined that initial group over the course of the nineteenth century.

Historian Niall Ferguson tells an interesting story of how the bond market nearly two centuries ago encouraged governments to become responsible and representative. In the aftermath of the Napoleonic Wars, the Prussian government desired to float a loan in London in order to avoid the political problems that would come if it attempted to do so at home. The Prussians in 1817 approached Nathan M. Rothschild, head of the London branch of the famous European banking house. Nathan Rothschild laid down the law to

the Prussians, saying that because of their absolutist form of government, it would be necessary to provide lands as security for any loan:

> [T]o induce British Capitalists to invest their money in a loan to a foreign government upon reasonable terms, it will be of the first importance that the plan of such a loan should as much as possible be assimilated to the established system of borrowing for the public service in England, and above all things that some security, beyond the mere good faith of the government . . . should be held out to the lenders . . . . Without some security of this description any attempt to raise a considerable sum in England for a foreign Power would be hopeless[;] the late investments of British subjects in the French funds have proceeded upon the general belief that in consequence of the representative system now established in that Country, the sanction of the Chamber to the national debt incurred by the Government affords a guarantee to the Public Creditor which could not be found in a Contract with any Sovereign uncontrolled in the exercise of the executive powers.

Ferguson summarizes this by saying, "In other words, a constitutional monarchy was seen in London as a better credit-risk than a neo-absolutist regime."[4] As more countries, in Europe and around the world, adopted constitutions and representative forms of government during the nineteenth century, the international bond market grew in scale and scope. But it was for the most part a market in sovereign debts. Businesses in Europe met most of their external capital needs by means of bank loans and stock issues.

The United States was in a different position. Its economy was of continental proportions, its development projects grand in scale, and its individual enterprises larger than elsewhere. The U.S. banking system, while knit together by correspondent relationships, nonetheless remained fragmented along state lines, with almost all banks chartered and regulated until 1863 by individual states. Compared to European states, where war was the progenitor of national debts, in the United States sovereign debts, federal and state, were relatively minor. The U.S. government in fact entirely paid off its national debt in 1836 (and at the start of the twenty-first century is at least contemplating doing that again). From 1817 to the 1840s, a good number of U.S. states issued sovereign bonded debts in domestic and international markets to build canals and finance other infrastructure projects, but they largely withdrew from doing so after nine states

defaulted on these debts in the early 1840s. As the country urbanized, local governments increasingly replaced states as public bond issuers, but state and local bond markets were dwarfed by the private sector, corporate bond market.

The crying capital need of the United States during much of the nineteenth century was for funds to build railroads, to open up and knit together an economy of continental proportions. Before the advent of railroads in the late 1820s, the United States had already developed the corporate form of competitive enterprise to a greater extent than any other country. The corporation from the 1790s forward was the typical form of banking and insurance enterprises, as well as of some transportation and manufacturing enterprises. Most U.S. railroads, despite some governmental assistance, were also organized and raised capital as private corporations. Prior to the middle of the century, railroad corporations were relatively small (compared to their later scale), were located in settled parts of the country, and were able to finance construction and operations with bank credit and stock issues. After 1850, however, railroad corporations grew larger, with enlarged capital needs, and they expanded into unsettled and undeveloped territories where there were few local banks and investors willing to finance them. The solution to the problem of financing U.S. railroads was the development of a huge market, both domestic and international, in the bonded debt of U.S. railroad corporations. The corporate bond market, essentially a railroad bond market in its early decades, can properly be viewed as an American financial innovation that later spread to the rest of the world. By the time John Moody began to rate bonds, the U.S. corporate bond market was several magnitudes larger than that of any other country.[5]

It was no accident of history, then, that Moody, the originator of the bond-rating agency, was an American, or that his original ratings were entirely for the bonded debts

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[4] Niall Ferguson, *The House of Rothschild: Money's Prophets, 1798-1848* (New York: Viking, 1998), 123.

[5] Raymond W. Goldsmith, *Comparative National Balance Sheets: A Study of Twenty Countries, 1688-1978* (Chicago: University of Chicago Press, 1985) is the only source I am aware of that offers a tolerably consistent set of data allowing one to compare historical bond market developments across countries. His data appear to indicate that as early as 1850 the U.S. corporate bond market was as large or larger than that of countries such as Great Britain and France, and that by the eve of World War I, it was on the order of three times larger than those of the other two countries. The data, however, are 'rough,' and such comparisons remain charged with ambiguities.

of U.S. railroads. The year was 1909, relatively late in the game given that the railroad bond market dated back to the 1850s, if not even earlier. It is evident that the corporate bond market, like the sovereign, bond market, could develop for a good long time without the benefit of independent agency ratings. How was that possible? And what led to the innovation of agency ratings?

To answer those questions, we need to examine three historical developments, again largely American, that have to do with the ways in which lenders, creditors, and equity investors get information about borrowers, debtors, and equity shares that corporations issue. One is the credit-reporting (not rating) agency. Another is the specialized financial press. A third is the investment banker. In a sense, the bond-rating agency innovated by Moody in 1909 represents a fusion of functions performed by these three institutions that preceded it.

Credit-Reporting Agencies. When most business was local, as it pretty much was in the early decades of U.S. history, transactions were between people who knew each other. As the scale and geographical scope of transactions expanded in a large economy in which resources, human and other, were mobile, the need for information on suppliers and customers of whom a businessperson had no personal knowledge increased. At first, letters of recommendation from someone known sufficed; the recommender might be one with whom the businessperson had already done business, or a respected member of the prospective new supplier's or customer's community, perhaps a banker or a lawyer.

