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SECURITIZATION IN THE 1920'S

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ABSTRACT

This paper quantifies the scale and scope of the commercial real estate mortgage bond market in the period surrounding the 1920s in an attempt to better understand the role of retail mortgage debt in early urban development. In particular, this paper quantifies the size of the market, identifies risk factors affecting the coupon yield spread over Treasuries and utilizes a unique data set to construct a commercial mortgage price index over the period 1926-1935.

A substantial retail appetite for real estate securities during this period may have significantly contributed to a real construction boom, but overly optimistic speculation in these securities may have led to overbuilding. The rapid deterioration of these securities and a near complete drop in issuance show, ex post, that investors were overconfident in building fundamentals during the boom years. The breakdown in the value of real estate securities as collateral assets preceded the crash of 1929 and may have contributed to the fall of asset prices more generally.

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Much of the blame for the present financial crisis is directed at the last two decades of financial innovation. It has become abundantly clear that financial assets backed by real estate artificially supported credit markets through the early 2000s. In light of a severe downturn in these mortgage-backed securities and their related derivatives, particular attention has been paid to the interplay between the financial markets and the real asset markets and to the short track records used to feed valuation models. Now, as global institutions begin to emerge from what was originally seen as a local problem, a more historical perspective on the interplay between financial speculation and real construction can supplement the inspection of the recent past.

The present crisis is not the first time that the real estate securities market has expanded to the brink of collapse. The U.S. real estate securities market was remarkably complex through the first few decades of the twentieth century. Many parallels with the modern market can be observed. The early real estate development industry fed the first retail appetite for real estate securities. Consequently, easily obtainable financing via public capital markets corresponded with an urban construction boom. Through the entire movement, regulation and centralization were glaringly absent. An exchange dedicated exclusively to real estate securities was created and quickly failed. Ultimately, the size, scope and complexity of the 1920s real estate market undermined its merits, causing a crash not unlike the one underpinning our current financial crisis.

The lessons we can learn from the intricacies of the 1920s real estate securities market have been muted by a lack of data. The purpose of this study is to use recently collected real estate securities issuance and pricing data to construct a clearer picture of early real estate financing conditions. First we explore the scope and quantify the size of the public real estate

securities market. Second, we explore a few characteristics of the market that help us understand factors affecting the cost of capital facing early urban real estate ventures. Third, we explore the performance of these securities, noting particularly that the crash in real estate debt preceded the crash in the equity markets. These analyses allow us to conclude that publically issued real estate securities affected real construction activity in the 1920s and that the breakdown in their valuation, through the mechanism of the collateral cycle, may have led to the subsequent stock market crash of 1929-30.

Background

Speculation in both residential and commercial real estate went through a period of growth at the beginning of the 1920s. U.S. nonfarm dwelling values are estimated to have increased by more than 400 percent between 1918 and 1926 (Gottlieb 1965). The national statistic, however, dilutes the meteoric increase in home prices experienced in certain cities and states, most notably Florida. Between January 1919 and September 1925, for example, the average nominal value of a building permit in Miami grew from $89,000 to $7,993,500, or 8,881 percent (Vanderblue 1927). Figure 1 shows the increase in nonfarm residential mortgage debt as a percentage of nonfarm residential wealth from 1846 to 1952 (Grebler, Blank and Winnick 1952). The increase in this ratio over the period 1920-1932, emphasizes homebuyers' willingness to buy into the rising price environment. Nicholas and Scherbina (2009) have documented the dramatic rise and fall of the Manhattan housing market in the late 1920s, and White (2009) draws excellent parallels between the bubble in the 1920s to the bubble more recently.

As an investment vehicle, however, residential housing remained an understudy to commercial building. Primarily in urban areas, commercial construction experienced a boom matched only in the mid-2000s. "New York," declared S. W. Straus, head of the largest real estate bond house in the U.S. in 1926, "cannot be held back in her growth and development as the supreme city in the world" (Commercial and Financial Chronicle 1926). More buildings taller than 70 meters were constructed in New York between 1922 and 1931 than in any other ten-year period before or since (Emporis, see Figure 2). These 235 tall buildings represented more than an architectural movement; they were largely the manifestation of a widespread financial phenomenon. The 1920s brought the rise of a new kind of building, designed and built for the express purpose of maximizing rents from a varied multitude of tenants and turning a profit for the developer. Developers had good reason to be optimistic about rental profits. The chairman of the Real Estate Securities Committee of the Investment Bankers Association of America provided the following summary of the rent environment in America during the boom years:

> With the war over in the fall of 1918, a great shortage of space became evident. The average rents all over the country went up… 10% in 1918, 20% in 1920, 10% in 1921, gradually increasing another 8% during 1922, 1923 and 1924, reaching 168% of the pre-war base. During this same period everyone capitalized real estate values on the basis of the high rents and by 1926 the average value of Chicago improved city real estate reached 194% of the pre-war value (Boysen 1931).

A departure from the less-streamlined corporate building designed as company headquarters, the speculative building was operated much like the businesses that occupied it. Cass Gilbert, designer of the Woolworth Building in New York, aptly characterized this new type of building as "a machine that makes the land pay" (Gilbert 1900). As Carol Willis writes in the introduction to her book *Form Follows Finance*, "structures such as the Empire State Building or

Board of Trade are magnificent not because they were designed by great architects, but because their designers worked intelligently within a formula with its own beautiful economy" (15). This paper will demonstrate that investors' appetite for real estate securities factored significantly into the commercial building design formula and created an incentive for developers to build big.

A speculative movement in such a capital-intensive sector as commercial real estate required considerable financing activity to stay afloat. Conventional wisdom assumes that large financial institutions like banks and insurance companies were the primary sources of capital in financing these ventures. The evidence gathered in this study paints a very different picture, illuminating the role of the public as a critical participant in speculation. Recent scholarship on the subject of early real estate financing generally focuses on the effects of the government's lending regulations on the homeowner rather than the dynamics of the early real estate market (see, e.g., Fishback et al., 2001, Wheelock, 2008). Radford (1992) and Willis (1995) acknowledge the public capital markets as an important source of capital but do not clarify the scope of its involvement. Only White (2009) acknowledges the importance of the 1920s real estate securities market as a precursor to more modern markets. "More and more," wrote E. H. H. Simmons, President of the New York Stock Exchange in 1929, "real estate organizations have taken the public into partnership with them by adopting the corporate form, and by issuing shares as well as bonds."[2] Our results help quantify the scope and scale of real estate organizations' financial partnership with the public.

The term 'real estate securitization' can be variously interpreted. In this paper we define it broadly to mean the issuance of public securities collateralized or backed by real properties on public capital markets. We examine those bonds that direct and divide cash flows from one or a

[2] Simmons, E. H. H. 1929. Financing American Industry, and other addresses. New York: Real Estate Board of New York.

group of commercial properties through an intermediary to a group of public investors. Our definition is specific to bonds backed by real properties and does not include equity of development companies.

Residential mortgage pass-through securities, known at the time as "guaranteed mortgage participation certificates (GMPCs)," are tangentially included in this study to bring attention to the prominence of more complex securitization. These securities represented pools of residential mortgage cash flows from geographically diversified baskets of cities and towns across the United States. They were issued by large title and insurance companies, who generally guaranteed their coupon at 5%. In essence, GMPCs functioned similarly to agency mortgage-backed securities, and while the guarantee did carry any implicit support by the government, the title and insurance companies were considered among the most stable financial intermediaries. White (2009) likens these companies to modern financial intermediaries and outlines the risks they posed to the broader financial system.

Since commercial real estate securities markets at the beginning of the 20th century are unfamiliar to many scholars today, it is worth describing more specifically the basic bonds in question. A sample of 125 commercial real estate bond prospectuses held at Yale University allows for a closer examination of the contracts. In general, all of the bonds were issued in denominations of at least $1,000 and $500, though many were issued in denominations as small as $100. Interest rates varied between 4-7%, paid biannually. Interestingly, most coupon payments were disbursed in gold coin, preserving the inflation hedge desired by many real asset investors. Terms varied from widely from 2 to 47 years, but large amounts of principal were often scheduled to mature at intermediate dates prior to final maturity. This feature was likely included to appeal to large investors with varying duration targets. Nearly every bond in the

sample was redeemable (callable) at any time by the issuing property developer with very little penalty. Because default procedures, outlined later in this paper, were often very costly to development companies, one might expect prepayments to strongly outnumber defaults. Three of the bonds were convertible, giving the bondholder the right to convert the principle balance into shares of the property development company (and, by extension, equity in the building) at predefined prices. Though buildings and their associated income backed most of the securities, different (but related) assets backed a few of the bonds in the collection. One of the bonds, labeled a "collateral trust" agreement, represented a claim only on the building's profits and not on the building itself had the bonds failed to meet their contract.

