Don't Leave Home Without It:
Limited Liability and American Express

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This document is very preliminary and not for quotation or attribution. If asked the author will deny ever writing any of the words in this document other than "and," "but," and "the." That is my story and I am sticking to it.

[ɴ] I have benefited from discussion with Andrew Ang, Joseph Chen, Peter Grossman, Lawrence Harris, Chris Jones and Eric Talley. I am grateful to Steve Norman, of the American Express Company, for his time. Able research assistance was provided by Alex Aftillians and Anna Lan. Once again, and as always, I am indebted to the staff of the University of Southern California Law Library. I would like to blame all of these people for any errors in this paper, but I cannot.

Equation Chapter 1 Section 1Don't Leave Home Without It: Limited Liability and American Express

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Abstract

While limited liability had become commonplace by the turn of the 20th century, some firms continued to be publicly traded without providing shareholders the protections afforded by limited liability. It appears that American Express was the last publicly traded unlimited liability firm, becoming a corporation with limited liability only in 1965. In this paper I examine the effects of adopting limited liability on the value of American Express shares, and on their risk. Consistent with economic theory and previous empirical research [Weinstein (2003)], I find little effect on firm value, and a reduction in both systematic and unsystematic risk. I also contribute to the econometrics of one-firm event studies by providing a GARCH based methodology designed to take into account heteroskedastic and autocorrelated error terms in the return generating process.

When Karl Malden left the priesthood[1] and the police station[2] he did television ads for the American Express Company (AMEXP). The name of the firm conveys a potentially important fact, that until well into the 20th century American Express was organized as a joint stock company, with unlimited shareholder liability for its debts, and not as corporation with no shareholder liability. American Express appears to have been the last major publicly traded company whose shareholders did not enjoy limited liability. In this paper I examine the share price performance of American Express during the period that it became a corporation. The history of American Express provides an opportunity to examine the value of limited liability.

The rise of the limited liability form of organization coincided with the dramatic change in economic conditions that characterized the industrial revolution of the 19th century. In general

[1] Malden was nominated for an Oscar in 1955 for his portrayal of the gruff but sympathetic priest, Father Barry in *On the Waterfront*.

[2] Malden nominated was for an Emmy in 1974, 1975, 1976 and 1977 for his portrayal of the gruff but sympathetic detective Lt. Mike Stone in the series *Streets of San Francisco.*

it has been believed that the limited liability was essential to the industrial revolution. By the early 20th century *The Economist,* which had opposed the expansion of limited liability in 1855, would suggest that limited liability had been as important as the railroad in fostering economic development in the 19th century.[3] Over the past 30 years, however, academics have reevaluated the claims concerning the importance of limited liability. Suffice it to say that, to this point, there has been limited empirical analysis of the value and effect of limited liability. Because limited liability had become the norm by the start of the 20th century, that is, by the time that the modern corporation had become the dominant form of organization for large firms, there is a paucity of data available to researchers on the valuation effects of limited liability.[4] Weinstein (2003, 2004) examined the example of California, which adopted limited liability in 1931, and was unable to detect any valuation effect of the legal regime change. The other significant example of change in liability regime in the 20th century is the move from double to limited liability for shareholders of National Banks in 1935.[5] While Esty (1998) did not examine the effect of the change in liability on share value, he did compare banks with state and national charters. As banks with state charters were subject to a liability regime that varied between states, a comparison of national state chartered banks, after controlling for other characteristics, can provide information about how a change, in liability regime might affect the firm, it does not provide a direct test of how it affects the value of the firm. The American Express experience is unique, and worth examining in its own right as is by far the most recent significant company to adopt limited liability since 1931, having incorporated only in 1965.

At the time that American Express adopted limited liability it was also in the midst of what readers of my generation remember as the "Salad Oil Swindle." In a plot worthy of a certain Sunday night HBO series that is set in the same general locale, one Anthony "Tiny" DeAngelis convinced a subsidiary of American Express to certify that he had, in storage tanks in Bayonne, N.J., over 850 million pounds of edible oil. In fact the tanks were filled with a little oil and a lot of water. This fraud, coupled with DeAnglis' forgery of other warehouse receipts led to

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[3] Cited in Mahoney (2000).