Such informal channels sufficed for a time, but by the 1830s the expanding scale and scope of American business gave rise to a new institution, the specialized credit-reporting agency. The history of one of these agencies is well documented, and it ties in directly with the related business of credit ratings. In 1841, Lewis Tappan, a New York dry goods and silk merchant who in the course of his business had compiled extensive records on the creditworthiness of his customers, decided to specialize on the provision of commercial information. Tappan founded the Mercantile Agency, which gathered through a network of agents and sold to subscribers information on the business standing

and creditworthiness of businesses all over the United States. The Mercantile Agency became R.G. Dun and Company in 1859. The company's subscribers, which included wholesalers, importers, manufacturers, banks, and insurance companies, grew from 7,000 in the 1870s to 40,000 in the 1880s, and by 1900 its reports covered more than a million businesses.[6]

John Bradstreet of Cincinnati founded a similar firm in 1849, and by 1857 was publishing what apparently was the world's first commercial rating book. The Dun and the Bradstreet companies merged in 1933 to form Dun & Bradstreet. In 1962, Dun & Bradstreet acquired Moody's Investors Service, the bond rating agency that John Moody had begun in 1909.[7] Thus the closely related businesses of credit reporting and bond rating came together under one corporate roof, although they apparently still operate as independent organizations.[8]

The Specialized Business/Financial Press. Railroad corporations were America's and perhaps the world's first big businesses, in the sense of multi-divisional enterprises operating over large geographical expanses and employing cadres of professional managers. The first was the Baltimore and Ohio, which began in 1828. By 1832, the industry was reported on by a specialized publication, *The American Railroad Journal.* The journal came into its own as a publication for investors when Henry Varnum Poor (1812-1905) became its editor in 1849. Poor gathered and published systematic information on the property of railroads, their assets, liabilities and earnings during his editorship of the journal, 1849-1862. After the American Civil War, Poor and his son started a firm to publish Poor's *Manual of the Railroads of the United States*, an annual

6 James D. Norris, *R.G. Dun & Co., 1841-1900: The Development of Credit Reporting in the Nineteenth Century* (Westport, CT: Greenwood Press, 1978); Rowena Olegario, "Credit Reporting Agencies: What Can Developing Countries Learn from the U.S. Experience," paper presented at the World Bank Summer Research Workshop on Market Institutions, July 17-19, 2000.

[7] James H. Madison, "The Evolution of Commercial Credit Reporting Agencies in Nineteenth-Century America," *Business History Review* 48 (Summer 1974), 164-86; Richard Cantor and Frank Packer, "The Credit Rating Industry," *Federal Reserve Bank of New York Quarterly Review* (Summer/Fall 1994), with a paper of the same authors and title in *The Journal of Fixed Income* (December 1995), 10-34.

[8] "…Moody's officials say D&B and Moody's do not exchange data or methodological advices." Bank for International Settlements, Basel Committee on Banking Supervision Working Papers (No. 3, August 2000), *Credit Ratings and Complementary Sources of Credit Quality Information*, p. 73.

volume that first appeared in 1868. The manual reported financial and operating statistics covering several years for most of the major American railroads. It was widely recognized as the authoritative source of such information for several decades.

After Henry Poor's death in 1905, and after John Moody began his ratings of railroad bonds in 1909, the Poor company itself in 1916 entered the bond rating business, a natural outgrowth of the financial and operating information it compiled and sold. The company merged with Standard Statistics, another information and ratings company, in 1941, to form Standard & Poor's (S&P). S&P in the 1960s was taken over by McGraw Hill, the publishing giant.[9] Nearly a century later, Moody's and S&P, the original ratings agencies, remain by far the world's largest such firms.

Investment Bankers. Before the first summary ratings of railroad bonds appeared in 1909, why were investors willing to purchase such securities? One reason is that innovative journalists such as Henry Varnum Poor got into the business of supplying comparative information on the assets and earning power of the companies. Possibly a more important reason is that investment bankers, the financial intermediaries who underwrote, purchased, and distributed the securities from railroad corporations, put their reputations (reputational capital, in the modern jargon) on the line in every such deal. The investment banker was the consummate insider. The banker insisted that securities issuers provide all relevant information related to company operations on an ongoing basis to him, sometimes by insisting that he or his banking associates be given seats on the board of directors of corporations. In this way the banker could size up the character of company entrepreneurs and managers, and continue to monitor company affairs.

As an intermediary, the investment banker, besides being the person to whom an enterprise needing large sums of capital increasingly turned, also had access to the suppliers of capital through a vast network, often international, in which the banker's reputation counted for a lot. Yankee houses such as J.P. Morgan & Company and its predecessor firms had affiliated houses in London and Paris, where European investors

[9] Alfred D. Chandler, *Henry Varnum Poor: Business Editor, Analyst and Reformer* (Cambridge: Harvard University Press, 1956 (Chandler, the noted business historian, is Poor's great-grandson); Cantor and Packer, loc. cit.

were cultivated and served up American securities. The U.S. banking houses of German-Jewish immigrants such as Kuhn Loeb & Co., Seligman Brothers, and Goldman Sachs were similarly tied in to pools of European investment capital, often through family and other personal connections in the old world.

Old-time investment bankers had a difficult time understanding why—in the United States--taking an active monitoring role in corporate affairs would raise suspicions of banker dominance, a money trust, financial capitalism, and so on. Since they had sold securities of the corporations to their investing clients, it seemed natural, even a reputation-protecting duty, to take such an interest. What they failed to realize, perhaps, is that as the size of the U.S. investing class expanded, the resentment was more over the bankers' access to inside or privileged information, not over supposed banker dominance of corporations. Why should not all potential investors have access to the same information as the bankers? It was a powerful argument, one that in the 1930s would lead to mandatory disclosure laws for issuers of securities, and to the Securities and Exchange Commission.

Even at the turn of the twentieth century, however, there were increasing demands from investors and financial regulators for wider disclosure of corporate operational and financial information. Such information availability, of course, might weaken the role of investment bankers as certifiers of the quality of securities, and also undermine their profits. J.P. Morgan himself, shortly before he died in 1913, is said to have complained that all business soon would have to be done with glass pockets.