The prospectuses in the Yale collection also help to identify and clarify the roles of the parties involved in each issue. We identify three critical participants in the public issuance of real estate securities: the building company, the trustee and the public.

The building company's corporate structure was generally designed solely for the construction, ownership and in some cases maintenance of a particular building or group of buildings. This kind of corporation was common for two reasons. First, exemplifying the aforementioned "speculative building" concept, these companies existed only to take advantage of the profits of real estate investment by way of easy financing. The entire sum of money required to "acquire the land, the building, and, in some instances, an immediate cash profit," could be raised through speculative financial instruments (Halliburton 1929, 6). Second, companies' operations were limited by states' legal codes. In Illinois, for example, it was illegal "for corporations to own real property beyond that needed in the transaction of their corporate business" (Jones 1934).[3] It was thus illegal for a life insurance company to build a corporate

[3] This law was revised in 1933 to allow broader corporate investment in real estate.

headquarters, occupy only a few floors and collect rents from tenants on the remaining floors. A building company provided a legal avenue toward real estate speculation.

Increased demand for real estate investment made it possible for real estate bond houses to join banks and insurance companies in channeling capital to real estate ventures. Bond houses represent the critical avenue to public individuals' savings. The largest bond houses included S. W. Straus & Co. (Chicago), the American Bond & Mortgage Co. (New York) and G. L. Miller & Co. (New York). These companies generally served simultaneously as originators, underwriters and distributors. Building companies could depend on the bond house to identify willing buyers of real estate bonds, purchase all of the bonds not sold to the public, and act as dealers between the building company and the public to facilitate bond issuance. Performing these three functions proved incredibly lucrative in an optimistic real estate market. So long as investors were easy to locate, bond houses could collect substantial fees for these services without having to part with much (or any) of their own capital (Halliburton 1939, 10).

The public was the obvious but critical third party in the real estate securities boom of the 1920s. It is not clear whether building companies viewed the public as an attractive (if ignorant) source of capital or as a lender of last resort. Anecdotal evidence suggests the latter, as do the empirical results of this study. "Since the life insurance companies, savings banks, and endowment funds could not be persuaded to advance funds more generously against new projects, the [real estate] dealers appealed directly to the inexperienced public. Nowhere in the field of corporation finance is there a better illustration of the maxim 'Divide and govern,'" writes Robert Halliburton in his 1939 deprecation of the real estate investment industry (6). Further, as we will show, there were risk factors associated with issuing securities on public capital markets that may have increased the cost of financing for building companies. As a

consequence of this suggestion, it is important to quantify the size of the public market and to decompose the broad factors affecting the rate of return on publicly issued real estate security investment.

Size of the Public Real Estate Securities Market

Real estate securities formed much more than a niche sector for an exclusive excess return-seeking group of investors; their influence rivaled the largest debt markets of the era. In 1936, after the practical disappearance of the real estate securities market and public outrage over institutional corruption, Ernest Johnson (1936a, 1936b) performed what remains today the most complete study of the size of the public real estate securities market in the 1920s. A summary of his results appears in Table 1, represented graphically in Figure 3 and Figure 4. Johnson estimated the total issuance to have exceeded $4.1 billion across 1090 individual issues between 1919 and 1931. Between 1919 and 1925, total yearly issuance grew from $57.7 million to $695.8 million, or nearly 1,106%. Real estate security issuance notably surpassed railroad bond issuance in the years 1924, 1925 and 1928 and represented nearly 23% of total public corporate debt issuance at the peak of the market in 1925. Further, market activity was geographically concentrated in two cities. Buildings in New York and Chicago backed 46.2% and 25.9% of the issuance over $1 million respectively, while buildings in the next most active city, Detroit, backed only 6.9% of the issuance. Not only was the market large enough to suggest an influence on large-scale commercial construction, it was focused in the two cities most known for their early skylines.

The collection of bond prospectuses in the collection at Yale University also contains annual statements from the New York Title and Mortgage Company and the Lawyer's Mortgage

Company, two of the largest issuers of GMPCs. Over the period 1917-1931, the total outstanding par value of GMPCs issued by these two companies grew nominally from $187 million to over $1.16 billion, or 522% (see Figure 5). Investor appetite for complex, geographically diversified securities backed by pools of residential properties was just as strong as it was for the more robust cash flows from single buildings.

Cost of Financing Analysis

In order to further explore the market characteristics affecting cost of capital, we have independently gathered data regarding real estate security issuance. Bond issuance data was collected from the Moody's Industrial Manual from 1926, which provides the issuer, underwriter, date of issue, date(s) of maturity, amount issued, and interest rate at issue for 1,253 bonds issued between 1911 and 1926. The bonds are assumed to have been outstanding through the end of 1926, admitting a slight survivorship bias. We believe that our selection of 1926, a strong year for the real estate market, mitigates most of the potential bias. The bonds' collective face value exceeds $846,000,000, meaning the sample represents roughly half the entire market. A summary of statistics appears in Table 2. Included are bonds issued by 14 major bond houses and backed by buildings in 150 cities across the United States. A geographical breakdown of the top fifteen most active cities by issuance is also provided, graphically mapped following Table 2. More specific information regarding redemption rights and collateral was found for some bonds in the appendices to the Moody's Industrial Manuals.

One known study (Johnson 1936) has examined the Moody's manuals to analyze the real estate securities market in the 1920s, though the study relies on the manuals only for

supplemental data. The sample collected for this study represents a significant portion of the total market and is not bound by a minimum issue amount.

Following the present literature (see, e.g., Maris and Segal, 2002, Collin-Dufresne et al. , 2001 and Rothberg, Nothaft and Gabriel, 1989), the real estate bond coupon spread above treasuries of comparable maturity is used to discern which market factors specifically affected the risks associated with investing in commercial real estate securities. Treasury and corporate yields from Homer (1991) support this analysis. While corporate yields were available with monthly frequency, Treasury yields were only available with annual frequency. Treasury yields were extrapolated linearly between data points to allow for a month-to-month comparison with corporate yields. Bonds issued before 1919 were excluded due to low issuance volume and the increased likelihood of survivorship bias.

This section of our study differs slightly from the literature in that we are forced to use only new issuance data and cannot evaluate ongoing yields for each particular issue. We assume that new issues are floated at or near par and that coupon yield-at-issue closely approximates actual yield. Similar to Maris and Segal (2002), our data is cross-sectional not time series. A linear regression is used to estimate the following:

$$\begin{aligned} SP = {} & a + b(CHIC) + c(NYC) \\ & + d_1(D_{20}) + \ldots + d_7(D_{26}) \\ & + e(TERM) + f(ISSAMT) \\ & + g_{sws}(BH_{sws}) + g_{abm}(BH_{abm}) + g_{glm}(BH_{glm}) \\ & + h(CORP\_SP) + i(TS) + \varepsilon. \end{aligned}$$

Where:

SP = Real estate security coupon spread over long-term Treasuries;
$CHIC$ = Dummy variable for a building in Chicago;
NYC = Dummy variable for a building in New York City;
D_i = Dummy variable for year of issue;
$TERM$ = Length of term from issue to longest maturity, in years;
$ISSAMT$ = $\log_{10}$(Total size of issue, in dollars);
BH_{sws} = Dummy variable for bond house S. W. Straus;
BH_{abm} = Dummy variable for bond house American Bond and Mortgage;
BH_{glm} = Dummy variable for bond house G. L. Miller;
$CORP\_SP$ = Long-term corporate yield spread over long-term Treasuries;
TS = Long-term corporate yield spread over short-term corporates.

CHIC and *NYC* attempt to capture the effect of a building's location on the coupon yield spread. As previously mentioned, the urban construction boom was most notably centered in New York and Chicago, as can be clearly seen in the image following Table 2. Since so many of the bonds in the Moody's collection were backed by buildings that still dominate the skylines of these two cities, we test the hypothesis that builders enjoyed a relatively lower cost of financing in these two cities than in other cities.

D20-D26 are dummy control variables included for every year other than 1919.

The three *BH* variables are dummy variables that test the effect of the issuing bond house on the perceived risk of the security. Since bond houses were active intermediaries between building companies and bondholders, their ability to make timely payments was a risk factor. S. W. Straus and the American Bond and Mortgage Company were both large, reputable bond houses. G. L. Miller, however, failed amid allegations of poor governance and considerable fraud. We test the hypothesis that building companies who issued bonds through bond houses in good financial standing enjoyed a lower cost of capital than those who issued through bond houses in poor financial standing.

Considering the group of dummy variables used in this regression, the base case is a bond issued in 1919 by none of the top three bond houses in neither New York nor Chicago.