[4] Moreover, as I will argue below, it is not clear that limited liability is desirable (that it, utility maximizing) even it is value maximizing.

[5] Prior to 1935 shareholders of nationally chartered banks were liable for up to twice the stated capital of the bank in the event of a failure. Macy and Miller (1992) examined the system and found that creditors were, in fact, able to obtain funds from shareholders for their liability, so the provision did have some teeth.

claims against American Express that were, in amount, greater than the market value of AMEXP equity. These claims were, eventually, settled for amount that cost AMEXP, on an after tax basis, $32 million.

In this paper I examine the share price performance of AMEXP during the period that it changed it legal form to have limited liability in order to draw to see if moving to limited liability had any discernable affect on shareholder wealth. Since theory predicts that a shift from unlimited to limited liability will reduce both the systematic and the unsystematic risk of equity, I also examine changes in risk associated with the move to limited liability. At the time AMEXP adopted limited liability, it traded over the counter. This research, then, also provides some insight into the efficiency of the pre-NASDAQ over-the-counter market.[6]

I proceed as follows. The next section of the paper reviews the economics of and empirical evidence concerning limited liability and also presents a brief history of American Express Company. Section 3 provides details of the data and empirical methods that I employ. Section 4 presents the empirical results. Section 5 provides a summary and suggestions for further research.

1. On the History and Economics of Limited Liability and the History of American Express

1.1. Limited Liability in the UK and the US

At the start of the 19th century limited liability, when it existed at all, was right granted by a sovereign or parliament to a specific enterprise for specific purpose. By the end of the 19th century in virtually all developed countries any individual or group could form a business enterprise for any lawful purpose and have the enterprise enjoy limited liability.[7] We also know that the 19th century marked, for much of the then developed world, a dramatic rise in living standards. It is tempting, therefore, to conclude that limited liability was essential for this growth. As I stated earlier, a common view is that provided by *The Economist* which, in 1926, editorialized that the "nameless inventor of limited liability" was as important to economic development in the 19th

[6] There have been a few studies that use share prices from the pre-CRSP period to draw inferences that make use of market efficiency concepts. The prize goes to Klerman and Mahoney (2005) who examine the value of judicial independence in England using share price data from as far back as 1701.

[7] There were some exceptions. The main exception was California which did not provide for limited liability until 1931. Weinstein (2003, 2004) examines the effect of limited liability on share prices and the political economy surrounding the move to corporate limited liability in California.

century as "Watt and Stevenson."[8] Such assertions should be taken with a grain of salt. First, the history is not quite right. Freely available limited liability did not come to the U.K until 1856.[9] By then most of the main advances of the industrial revolution had already occurred, essentially all that remained was the move from steam to electric power. While it is true that virtually all railroads, canals, and public utilities did have limited liability this was due to the fact that they required an act of parliament (or a royal charter) in order to acquire their needed land by eminent domain. As they had to get an act through parliament, which at that time was about as honest as the Chicago City Council, they found it advantageous to throw in limited liability. Meanwhile, other large scale enterprises, such as steel mills and virtually the entire Manchester textile industry were organized as partnerships with unlimited liability.[10] Thus, while it appears that, given the opportunity business people preferred limited liability, large scale enterprises were possible without it.

What did business people want in the way of corporation law? We get some information from the debate surrounding the Joint Stock Companies Act of 1844 (7&8 Vict. c. 110). This act provided that all large (over 20 investor) partnerships, or any partnership with more than 7 members and traded partnership shares, had to register with the Board of Trade (the equivalent of U. S. Department of Commerce) and file semiannual, audited, financial statements and lists of shareholders. These filings could be inspected by the public. In return for these restrictions companies (which were not "corporations") got what they appear to have wanted: 1) the ability to own property separate and distinct from the property of their investors, along with having that property protected from the partners' individual creditors;[11] 2) the ability to sue and be sued in the name of the enterprise, and 3) and indefinite life. While there was some desire for limited liability, Gladstone, who drafted the legislation and chaired the hearings on it did not push

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[8] Cf fn. 3 This is high praise indeed, as Watt invented the steam engine and Stevenson the railroad locomotive.