By that time, John Moody had already responded to the public's request for more, and more convenient, publicly available information on the quality of investments with his railroad bond ratings. Other firms were also about to enter the ratings business. These developments represented a transfer of some of the investment banker's reputational capital as a certifier of the quality of bonds and other securities to the ratings agency. The next section examines how well the agencies performed in their innovative reputational role.

2. Ratings Agency Performance, 1909-1960s

The U.S. Corporate Bond Market. We are fortunate that research projects of the National Bureau of Economic Research studied U.S. corporate bond quality, including the performance of bond rating agencies, during a long period of six decades when corporate bond markets and the business of ratings agencies were for the most part confined to the United States.[10]

The key results of the major NBER study are contained in W. Braddock Hickman's *Corporate Bond Quality and Investor Experience* (1958). Hickman's data included all large (defined as $5 million or more) "straight" corporate bond issues (defined as fixed-income, single-maturity bonds offered by railroad, public utility, and industrial corporations and held by the investing public) made in the United States from 1900 to 1943, and a representative 10 percent sample of smaller straight issues of less than $5 million. Excluded were real estate mortgage bonds and the bonds of financial corporations. The total par value of the straight corporate bonds issued during the 44 years of the study came to $71.5 billion; of that amount, 93 percent was in the form of regular offerings, and 7 percent resulted from contract modifications and exchanges growing out of corporate reorganizations.

Hickman described the aggregate experience of most of the corporate bonds over the entire 44-year period as follows:

> The 93 percent of regular offerings breaks down into 12 percent paid in full at maturity, 37 percent called, 18 percent defaulted, and 26 percent outstanding on January 1, 1944 with a perfect contractual record through that date. The[re was a] zero loss rate on the issues paid in full at maturity . . . (realized yield equaled promised yield). On the defaulted issues the average life-span loss was 3.7

[10] The major NBER study was conducted in the 1940s and 1950s under the leadership of W. Braddock Hickman, with the comprehensive results contained in three volumes by him: *The Volume of Corporate Bond Financing since 1900* (1953), *Corporate Bond Quality and Investor Experience* (1958), and *Statistical Measures of Corporate Bond Financing since 1900* (1960). All three volumes were published by Princeton University Press for NBER. The smaller study, a follow-up to the Hickman study, is that of Thomas R. Atkinson, *Trends in Corporate Bond Quality* (New York: NBER, 1967, distributed by Columbia University Press). It extend the Hickman study, which analyzed the period 1900-1944, to the mid 1960s.

> percent. But the remarkable fact is that capital losses on defaulted issues were just offset by capital gains on irregular offerings and on regular offerings called or selling in 1944 above amortized book value. The weighted average of promised and realized yields on total offerings both worked out at 5.6 percent, so that for the universe of corporate bonds the net loss rate was zero. This finding is a tribute to the ability of domestic business corporations to service their long-term obligations in a turbulent period of forty-four years during which there was a great war, a great depression, and the start of a second great war.[11]

Although the "remarkable fact" of a zero net loss rate held for the whole period, it was not true of particular subperiods. For bonds issued and extinguished during 1900-1931, the default rate was 17 percent, and the promised-at-offering and realized yields were 6.2 and 6.4 percent. For bonds issued and extinguished in the period 1932-1943, only 4 percent defaulted, and the promised and realized yields were 4.9 and 6 percent. But for bonds issued before 1932 and extinguished after that date, 23 percent defaulted, and the promised yield (5.4 percent) was greater than the realized yield (4.6 percent).

The zero net loss rate for the whole period might be an artifact of interest-rate history. U.S. interest rates were low in 1900, but even lower—close to all time lows—near the end of World War II, the end of Hickman's period.[12] So a declining interest rate trend may account for a good part of the capital gains on bonds that offset losses from defaults.

Hickman's summary of default rates, yields and loss rates is presented in Table 1, reproduced from his 1958 book. A most useful aspect of his work for our purposes is the analysis of bond market experience in terms of three different forms of ratings as prospective quality measures that might be of use to investors. These are, first, the independent agency ratings, a composite average of the ratings of Moody's., Standard & Poors (or its two predecessor organizations, Standard Statistics and Poor's), and Fitch; second, the ratings implied by legal investment lists for savings banks adopted by regulatory authorities in the states of Maine, Massachusetts, and New York; and third, a

[11] Hickman, *Corporate Bond Quality and Investor Experience*, 7-8.
[12] Sidney Homer and Richard Sylla, *A History of Interest Rates*, 3rd ed. Rev. (New Brunswick, NJ: Rutgers University Press, 1996), Chaps. 17-18.

market rating given by the yield spread of a particular bond issue over the "basic" or lowest yield of a corporate bond of the same maturity.

All three of the prospective quality measures performed quite well over the period, in the sense of predicting both lesser or greater default rates, and the risk-return trade-off (the greater the risk of default, the greater the return earned). Composite agency ratings I through IV, corresponding to the top four ratings—the "investment grade" issues—of the ratings agencies show lower default rates (and default rates that rise as one moves from higher to lower rated issues) than the lower, non-investment-grade issues lumped together in composite rating categories V-IX. Promised and realized yields also line up pretty much as one would expect if the ratings agencies were indeed effective at predicting bond quality, as do loss rates.

Hickman attributed the similarities of results achieved by the ratings of the agencies, the legal lists, and the market to their using essentially the same information to arrive at their ratings:

> The results thus provide confirmation of the reasonableness of the quality measures generally used by investors in selecting corporate bond investments. The similarity of the patterns of default experience when classified by the major quality measures arises from the fact that the same basic information is utilized under each of the ratings systems. That is to say, the investment agencies, the legal lists, and the market typically assigned high rankings to the large issues of large obligors on which the fixed charges were earned a large number of times at the offering.[13]

A less encouraging similarity of the three ratings systems is shown in Table 1 by the industry group breakdowns. The default rate was greater for railroads than for public utilities and industrials. Yet when the bonds were offered, "the investment agencies, legal lists, and market all favored rails. . . . As a general rule, the various rating systems were efficient in ranking issues within an industry but were less successful in judging default risks as between major industrial groups."[14]

[13] Hickman, 12.
[14] Ibid, 12-13.