As in Rothberg, Nothaft and Gabriel (1989) and Maris and Segal (2002), we included *TS* and *CORP_SP* to measure the likelihood of prepayment and default and their effects on the coupon spread. We assume the risk of prepayment dominates the risk of default because of the very high cost of reorganization and foreclosure when dealing with such large properties. Additionally, from the investor's standpoint, these securities were marketed as "absolutely safe," and their glowing track records were paraded in the media by building companies and bond houses. *TS* is a general measure of the term structure of interest rates. The spread between long- and short-term corporate bonds was used because monthly frequency was unavailable for long- and short-term Treasuries. We use *TS* as a proxy for expected future interest rates. A low *TS* implies a flat yield curve and thus the expectation of lower long-term future interest rates. Since lower future interest rates increase the incentive to prepay, we would expect a low *TS* measure to correspond with wider spreads if prepayment risk is considered important by investors. *CORP_SP* measures the long-term high-grade corporate yield spread over comparable treasuries. We use this as a proxy for the default risk premium, assuming that a high corporate yield spread implies poor economic conditions and thus a higher risk of default. We would expect a high *CORP_SP* to correspond with higher real estate security coupon spreads if default risk is considered important by investors.

TERM captures the effect of the term of the bond, measured in years from date of issue to date of longest maturity, on the coupon spread. We use this variable to better understand the investors' perceptions of the long-term prospects of the commercial real estate industry. If investors felt as though the real estate boom was indeed a bubble, we would expect to observe a

higher spread on longer-term securities. As we noted from the bonds in the collection at Yale University, however, many of these securities had intermediate maturity dates. If a maturity schedule were available for each bond, we recognize that using duration would be a more accurate way to measure the term's effect on coupon spread.

Willis (1995) emphasizes the economic benefits of building taller buildings. *ISSAMT* is a particularly interesting variable because it seeks to explain whether 'bigger is better' in a financial sense as well. If Willis is correct in her assertion that tall buildings conformed to a concept of 'economic height' that maximized income, and by using the total issue amount as a proxy for building height (or size), we would expect to see an inverse relationship between the total issue amount and coupon spread. This would lead to a feedback phenomenon in which building companies could lower their financing costs by raising more capital and building taller buildings. The natural result of such an effect would be a surge in the number of tall buildings as a response to the availability of public capital. Conversely, as in Maris and Segal (2002), it could be the case that the large issues require additional yield in order to be fully funded by the public. Regardless, discerning the size of the *ISSAMT* effect is an important step towards understanding how financial instruments impacted the decision to build skyward.

Results

Of the two geographical dummy variables, only *NYC* is significant. The negative coefficient on the *NYC* variable suggests that coupon spreads on bonds backed by buildings located in New York were on average 16 basis points lower than those on bonds backed by buildings in other cities. This result has two potential explanations. First, income streams from buildings in New York might have been fundamentally more robust than those from buildings

located elsewhere, thus making their mortgages less risky. Alternatively, demand for real estate investment vehicles in the capital-rich city of New York could have driven coupon rates down, meaning investors in New York accepted lower yields in exchange for an allocation to real estate. Each of these explanations, however, reveals a financial impetus for a stronger real estate building boom in New York versus in other cities.

The *ISSAMT* coefficient is significant and positive, but only marginally, suggesting that a doubling of the total issue amount increased the coupon spread by only 9 basis points. This result supports the conclusion of Maris and Segal (2002) that larger issues require higher spreads if they are to be absorbed by the market. The effect is nearly small enough, however, for building developers to have ignored any difference in the cost of financing a small building versus that of financing a large building. Archival evidence in Willis (1995) supports this claim in the form of a 1929 cost/income analysis for two proposed variations of the Empire State Building (92). The developer compares profit estimates for a 55-story building to those for an 80-story building. In the line items for interest on first and second mortgages, the developer assumes an equal rate of interest for both structures despite a difference in the amount of capital needed. If building companies saw that investors were practically insensitive to the size of an issue, and if taller buildings were more economically viable, it would follow that the availability of public capital would have motivated building companies to raise more and build higher.

The *CORP_SP*, *TS*, and *TERM* variables each provide insight as to the long-term risks perceived by investors. The *CORP_SP* coefficient is negative but highly insignificant. This can be explained either by the corporate bond spread's inability to proxy for the default risk premium or by investors' outlook on the likelihood of default. It is not inconceivable that investors perceived very little default risk. First, economic and rental conditions were strong. Second,

reorganization and foreclosure proceedings were incredibly costly to building companies. Finally, as Halliburton (1939) contends, building companies and bond houses relied on a notoriously "inexperienced public" to absorb securities marketed as "pure gold." As additional evidence of investors' rosy outlook, the *TERM* coefficient is negative and significant. If investors were at all concerned about the long-term prospects of the real estate industry, a longer term would have meant greater credit risk. The negative coefficient reveals investors' optimism. In good economic times, however, prepayment risk would have been more of a concern. Interestingly, the *TS* coefficient is positive and highly significant, indicating that every 1% increase in the height of the high-grade corporate yield curve led approximately to a 0.5% increase in coupon spread. The exact opposite effect was expected. Further investigation will be required to explain why a decrease in prepayment risk would have led to an increase in the coupon spread.

Finally, supporting the importance of the bond house's role in the real estate securities market, all three of the *BH* coefficients are significant. As predicted, the BH_{sws} and BH_{abm} coefficients are negative. This result confirms that investors perceived less credit risk in bonds issued by S. W. Straus and the American Bond and Mortgage Company. As a financial intermediary, a bond house's reputation for financial strength was extremely valuable. S. W. Straus and the American Bond and Mortgage Company boasted the two strongest reputations, being the top two firms by volume and having issued 65% and 13% of the securities in the Moody's sample, respectively. A distant third, with 6% of total issuance, was G. L. Miller. A company that once claimed "no investor ever lost a dollar in Miller First Mortgage Bonds," G. L. Miller collapsed in 1926 (Halliburton 1939). The Moody's sample provides evidence that investors wished to be compensated for this risk. The coefficient of the BH_{glm} variable is

significant and positive, indicating that the influence of G. L. Miller made its bonds riskier than those issued by other bond houses. A full investigation of the bond house's influence (and abuses) would be the subject of a different study, but understanding the extent to which a bond house could have influenced the cost of capital illuminates the financial intermediary's role in 1920s urban construction.

Performance

To the best of our knowledge, no previous scholarship has examined the price performance of real estate securities over this period. We have collected real estate security quotation data from the Commercial and Financial Chronicle's Bank and Quotation section (CFC) over the period 1928-1935. Published monthly, the B&Q section lists the name of each security, some fundamental characteristics, and both the bid and ask prices quoted as a percent of par. A typical quotation appears as follows:

Woodbridge Bldg 5¾s '41 … A&O | 99 | 101 |

This was a bond on the Woodbridge Building in New York City with a coupon of 5.75% maturing in 1941. It paid interest biannually in August and October. The bid and ask prices were 99% of par and 101% of par, respectively. Overall, data on 520 securities was collected, though not every security was listed every month. The list of quoted securities grew substantially over the period. At the beginning of 1928, only 145 securities were listed. By the end of 1935, the CFC was publishing price data for over 430 securities.

To reveal a clearer picture of the real estate securities market as a whole, we computed an equal-weighted average of quoted prices in each month and constructed a time series of these averages. These prices are shown in Figure 8. Immediately apparent is the catastrophic decline

beginning in late 1928. The market fell from a peak in May 1928 of 100.10, a premium versus par, to a low of just 24.75 cents on the dollar in April 1933. Though some value was recovered by the end of 1935, the bonds still traded at less than half of par. We also used the coupon rate listed on each security to construct a series of equal-weighted real estate bond yields over the period. These yields are shown in Figure 9. Because the yields of comparable-maturity Treasury bonds likely affected the yields of real estate securities, we subtracted the Treasury yields used in the cost of financing analysis to compute the real estate securities' aggregate spread over Treasuries, shown in Figure 10. Increasing long Treasury rates probably contributed to some of the initial price decline from 1928 to the beginning of 1929, but while Treasury yields started to contract through 1929, real estate bond yields continued to increase.

From a modern perspective, the most important question that can be answered relates to the timing of the real estate debt crash versus the stock market crash. For stock market returns, we use the historical S&P composite that appears in Shiller (2002). We use two measures of perceived riskiness in the mortgage bond market to discern relative timing: the yield spread over Treasuries and the bid/ask spread. The growth in yield spread over treasuries, chained to January 1928, appears in Figure 11 along with the growth in the S&P composite, also chained to January 1928. Though yield spread tightens for the first 11 months, it begins to move upward in December 1928, nearly a year before the stock market collapsed. Further emphasizing that the real estate market deteriorated before the stock market, we calculated the equal-weighted average bid/ask spread from the prices listed in the CFC for each of months, shown in Figure 12. The bid/ask spread, which reflects the fear of asymmetrical information regarding a security's fair value, increases for most of 1928, drops in the summer of 1929, and spikes significantly at the beginning of September 1929, well before the October stock market crash.