There were also some differences among the three rating systems, especially between the market ratings and the other two, agencies and legal lists. For most of the periods he studied, Hickman found that "the market was less stable than either the agency ratings or the legal lists, in the sense that the proportion of the total volume of outstanding issues rated high grade by the market at the beginning of a given period that was still so rated at the end of that period was below the corresponding proportion based on legal bonds and agency ratings." It was obvious that market ratings were "extremely sensitive" to bond market conditions:

> Being so sensitive, the market rating usually reflects changes in the credit standing of obligors more promptly than other ratings do. As a result, default rates over four-year periods were usually lower for high-grade outstandings selected by market rating than for equal volumes of high grades selected by agency rating or legal status. Life-span experience on bond offerings showed just the reverse: defaults were heavier among the market-selected high grades than among equal volumes rated high grade by the agencies or included in the legal lists. The reason again is the extreme sensitivity, amounting almost to instability, of the market rating to changing conditions, with the result that a fixed market-rating standard applied at offering picks up a disproportionately large volume of offerings in years of market optimism and a disproportionately small volume in years of market pessimism. Since bonds offered in years of market optimism fared worse than those offered in other years, life-span default rates were higher on offerings selected by a fixed-market-rating applied to all offerings over the full period studied than on offerings selected by agency rating.

The market, however, was better than agency ratings at predicting default risks over shorter periods of four and one years. Hickman therefore concluded, "the market rating was unstable over time, but was an efficient device for ranking offerings and outstandings at any given moment in order of the risk of subsequent default."[15]

Hickman was surprised to find that agency ratings conformed more to business cycles than did market ratings. Agency upgrades expanded in 6 of 6 business-cycle expansions and contracted in 5 of 6 business-cycle contractions, whereas market ratings "show little sensitivity to business cycles."

[15] Hickman, 18-19.

> It is a curious fact that agency ratings should prove so sensitive to the short-run ups and downs of business, since it is frequently stated that they measure "intrinsic quality," which would seem to imply a degree of permanence inconsistent with cyclical fluctuations. In view of the conservatism of the investment agencies in the 1920's, and the excellence of their long-term forecasts of life-span default risk at offering, it is unlikely that they were affected by changes in investor confidence during business cycles. A more likely hypothesis . . . is that the cyclical behavior of the ratings reflects the sensitivity of the various financial ratios on which they are based.[16]

Hickman voiced concern about the cyclical behavior of agency-ratings upgrades in good times and downgrades in bad times when they happened to be used in conjunction with financial regulation, which now, a half century later, is still a concern. In Hickman's era, issues in the top four grades of agency ratings were eligible for purchase by commercial banks and were usually accepted at book value for purposes of life insurance company and commercial bank asset valuation, whereas defaulted issues and lower-grade issues had to be marked to market, and the capital loss had to be charged against a financial institution's surplus account. This meant, said Hickman, that

> the surplus accounts of the financial intermediaries were cyclically unstable: they expanded during good times when issues were upgraded and shrank during bad times when issues were downgraded. If the downgraded issues were not sold, the capital losses were frequently paper ones, since many downgraded issues were promptly upgraded during the next business expansion.[17]

Although the ability of ratings agencies to change ratings when business conditions changed, with downgrades closely related to defaults, impressed Hickman, he also noted, "Under present valuation rules, the implication is that capital values and surplus accounts tend to shrink during business contractions at the very time when some assurance of financial stability is most needed by investment intermediaries and their beneficiaries."[18]

A major—and anomalous--finding of Hickman, revealed clearly in Table 1, is that non-investment- grade bonds had a much higher realized yield to investors after taking account of loss rates than might have been expected, in comparison with the yields of

[16] Hickman, 23-24.
[17] Hickman, 140-141.
[18] Ibid, 162.

investment-grade issues. Hickman reasoned that a bond return consisted of a pure (or basic) yield, a risk premium, and a reward for assuming risk, and he wondered why large (perhaps institutional) bond investors who could diversify and eliminate much of the risk of investing in particular issues did not do so in order to earn the higher returns on low-grade bonds. He noted,

> Such investors, who through their bidding largely determine the prices and promised yields of corporate bonds, are able to diversify adequately and thus don not require a specific premium for risk bearing. The investment intermediaries are, however, closely regulated as to the type and quality of securities that may be purchased and their investment officers, through their close ties with the general public and their directors, would be embarrassed if their portfolios contained a large volume of defaulted obligations, even though no loss should ultimately result. As a general rule, institutional investors are fairly conservative and place a premium on quality, just as do small investors who seek to avoid ruinous default losses through the purchase of high-grade bonds. The result is that promised yields on low grades—averaged over long investment periods—are more than sufficient to offset default losses, so that realized yields on low grades are high. These institutional considerations rest on personal observation rather than on statistical evidence.[19]

Whatever the explanation, this (as an aside) is the finding that so impressed Michael Milken when he read Hickman's book. Subsequently it led Milken to develop an active market for high-yield or "junk" bonds during the 1970s and 1980s, a major financial innovation of the period.

On the whole, Hickman concluded that agency and market ratings had performed quite well in the first half of the century. Each type of rating had some features where it was better at doing what it was intended to do than the other, but neither was dominant. Similarities outweighed differences. Hickman was concerned about the use of agency ratings for regulatory purposes. That use might accentuate financial difficulties in a business contraction, just when measures should be taken to alleviate such difficulties. But that was not a disadvantage of agency ratings. If market ratings were used in the same way for regulatory purposes, the situation might even have been worse, which may be why some regulatory authorities at the time discontinued use of market-based ratings.

Thomas Atkinson's 1967 NBER study, *Trends in Corporate Bond Quality,* was something of an update of Hickman's studies, but far more modest in scope. It covered the period from 1944 to 1965, a different and more stable economic and bond environment from the earlier one Hickman had studied. From 1945 to 1965, less than 0.1 percent (about 0.5 billion dollars) of the volume of corporate bonds outstanding went into default, compared to 1.7 percent during 1900-1943. Most of the defaults were in the railroad industry.[20]

Another important difference in the two eras had to do with direct placements of bonds compared with public offerings. In Hickman's period, direct placements of cash offerings were but 7 percent of the total amount marketed, whereas from 1948 to 1965, direct placements accounted for 46 percent of the total. There were advantages, Atkinson argued, to borrowers and lenders in direct placements. Borrowers paid a slightly higher interest rate, but gained flexibility and assured financing as compared with public offerings. Lenders gained the higher interest rate in return for giving up a degree of marketability.[21]

Although the bond market grew absolutely in the postwar decades, its share of corporate financing declined. One reason was that corporate earnings were higher and more stable, generating more internal funds for financing and less need to rely on bonds. Another reason was that commercial banks introduced term loans as an alternative to bond financing. As an institution-based rather than market-based method of financing, the term loan had some kinship with the direct placement of bonds.

Given postwar stability and prosperity, it is hardly surprising that most bonds were investment grade. From 1944 to 1965, 93.5 percent of bonds (like Hickman, Atkinson excludes real estate and finance bonds) fell into the top four agency ratings

[19] Ibid, 16.
[20] Atkinson, 2.
[21] Ibid, 21.

signifying investment grade. In Hickman's era, the corresponding figure was 83 percent of rated public offerings.[22]

Atkinson did not make any detailed study of agency ratings as predictors of default, perhaps because so few bonds defaulted. He did, however, find one difference between the postwar era and Hickman's era. Hickman provided evidence that agency ratings tended to be pro-cyclical, rising in expansions and declining in contractions. In contrast, according to Atkinson,

> Agency ratings of public offerings are not consistently related to postwar business cycles. In two cycles quality has a positive conformity and two an inverse conformity. Weakening in quality is seemingly not related to the volume of bond offerings.[23]

Although the quality of bonds overall was higher in the postwar era than in Hickman's era, Atkinson pointed to a deterioration in quality toward the end of his period, in the early 1960s. He also noted that convertible bonds were increasingly used, and that these were of lower quality in both Hickman's and his era. This perhaps was an early indicator of troubles ahead.

Given stable U.S. economic conditions—strong economic growth punctuated by few and mild recessions—and stable financial conditions—a near absence of bond defaults, for example--it is not surprising that agency bond ratings mattered little in the quarter century after World War II. In the foreword to Atkinson's short book, in which agency ratings are treated as almost an afterthought, James Early wrote, "the postwar years have been so free of bond defaults that one might conclude that no quality problem exists."[24] The leading agencies apparently employed only a few analysts each, with revenues coming from the sale of research reports.[25]

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[22] Ibid, 52.
[23] Atkinson, 3.
[24] Ibid, xv.
[25] Frank Partnoy, "The Siskel and Ebert of Financial Markets? Two Thumbs Down for the Credit Rating Agencies," *Washington University Law Quarterly* 77, no. 3 (Oct. 1999), 648.

The U.S. State and Local Bond Market. Moody's began to rate U.S. state and local government bonds in 1919, a decade after ratings began for the bonds of railroad corporations. By that time the market for such bonds was more than a century old, confirming the long lag of ratings behind capital market developments. Moreover, Standard and Poors did not begin to rate state and local bonds until the early 1950s.[26]

The state and local debt market expanded rapidly in the century before agency ratings began. From an estimated $13 million in 1825, it expanded to $260 million by 1843 (when it was considerably larger than the U.S. national debt), to $1.1 billion by 1880, and to $2 billion shortly after the turn of the twentieth century.[27]

The first default on state and local debt, the city of Mobile, Alabama, came in 1839, after which there is a continuous history of defaults with four periods of large-scale defaults. The first was 1839-1843, when twelve state and local governments whose indebtedness of $125 million was more than half of total defaulted; $13.8 million of debt was repudiated and $1.3 million of interest due was never paid. The second period was 1873-1879, when units with approximately a quarter of the $1 billion outstanding defaulted and the total loss of principal and interest was $150 million. A third period of widespread defaults came in the years 1893-1899, when units with $130 million of debt, about 10 percent of the total outstanding defaulted, and about $25 million of principal and interest was lost. The Great Depression of the 1930s brought the fourth and last period of major defaults. From 1929 to 1937, units with $2.85 billion of indebtedness, representing some 15 percent of the average outstanding state and local indebtedness for the period, defaulted. In the end, however, the total loss of principal and interest was relatively minor compared with earlier debt crises. The Depression-era losses were about $100 million, or half of one percent of state and local indebtedness, and 70 percent of these losses were settled under a new Federal Municipal Bankruptcy Act enacted in 1937.[28]

State and local defaults were relatively minor in the two decades of prosperity after World War II. They came to some $325 million during 1945-1965, which was only

[26] George H. Hempel, *The Postwar Quality of State and Local Debt* (New York: National Bureau of Economic Research, 1971), p. 103.
[27] Ibid, Table 6, p. 34.
[28] Ibid, Chapter 3.