Conclusion

The rise in popularity of publicly issued financial instruments backed by real estate is not only a recent phenomenon. A wide and complex real estate securities market existed fifty years prior to the creation of Fannie Mae and Freddie Mac and was subject to many of the same dynamics that affected the mortgage-backed securities market of the past few decades. Early commercial real estate securities brought economies of scale to small real estate investors, exposed the public to poorly supported assertions of asset value, depended on the financial strength of a few large intermediaries, and ultimately buckled under the top-heavy burden of greater demand for financial assets than for their underlying real properties.

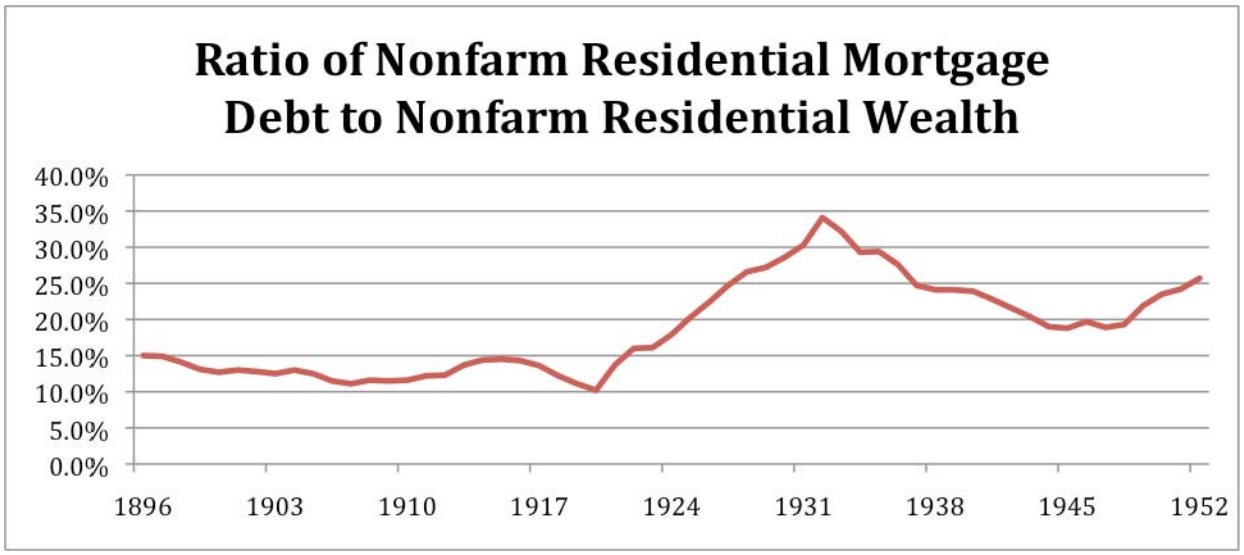
A thorough investigation of the real estate debt market's collapse in the late 1920s would be helpful in enlightening how financial institutions should proceed today. The disappearance of profits from the mortgage-related origination business has put some of the world's most influential firms in peril. Similarly, while real estate bond issuance accounted for nearly 23% of all corporate debt issuance in 1925, it dropped to just 0.14% by 1934 (Johnson 1936a, see Figure 3). The market vanished, and the bond houses, some of which held the most trusted names on Wall Street, quickly followed.

By nearly every measure, real estate securities were as toxic in the 1930s as they are now. Johnson (1936a) documents the dismal landscape for those unlucky enough to have been left with an allocation to commercial real estate debt. At least 80% of the outstanding securities issued in every year between 1920 and 1929 were failing to meet their contracts in 1936 (see Figure 6). Defaults were devastating. Recoverable value on those same issues ranged from approximately 80% for 1920-vintage bonds to less than 40% for 1928-vintage bonds (see Figure

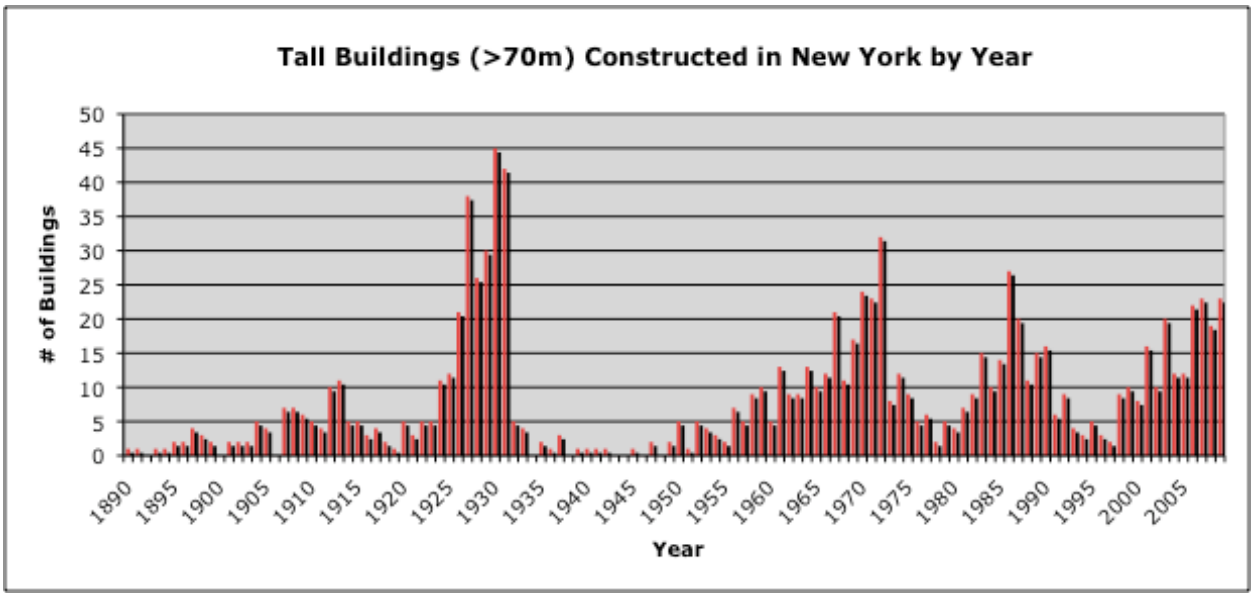
7). Trading utterly ceased. The Real Estate Board of New York attempted to start what was known as the New York Real Estate Securities Exchange in December of 1928, but by the 1930s, days would pass without a single transaction (Time 1936). Further study will hopefully provide some explanation for how such a prosperous market could disappear and not reemerge for decades.

Today, though the public bemoans the underpinnings of a financial system that leaves our modern landscape scattered with vacant buildings and unfinished construction, it is important to recognize that the U. S. has experienced this trauma before. The New York skyline is a stark reminder of securitization's ability to connect capital from a speculative public to building ventures. An increased understanding of the early real estate securities market has the potential to provide a valuable input when modeling for worst-case scenarios in the future. Optimism in financial markets has the power to raise steel, but it does not make a building pay.

-Figure 1-
Source: Grebler, Bank and Winnick (1952)



-Figure 2-
Source: Emporis



-Figure 3-
Source: Johnson (1936a)