O.3 percent of total state and local debt outstanding. Much of this was concentrated in revenue bonds, particularly those issued by the West Virginia Turnpike and the Calumet Skyway in the Chicago area. Permanent losses were only $8-9 million, with most of these settled under the Municipal Bankruptcy Act.[29]

How well did ratings agencies perform in assessing probabilities of defaults in the state and local debt markets? Hempel studied 264 agency-rated issues that defaulted in the Great Depression era; although these issues were small in numbers compared to the total defaults of that era, they did represent more than three-fourths of the dollar value of defaulted state and local debt. Here is how he described his findings:

> The proportionate totals…show that 78 per cent of the defaulted issues were rated Aa or better in 1929. The defaulting issues rated Aa or better in 1929 constituted 94.4 per cent of the total dollar value of the 264 issues…. The large proportion of defaulting state and local issues in the top rating categories appears to be partly explained by the large percentage of issues in the top rating categories in 1929—53 per cent of all rated issues were rated Aaa, 24 per cent were rated Aa, 18 per cent were rated A, and 5 per cent were rated Baa or lower. Furthermore, the ratings at that time appear to be biased in favor of large governmental units. Nearly 98 per cent of the 310 cities with populations over 30,000 were rated Aa or better. Nevertheless, it is disturbing that such a high proportion of the 264 defaulting issues were rated Aa or better in 1929.[30]

As the Depression unfolded, ratings were, of course, downgraded. Of the 264 defaulting issues, 70-80 percent were rated Aa or better from 1929 to 1931. But by 1933-1934, fewer than 10 percent were so rated. But, Hempel notes, "This reflection would not have been of much benefit to the investor who bought one of the 'high quality' Aaa or Aa rated issues in 1931."[31]

After the Depression and up to the time Hempel wrote his book (published in 1971), only rated state and local bond issues defaulted. Defaults were more numerous, but not all state and local issues were rated. All six of the post-Depression defaulting bonds were limited liability obligations (e.g., revenue bonds), and three were rated by Moody's only after they had gone into default. Hempel detected that by the postwar era the ratings agencies had eliminated their bias in favor of large issuers as a result of the Depression experience. Since defaults were so few, as was the case with corporate

[29] Ibid., pp. 26-29.
[30] Ibid, p. 108.

bonds, Hempel did not think that any strong conclusions could be drawn in evaluating ratings agency performance:

> The most favorable conclusion one can derive from the past payment performance of rated state and local issues is that the new and more sophisticated rating processes started in the mid1930's (after the weak performance before the mid-1930's) are largely untested as an indicator of prospective quality. In spite of the lack of historical proof, the consensus opinions of groups of sophisticated bond analysts (i.e., agency ratings) are analyzed as meaningful indicators of prospective quality.[32]

Like Atkinson in the case of corporate bonds, Hempel thought that the high ratings and negligible default experience in the state and local sector of the bond market reflected the greater macroeconomic stability of the quarter century after 1945 as much as anything else.

But by the time Atkinson and Hempel wrote, change was in the air. U.S. economic and financial conditions were becoming less stable by the late 1960s. Controls imposed on short- and long-term capital flows, imposed for balance of payments reason, more or less closed the U.S. capital markets to the rest of the world in the 1960s. That changed when the Bretton Woods system collapsed in the early 1970s, giving way to flexible international exchange rates. A new era of financial globalization emerged. These environmental changes would create new opportunities for the ratings agencies.

3. Globalization of Credit Ratings, 1970s-2000

Historical Parallels. Credit rating agencies expanded rapidly from the 1970s through the 1990s, much as they did from 1909, when John Moody introduced the concept, to the 1930s. In each period, the expansion started slowly and then gathered steam as the early entrants became larger and new entrants appeared. Such parallels between the two periods of agency expansion suggest to a historian that similar forces may have been at work in them. What might those forces have been?

The early twentieth-century appearance and growth of rating agencies was pretty much a U.S. development. The main reason is that the United States, largely because of

[31] Ibid, p. 112.
[32] Ibid, p. 113.

large-scale railroad development under corporate auspices (the governmental role in railroad development was larger in most other countries) created a corporate bond market much larger than elsewhere, and the country also had a rapidly growing state and local bond market.

Two additional developments contributed. One was that firms in industries other than the railroad sector, in particular public utility and the manufacturing firms, sought access to the bond markets. Second, rising average levels of income and wealth in the United States greatly expanded the potential and actual numbers of investors. In earlier times only the very wealthy, a tiny minority in both Europe and America, were interested in bond investments, and leading investment and merchant banking houses on both sides of the Atlantic were capable of serving as certifiers of bond quality for that minority. But the old-time investment banking houses, increasingly under attack in the United States (the Money Trust investigation of 1912-1913, for example), were not in a good position to meet the demands of an expanding class of investors for certifications of bond quality. That was John Moody's entrepreneurial insight in 1909.

The Great War of 1918-1918 helped the process along. Because of it the United States replaced England as the world's financial center, becoming the banker of the victorious allies. U.S. participation in the war led to massive amounts of public debt creation and the mass-marketing of bonds to the growing class of investors. A new central bank, the Federal Reserve System, created much of the money for investors to buy the government bonds, and then went on after the war to increase investor confidence in the financial stability of the country.

During the 1920s the federal government paid down much of its debt, freeing up funds for investors to reinvest. The decade was quite a prosperous one in America but marked by financial turbulence in much of the world. Over its course, the U.S. bond market, both for domestic and foreign as well as sovereign and private issues, grew by leaps and bounds. The investing classes needed bond ratings to sort out the great variety of issues with which they were presented. Ratings agencies addressed that need, supplementing if not actually taking over functions once performed by investment

bankers. According to Braddock Hickman, the agencies did a pretty good job of sorting bonds into quality groupings. Their reputational capital grew, even with financial regulatory authorities. By the 1930s, U.S. regulators were incorporating agency ratings into their regulations.

Some six decades later, history repeated itself or, as Mark Twain said, at least rhymed. Now, however, the whole world was America. The role of World War I and the breakdown of the classical gold standard was taken over by the Cold War and the breakdown of the Bretton Woods System. The latter's replacement by a floating-exchange rate regime created an opening for freer international capital flows and financial globalization. The prosperity of the postwar decades expanded the class of potential investors around the world, while developments such as the Eurodollar market and the OPEC cartel redistributed the world's capital resources, as had happened at the time of World War I. More and more sovereign states and private corporations from around the world appeared in the markets as issuers of bonds. International agencies such as the IMF served to make international investors more confident of financial stability, just as the Federal Reserve had done earlier in the century. And financial regulatory authorities, now on an international scale, began to incorporate agency ratings into their regulations.