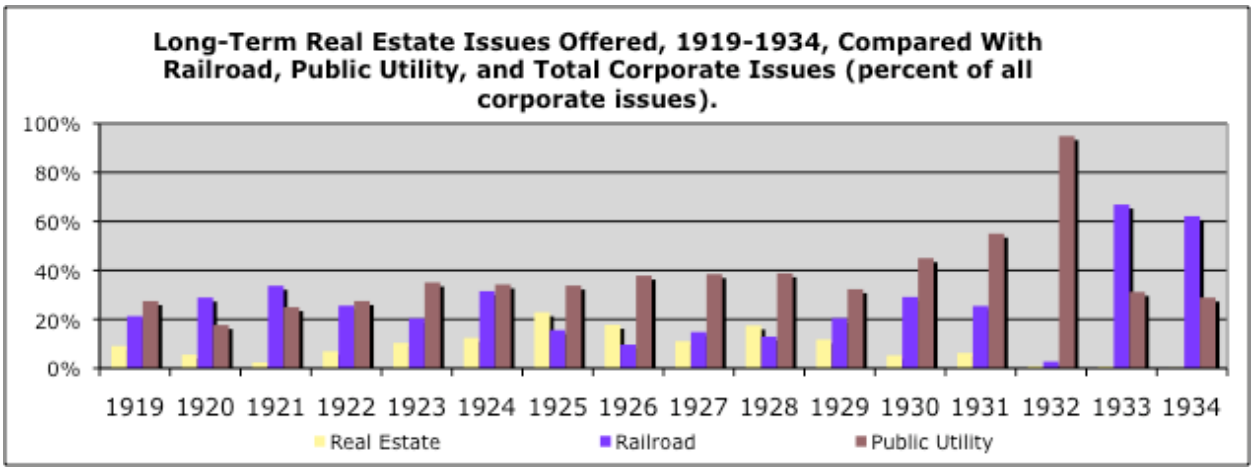
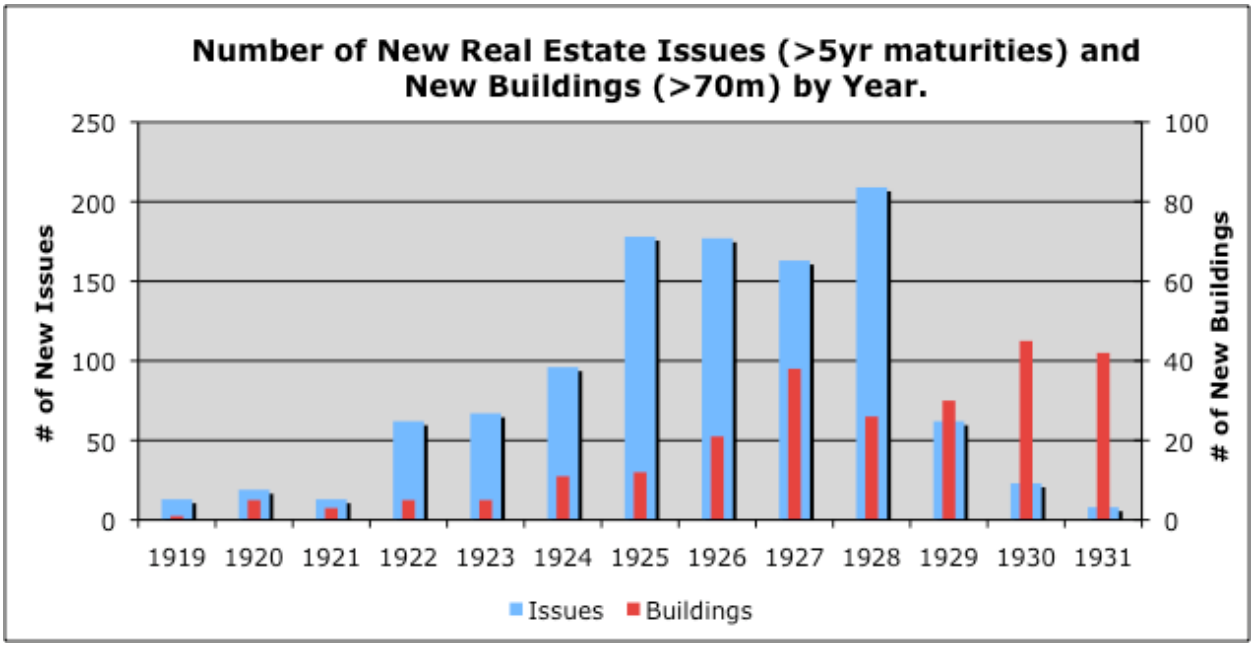
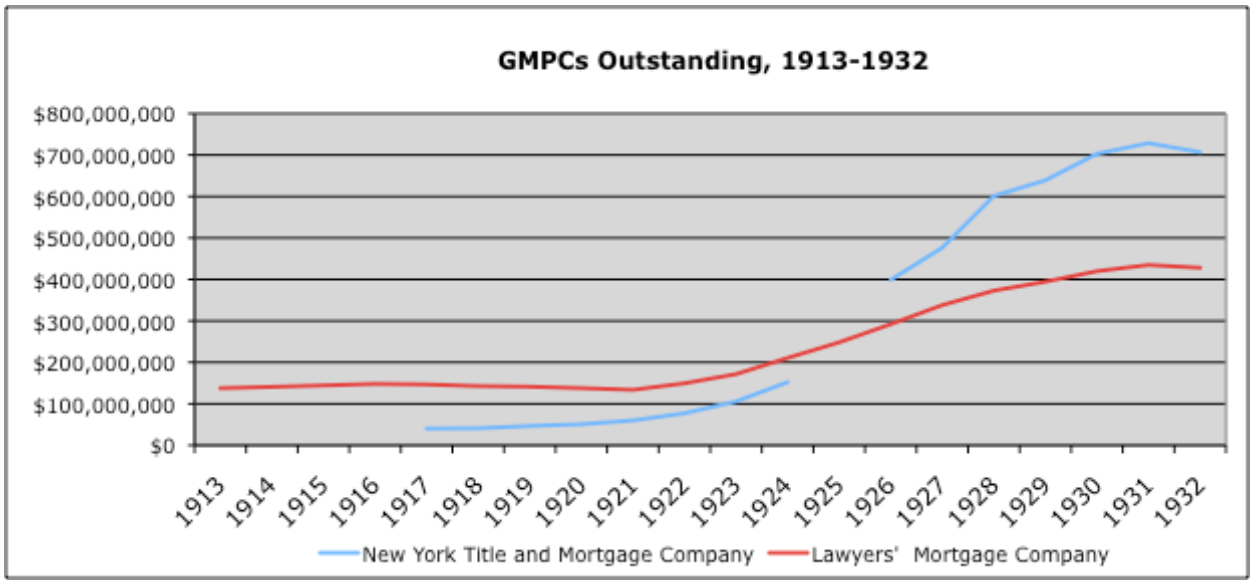


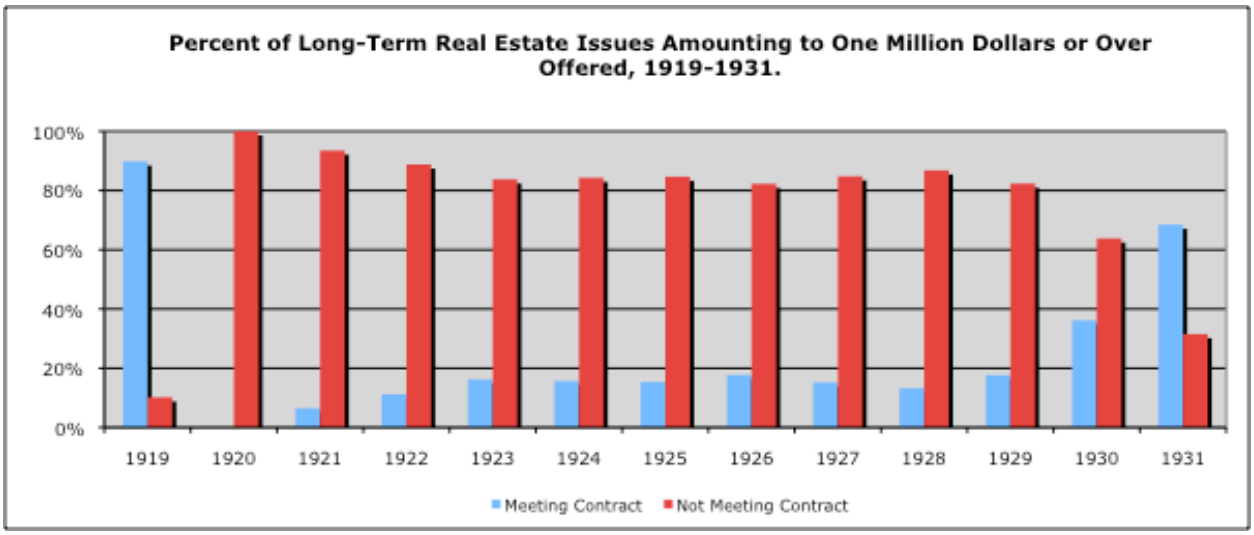
Figure 4
Source: Emporis, Johnson (1936a)