Rating Agency Expansion. Like causes often lead to like effects. There were no ratings agencies in the United States until 1909, and then in two decades they appeared and became pillars of the investment community. By the 1960s and early 1970s, as we saw earlier, those agencies had become small and relatively moribund; the U.S. bond market was too safe for them to matter much, and the rest of the world generated little business.

In 1996, two decades later, journalist Thomas Friedman in a television interview would say,

> There are two superpowers in the world today in my opinion. There's the United States and there's Moody's Bond Rating Service. The United States can destroy

> you by dropping bombs, and Moody's can destroy you by downgrading your bonds. And believe me, it's not clear sometimes who's more powerful.[33]

Like skilled surfboarders, the ratings agencies once again caught a large wave of financial development and rode it.

Agency expansion began slowly at first, and then picked up steam. Even the leading agencies had but a handful of analysts at start of the 1970s. Partnoy reports that by 1980 S&P has 30 professionals in its industrials group, a number that grew to 40 by 1986 (he doesn't report the numbers in other groups). By 1995, in contrast, "S&P had 800 analysts and a total staff of 1,200; Moody's has expanded at a similar rate, to 560 analysts and a total staff of 1,700."[34] The growth of agency employment obviously reflected a growth in the business of credit rating.

> The number of rated issuers has increased by the same order of magnitude. In 1975, 600 new bonds were rated, increasing the number of outstanding rated corporate bonds to 5,500. Today [2000], Moody's rates 20,000 public and private issuers in the U.S., and about 1,200 non-U.S. issuers, both corporations and sovereign states; S&P rates slightly fewer in each category. Moody's rates $5 trillion worth of securities; S&P rates $2 trillion. Moody's and S&P thus dominate the world's business of rating government and corporate debt.[35]

If the credit rating agency itself was the key innovation of the earlier era, the key innovation underlying the recent era of agency growth is likely an innovation in the way agencies finance their operations. From 1909 to the 1970s, revenues came from selling agency reports to subscribers. Investors and other users of the information provided by the agencies essentially paid for it. Starting in the 1970s, the agencies shifted their main revenue source from investors and users to the issuers of securities. Now nearly all of the leading agencies' revenue comes from fees, usually a few basis points of the amount of the issue rated, charged to issuers.[36] This raises the question of what those who pay for agency ratings receive in return.

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[33] Cited by Partnoy, p. 620.
[34] Ibid, p. 650.
[35] Ibid, p. 651.
[36] Ibid., p. 653.

What do the rating agencies do to earn their keep? The traditional answer to this question is that the agencies gather and analyze all sorts of pertinent financial and other information, and then use it to provide a rating of the intrinsic value or quality of a security as a convenient way for investors to judge quality and make investment decisions. With every rating, the agency puts its reputation on the line. Hickman showed that during the first half of the twentieth century in the United States, the agencies did a pretty good job. Their ratings did provide investors with information that reflected the likelihood that an issue would go into default, and guidance as to the loss consequences of such events. But they were not the only such source of information. Market-based ratings performed about as well as agency ratings.

Since publicly available sources of information pertinent to investment values are far greater than they were in the day when rating agencies first appeared, and since the markets themselves (partly because more information is available) have become more efficient, many question whether the continuing success of the agencies rests on their reputational capital. If the markets in the Hickman era from 1900 to 1944 could do about as good a job of rating securities as the agencies did, presumably they can do an even better job of it now, with better information and better technologies. So why do the agencies continue to exist and even thrive?

Partnoy's Complaint. Partnoy takes a cynical view. He argues with some vehemence that the agencies are in the business of selling regulatory licenses. This view is less a critique of the agencies per se than it is of financial regulatory authorities that adopt and use agency ratings in their regulatory procedures:

> The regulatory license view is quite simple. Absent regulation incorporating ratings, the regulatory license view agrees with the reputational capital view: rating agencies sell information and survive based on their ability to accumulate and retain reputational capital. However, once regulation is passed that incorporates ratings, rating agencies begin to sell not only information but also valuable property rights associated with compliance with the regulation.[37]

[37] Ibid, pp. 683-84.

Regulators at the U.S. federal and state levels began to use agency ratings for regulatory purposes in the 1930s. This was controversial at the time, but the controversies died out in subsequent decades when U.S. economic conditions were good and most bond issues were investment grade with few going into default. When those favorable economic and bond-market conditions disappeared in the early 1970s, the practice of incorporating agency ratings was revived and expanded, with the SEC going even so far in 1973 to designate certain rating agencies as "Nationally Recognized Statistical Ratings Organizations."[38]

Interestingly, it was around this time that the agencies shifted to the practice of charging issuers for ratings and earning most of their revenues from such charges. The regulatory-license hypothesis would explain this by saying that once an agency rating was important to the acceptance of a new bond issue, in the sense of determining whether regulated financial intermediaries could buy it all and under what terms, the issuer would have a strong incentive to purchase a rating from a rating agency, particularly if it had been designated by the regulator as a "Nationally Recognized Statistical Rating Organization." Do such designations create rents for established agencies that are so designated? Do they increase the likelihood of conflicts of interest and other potential abuses?

Agency Theory and the Ratings Agencies. Another explanation of the persistence of ratings agencies when market ratings might do as good or better a job of sorting securities by quality is based on agency theory. An older variant of it is that independent rating agencies, by rating bonds when issued and continuing to monitor the issuing company after the issue, solved a principal-agent problem between investors and company managers. Without this continued monitoring and the threat of ratings downgrades, managers might engage in opportunistic behavior to better their own and/or stockholders' positions at the expense of bondholders.[39]

[38] Partnoy, p. 692.