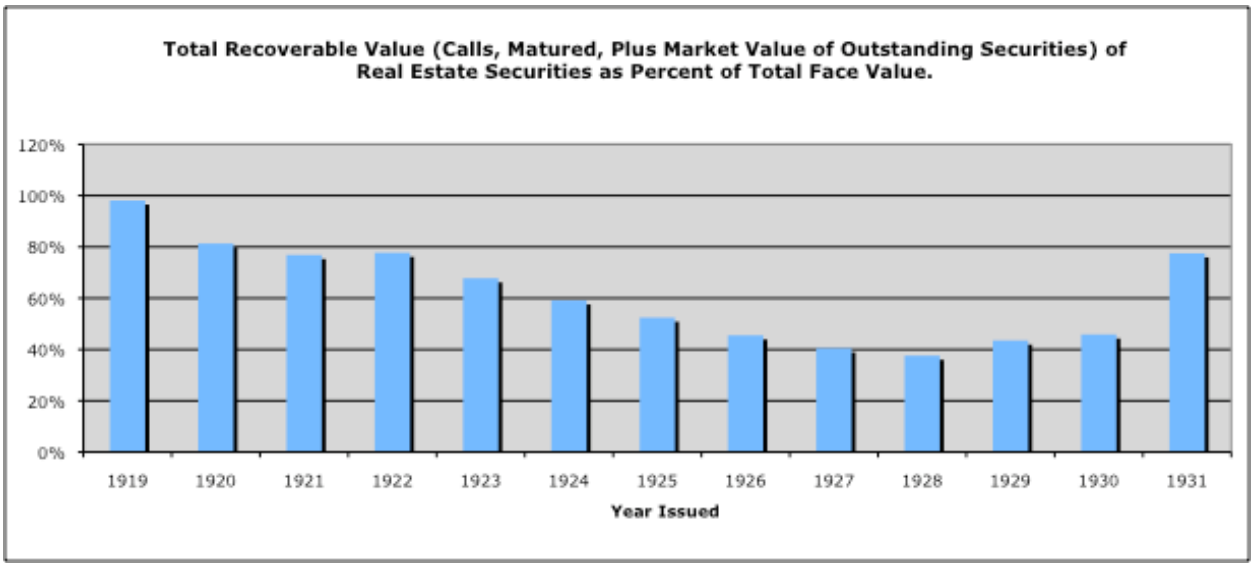
-Figure 5-
Source: Johnson (1936a)



-Figure 6-
Source: Johnson (1936a)



-Figure 7-
Source: Johnson (1936a)



-Table 1-

Long-Term Real Estate Issues Offered, 1919-1934, Compared With Railroad, Public Utility, and Total Corporate Issues (millions of dollars)

Source: Johnson (1936a)

Year of Offering	Real Estate	Percent of Total	Railroad	Percent of Total	Public Utility	Percent of Total	All Corporate Issues
1919	$57.7	9.11%	$135.0	21.30%	$173.8	27.43%	$633.7
1920	$68.3	5.53%	$356.4	28.87%	$218.0	17.66%	$1,234.4
1921	$45.1	2.38%	$638.8	33.69%	$473.2	24.96%	$1,896.2
1922	$160.1	6.95%	$589.2	25.57%	$632.4	27.44%	$2,304.3
1923	$239.3	10.33%	$471.8	20.37%	$812.2	35.06%	$2,316.4
1924	$319.3	12.43%	$809.1	31.49%	$880.1	34.25%	$2,569.3
1925	$695.8	22.89%	$473.6	15.58%	$1,027.1	33.78%	$3,040.2
1926	$647.4	17.75%	$351.7	9.64%	$1,380.3	37.84%	$3,648.0
1927	$573.3	11.05%	$767.5	14.79%	$1,997.0	38.48%	$5,189.9
1928	$683.7	17.48%	$505.7	12.93%	$1,518.7	38.83%	$3,911.3
1929	$333.9	11.75%	$581.2	20.45%	$918.1	32.30%	$2,842.3
1930	$171.1	5.27%	$946.0	29.13%	$1,460.9	44.98%	$3,248.0
1931	$114.9	6.24%	$468.4	25.45%	$1,012.5	55.00%	$1,840.8
1932	$3.7	0.91%	$11.1	2.74%	$385.0	94.87%	$405.8
1933	$0.9	0.65%	$92.6	66.86%	$43.2	31.19%	$138.5
1934	$0.4	0.14%	$178.3	62.13%	$82.9	28.89%	$287.0

-Table 2-
Mooyd's Data Summary, N = 1,253
Source: Moody's Industrial Manual (1926)

	Average	St. Dev.	Weighted Avg.	Minimum	Maximum
Size	$675,773	$1,126,578	--	$10,000	$15,000,000
Rate	6.55%	0.43%	6.42%	8.00%	4.00%
Term (long, yrs)	11.1	3.6	14.0	2.0	31.0

Summary by Length of Term

	No. of Issues	Total Issuance	Weighted Avg. Rate
[0,5) yrs	2	$110,000	6.05%
[5,10) yrs	334	$51,219,000	6.73%
[10,15) yrs	629	$346,340,500	6.45%
[15,20) yrs	255	$363,959,600	6.34%
[20,25) yrs	27	$58,535,000	6.41%
[25,30) yrs	4	$25,795,000	6.67%
>30 yrs	2	$785,000	4.34%

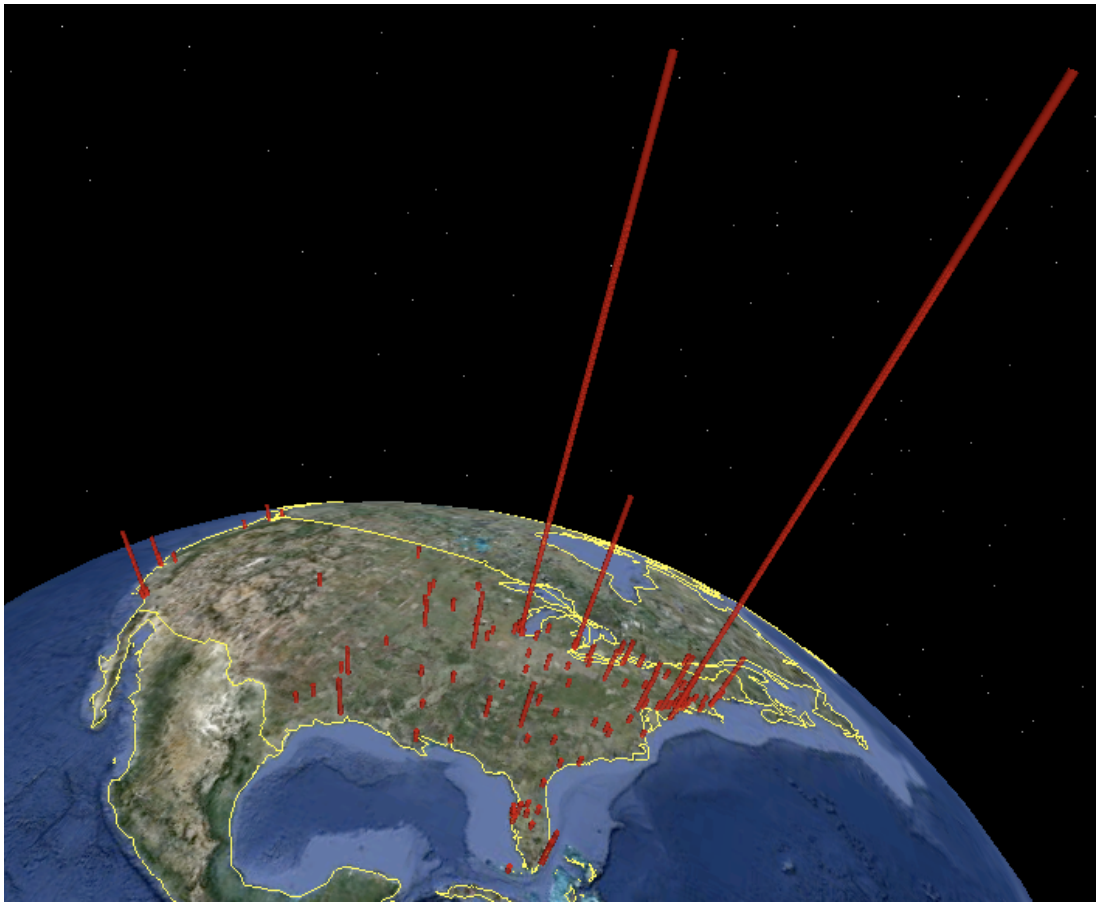
Summary by Year of Issue

	Total Issuance	No. of Issues	Avg. Issue Size	Weighted Avg. Term	Weighted Avg. Rate
1911	$300,000	1	$300,000	16.0	6.00%
1915	$1,400,000	3	$466,667	12.5	6.00%
1916	$3,955,000	14	$282,500	10.3	5.84%
1917	$5,505,000	16	$344,063	10.2	6.07%
1918	$6,985,000	8	$873,125	10.5	6.01%
1919	$33,441,000	47	$711,511	13.7	6.01%
1920	$26,751,500	40	$668,788	14.3	6.19%
1921	$42,486,500	81	$524,525	14.9	6.84%
1922	$141,099,100	195	$723,585	14.9	6.56%
1923	$140,753,500	226	$622,803	14.8	6.51%
1924	$136,054,500	218	$624,103	14.4	6.45%
1925	$235,893,000	301	$783,698	13.1	6.34%
1926	$71,840,000	101	$711,287	12.9	6.37%

-Table 2 (cont.)-

Summary by City

	Total Issuance	No. of Issues	Avg. Issue Size	Weighted Avg. Term	Weighted Avg. Rate
New York, NY	$217,461,600	166	$1,310,010	13.9	6.26%
Chicago, IL	$195,683,500	483	$405,142	13.3	6.50%
Detroit, MI	$58,770,000	80	$734,625	16.4	6.56%
Los Angeles, CA	$24,580,000	27	$910,370	16.0	6.31%
Philadelphia, PA	$21,420,000	21	$1,020,000	12.6	6.42%
Boston, MA	$20,000,000	24	$833,333	13.1	6.31%
St. Louis, MO	$19,880,000	18	$1,104,444	14.5	6.43%
Atlantic City, NJ	$17,865,000	7	$2,552,143	18.2	6.03%
Atlanta, GA	$17,013,000	35	$486,086	14.5	6.97%
Washington, DC	$14,887,500	12	$1,240,625	11.7	6.62%
Brooklyn, NY	$12,730,000	12	$1,060,833	14.0	6.37%
Houston, TX	$12,425,000	8	$1,553,125	15.9	6.34%
Pittsburgh, PA	$10,285,000	9	$1,142,778	13.3	6.51%
Miami, FL	$10,163,500	19	$534,921	13.0	6.87%
San Francisco, CA	$9,785,000	14	$698,929	15.5	6.27%



(Source: Moody's Industrial Manual [1926, issuance bars], Google Earth [map])

-Table 3-
Regression Results

Regression Statistics	
Multiple R	0.82099045
R^2	0.67402532
Adjusted R^2	0.669649821
Std. Error	0.003075568
Observations	1209

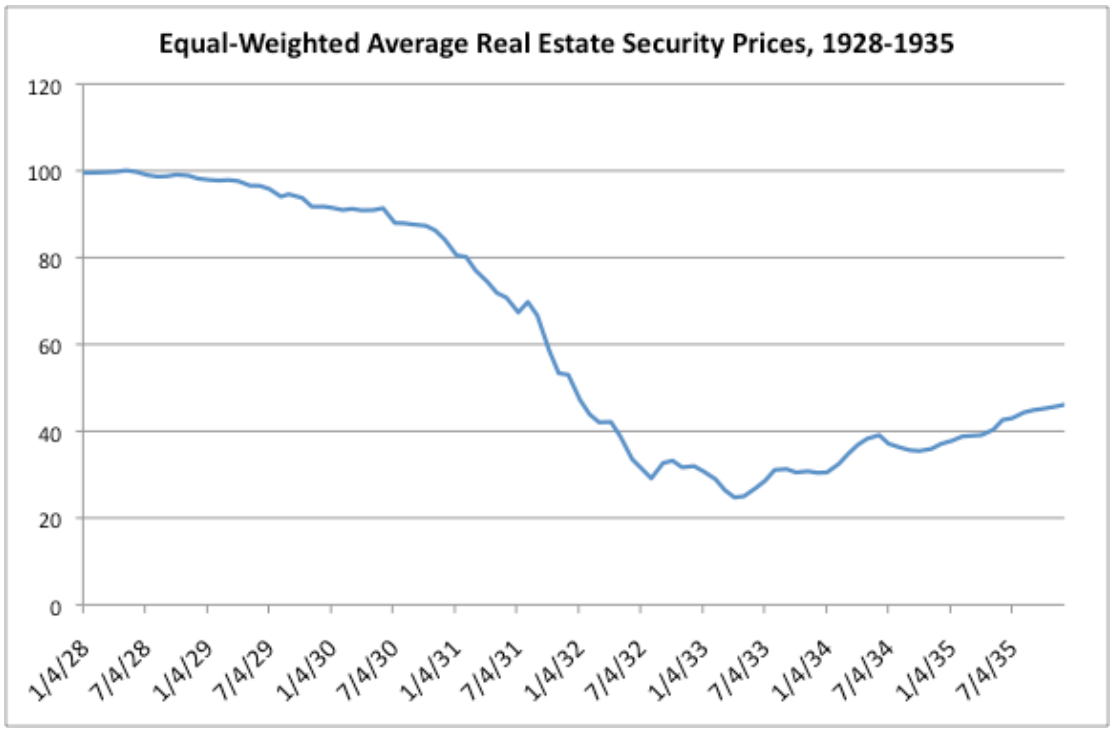
Significant at the 5% level
Significant at the 1% level

ANOVA

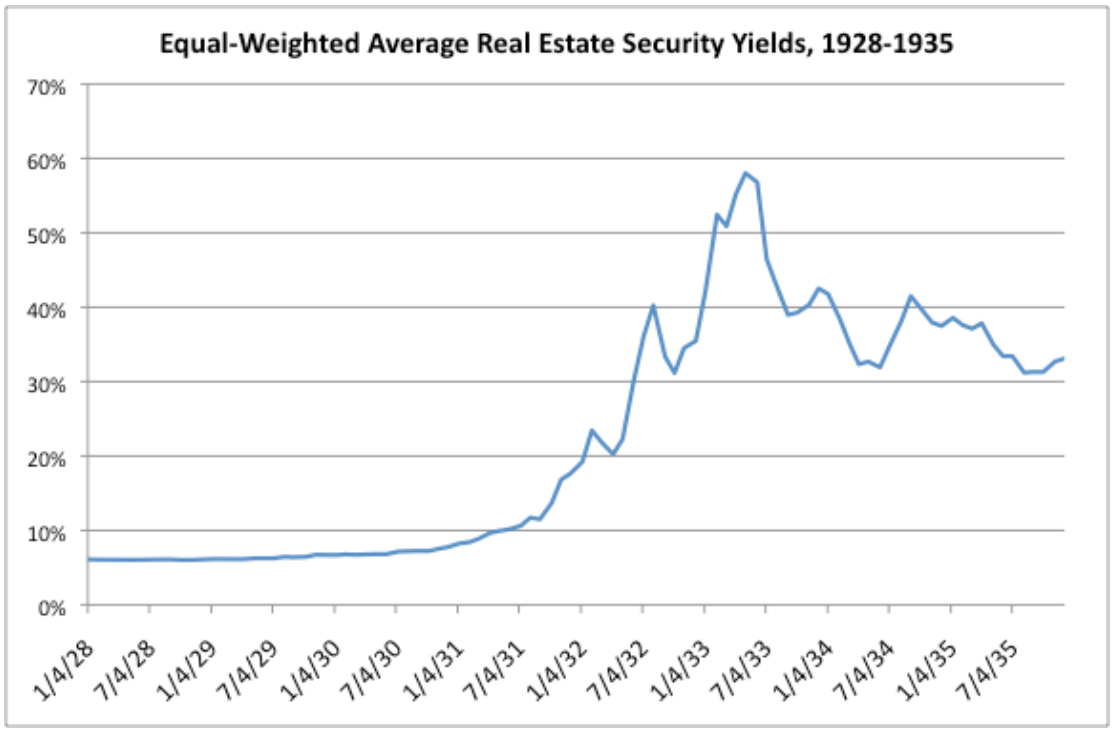
	df	*SS*	*MS*	*F*
Regression	16	0.023314126	0.001457133	154.0453579
Residual	1192	0.011275266	9.45912E-06	
Total	1208	0.034589392		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.021134663	0.001642011	12.87120726	1.36015E-35
CHIC	-2.73109E-05	0.00022882	-0.119355684	0.905013681
NYC	-0.001672515	0.000288176	-5.803788482	8.30259E-09
D_{20}	-0.00018149	0.000741485	-0.24476557	0.806680082
D_{21}	0.000627371	0.000712603	0.880392391	0.378824241
D_{22}	0.003327539	0.000811568	4.100136444	4.40894E-05
D_{23}	0.002237151	0.000786516	2.844380379	0.00452585
D_{24}	0.001596298	0.000914343	1.745840896	0.081096219
D_{25}	0.00251413	0.000816671	3.078508804	0.002127921
D_{26}	0.005572149	0.000817978	6.812105351	1.5223E-11
TERM	-0.000219287	4.19146E-05	-5.231763711	1.98209E-07
ISSAMT	0.000927157	0.000281024	3.299210298	0.000998227
BH_{sws}	-0.003547314	0.000273924	-12.95000295	5.54226E-36
BH_{abm}	-0.00072367	0.000307634	-2.352375302	0.018815845
BH_{qlm}	0.00316252	0.000375886	8.413509729	1.12552E-16
CORP_SP	-0.02983543	0.131297242	-0.22723577	0.82027938
TS	0.49591553	0.052945212	9.366579423	3.61762E-20