A newer and more finance-grounded variant of the agency approach to explaining ratings agencies is that they help to resolve conflicts of interest that might otherwise exist among the owners of financial assets, the institutions (both public and private) that guarantee the assets, and the asset managers that act as agents for the principals or owners. An asset manager, for example, might be tempted for legitimate or illegitimate reasons to invest the funds of principals in high-risk assets, to the potential detriment of the owners and possibly guarantors of the assets. Agency bond ratings could be used as one way of constraining the asset managers from acting in such a way. As Martin Fridson, a proponent of this newer view of the independent rating agencies, puts it,

> By prohibiting their asset managers from investing in or retaining bonds of less than a specified rating, asset-owners and asset-guarantors can significantly limit their risk, even though they lack the expertise to quantify that risk themselves.[40]

It is hardly a perfect system, Fridson notes while pointing to some of the drawbacks of it, but it is a method of constraining and disciplining the behavior of asset managers and issuers at a low monitoring cost.

Conclusion. There is now nearly a century of experience with independent-agency bond ratings in the United States. Many of this issues that arise in recent discussions came up in earlier studies of the U.S. experience. The ones that seem most relevant now have to do with the use of agency ratings for purposes of financial regulation. If ratings are used, for example, to help in determining the capital adequacy of financial intermediaries, the underlying rationale would rest at least in part on thinking that such a use would help to prevent or alleviate financial crises. In that connection, it is worth recalling Braddock Hickman's concern that such a use conceivably might make a financial crisis worse than it otherwise might have been, or perhaps even cause a crisis when business contractions lead to ratings downgrades.

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[39] Partnoy, p. 649 and fn. 135, discusses this, citing L. Macdonald Wakeman, *The Real Function of Rating Agencies.*

[40] Martin Fridson, "Why do Bond Rating Agencies Exist?" *Merrill Lynch Extra Credit* (November/December 1999), p. 8.

Partnoy's complaint that the use of agency ratings for regulatory purposes puts the agencies into the business of selling regulatory licenses also needs to be taken seriously. The U.S. Comptroller of the Currency in 1936 issued a regulation prohibiting banks from purchasing investment securities with characteristics that were "distinctly or predominantly speculative," and then added that " the terms employed…may be found in recognized rating manuals, and where there is doubt as to the eligibility of a security for purchase, such eligibility must be supported by not less than two ratings manuals." The latter phrasing referring to recognized raters was attacked as placing too much authority in the private rating agencies, and on that ground it was deleted from the regulation in 1938, although in a less formal way it remained in effect with regulators.[41] The designation of "Nationally Recognized Statistical Ratings Organizations" some four decades later in the United States brought back what had been abandoned in 1938. Should representative governments be in the business of passing out such designations if the designees are thereby allowed to profit from selling regulatory licenses? Or, if ratings are to be incorporated in financial regulations, is it possible that regulatory authorities have a responsibility to come up with, and apply, their own ratings? If the answer is, "No," then why not contract out other regulatory functions, such as bank examinations, to private contractors?

[41] Hickman, pp. 144-45.

TABLE 1—Life-span Default Rates, Yields, and Loss Rates for Bonds Classified by Industry, Quality, and Other Characteristics at Offering, 1900–1943

	Default Rate	*Promised Yield*	*Realized Yield*	*Loss Rate*
All Industries	17.3%	5.3%	5.4%	−0.1%
Railroads	28.1	5.5	5.2	0.3
Public utilities	10.6	5.0	5.4	−0.4
Industrials	14.8	5.4	5.8	−0.4
Agency Rating				
I	5.9	4.5	5.1	−0.6
II	6.0	4.6	5.0	−0.4
III	13.4	4.9	5.0	−0.1
IV	19.1	5.4	5.7	−0.3
V-IX	42.4	9.5	8.6	0.9
No rating	28.6	4.8	4.6	0.2
Legal Status				
Legal in Maine	7.1	4.0	4.9	−0.9
Not legal in Maine	19.2	5.5	5.5	0.0
Legal in Massachusetts	7.6	4.0	4.7	−0.7
Not legal in Massachusetts	18.5	5.4	5.5	−0.1
Legal in New York	9.0	4.0	4.5	−0.5
Not legal in New York	18.8	5.5	5.5	0.0
Market Rating				
Under ½%	10.5%	3.8%	3.9%	−0.1%
½–1	13.9	4.5	4.7	−0.2
1–2	20.7	5.4	5.5	−0.1
2% and over	32.4	9.3	9.5	−0.2
Times-Charges-Earned Ratio				
3.0 and over	2.1	4.0	4.9	−0.9
2.0–2.9	4.0	4.3	5.1	−0.8
1.5–1.9	17.9	4.7	5.0	−0.3
1.0–1.4	34.1	6.8	6.4	0.4
Under 1.0	35.0	6.2	6.0	0.2
Ratio of Net Income to Gross Income				
25% and over	3.3	4.5	5.0	−0.5
20–24	11.6	4.6	4.6	0.0
15–19	12.7	4.4	4.8	−0.4
10–14	17.6	5.1	5.3	−0.2
Under 10%	27.5	5.0	5.0	0.0
Negative	17.2	8.9	10.7	−1.8
Lien Position				
Secured	18.8	5.3	5.4	−0.1
Unsecured	13.6	5.3	5.3	0.0
Size of Issue				
$50 million and over	16.3	4.9	5.0	−0.1
20–49	16.4	5.2	5.7	−0.5
5–19	19.0	5.7	5.5	0.2
Under $5 million	24.9	6.3	6.1	0.2
Asset Size of Obligor				
$200 million and over	16.4	5.4	5.3	0.1
100–199	17.0	5.0	5.8	−0.8
5–99	18.8	5.6	5.7	−0.1
Under $5 million	23.6	6.6	6.6	0.0

Source: W. Braddock Hickman, Corporate Bond Quality and Investor Experience (Princeton: Princeton University Press, 1958), pp. 10-11.

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