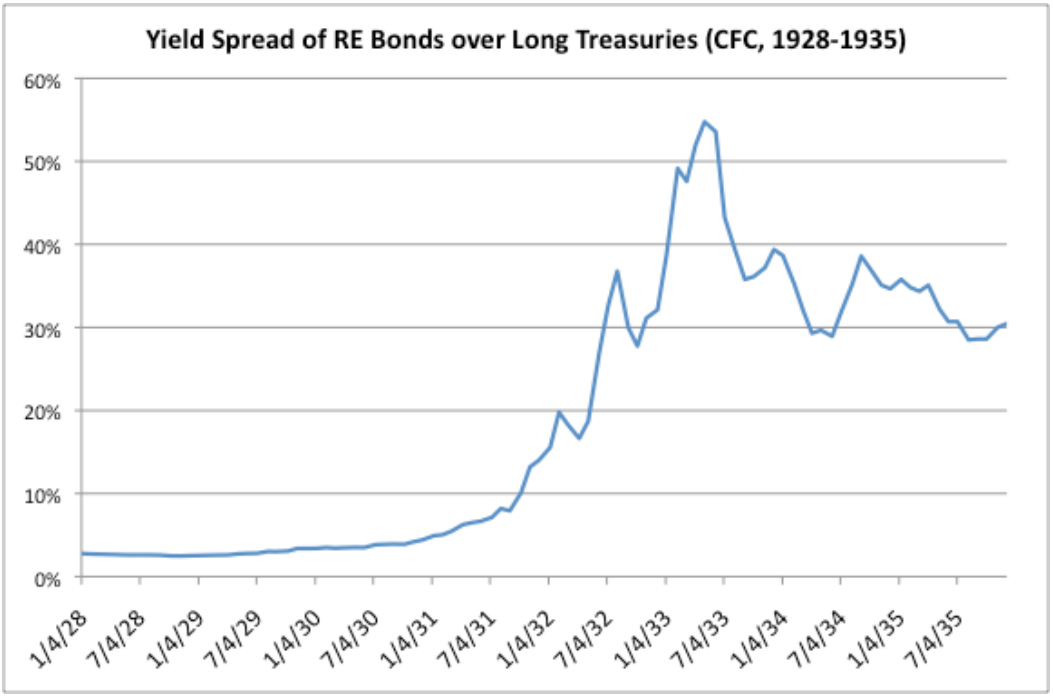
-Figure 8-
Source: Commercial and Financial Chronicle: Bank and Quotation Section, 1928-1935



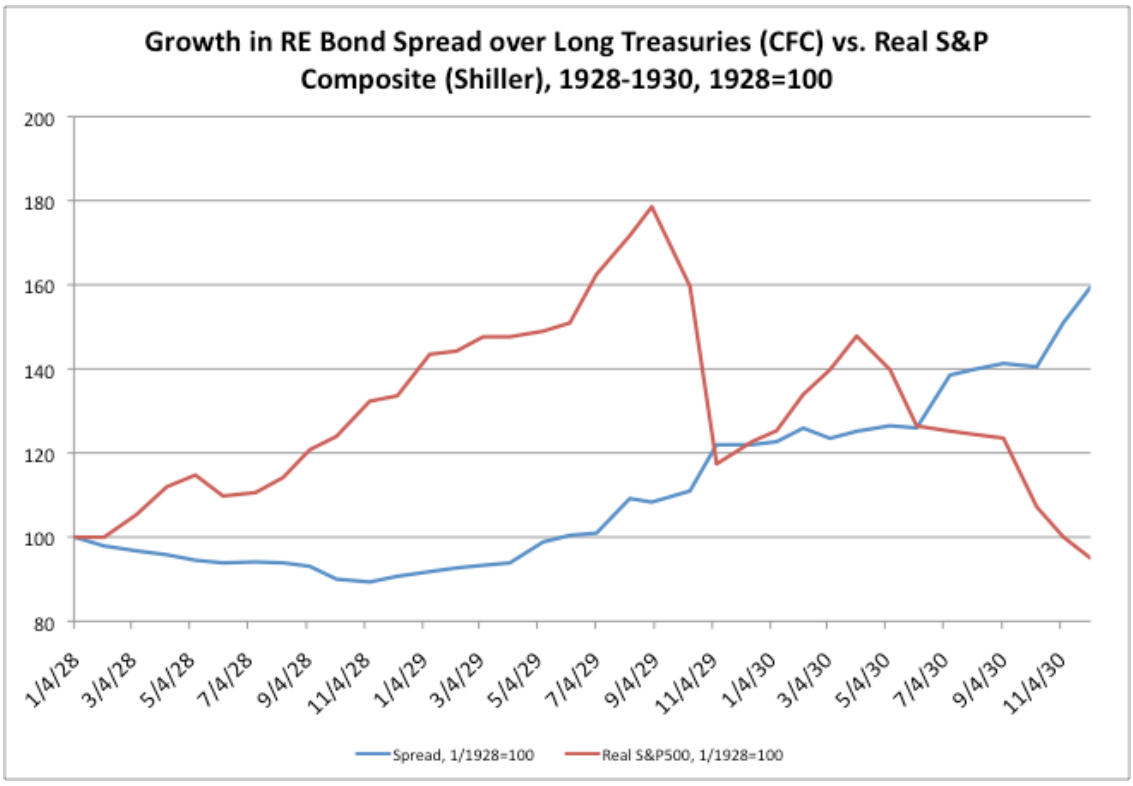
-Figure 9-
Source: Commercial and Financial Chronicle: Bank and Quotation Section, 1928-1935



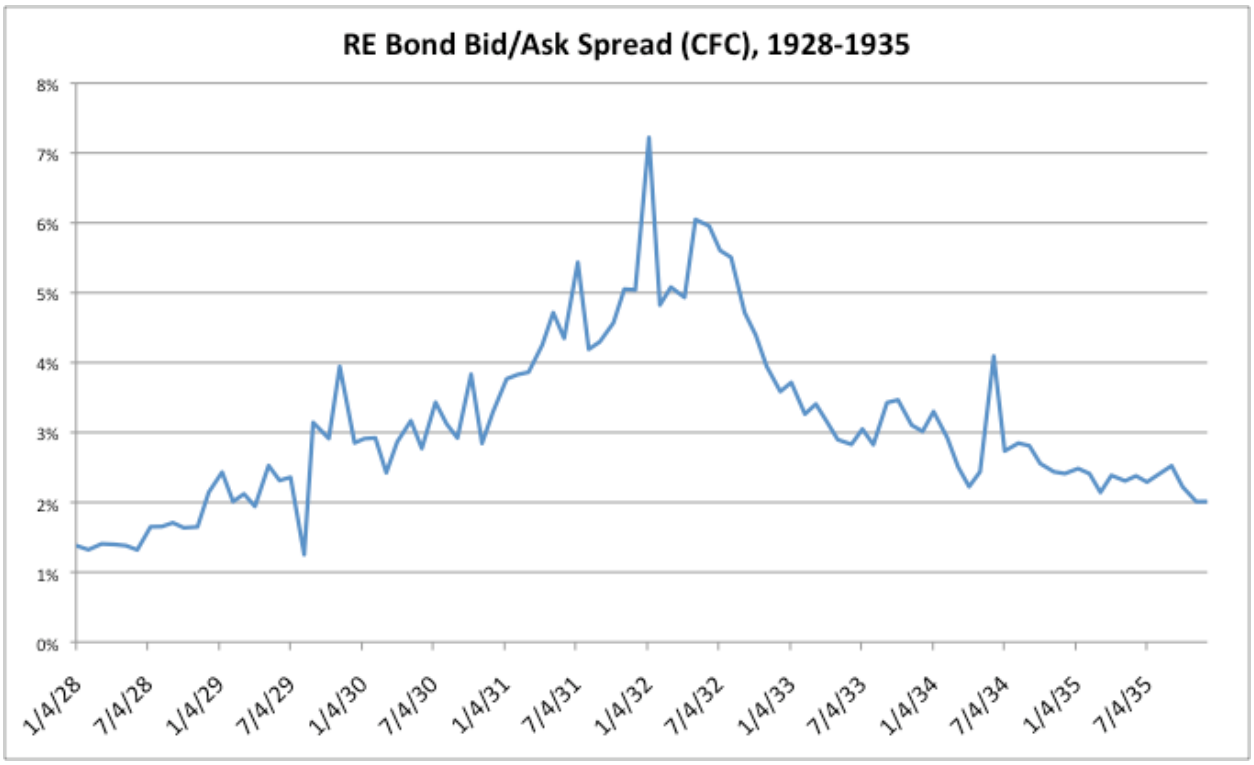
-Figure 10-
Source: Commercial and Financial Chronicle: Bank and Quotation Section, 1928-1935



-Figure 11-
Source: Commercial and Financial Chronicle: Bank and Quotation Section, 1928-1935



-Figure 12-
Source: Commercial and Financial Chronicle: Bank and Quotation Section, 1928-1935



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