[9] An earlier act [the Limited Liability Act of 1855 (18 & 19 Vict. C. 133)] was repealed and it was not until Joint Stock Companies Act of 1856 (19 & 20 Vict. c. 47) and the Joint Stock Companies Act of 1857 (20 & 21 Vict. c. 89) that the issue of freely available limited liability was settled. Even then the entities were not "corporations" but partnerships and banks and insurance companies were excluded.

[10] Though, unlike partnerships today, the partnership interests in these companies were often publicly traded (Harris 2000).

[11] What Hansmann and Kraakman (200) term "offensive" asset partitioning as opposed to limited liability which is what they term "defensive" asset partitioning.

strongly for limited liability.[12] Nor, indeed, did *The Economist* a decade later (notwithstanding their view in 1926), when limited liability was in the offing, editorializing that statutory limited liability was unnecessary as firms could obtain limited liability by writing into their contracts, as insurance companies typically did.

In the United States, because corporate law is a matter for the states, limited liability evolved over time. The American experience with limited liability starts in the second decade of the 19th century when the New England states, in a move designed to foster the growth the textile industry, permit firms to incorporate with limited liability. By the latter part of the 19th century every state except California had adopted limited liability.[13]

1.2. On the economics of limited liability

Modern analyses of the economics of limited liability tend to conclude that, absent tort liablity, it is of (pardon the pun) limited value (Carney (2000); Halpern, et.al. (1980); Hansmann and Kraakman (1991); Leebron (1991)). This is easy to see. Consider a Coasian world of no taxes, no transactions costs, and no information asymmetries. If suppliers of goods and capital know that shareholders are not liable for corporate obligations they will charge more for the increased risk that they will not be able to recover. Any increased value the investors experience from being protected against corporate creditors is offset by a reduced profitability of the corporation as its suppliers charge more. Thus, at least to the extent that corporate obligations arise from contract, the value of limited liability is capped at the value the anticipated transactions costs. While these may be large, it is hard to believe that they are as great as the value of the change to machines associated with the industrial revolution.

Moreover, there is a cost associated with limited liability. Limited liability provides and incentive for shareholders to take on more tort risk. This simply reflects the incentive problems associated with the "bankruptcy put." To the extent that bankruptcy risk arises not from contract but from tort, shareholders do not bear it—potential tort victims do. Which effect is dominant,

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[12] He was President of the Board of Trade in the first Peel government.

[13] There were some pockets where liability was equal to two or three times the paid in capital. Thus, while shareholders had some liability for corporate debts this liability was capped at a certain dollar amount. This was the rule, for example, in Minnesota into the 1920's.

the benefits of reducing transactions costs, or the cost or risk externalization is an empirical question.[14]

Little empirical work has been done on the value of limited liability. Analyses of macro economic data is difficult because the rise of limited liability coincided with a period of rapid technological change, making it difficult to parse out the value of limited liability. The only direct test of the value of limited liability on share prices appears to be Weinstein (2003) which was unable to detect any affect of California's move to limited liability on the price of shares of publicly traded California corporations. Moreover, Weinstein(2004) presents evidence that the business community was not the driving force for adopting limited liability in California, rather it appears to have been the organized corporate bar.[15]

The history of American Express also provides the opportunity to examine the effect of limited liability on the systematic risk of the equity. Assume that the firm's assets have positive systematic risk. In that case, we would expect that removing the possibility of an assessment, which is more likely to happen when there are bad outcomes for the company, which would be associated with poor economic conditions and hence low returns on the stock market, should be associated with a *decline* in the equity β.

It is tempting to wonder how there could be a market for the shares of an unlimited liability company. Whatever theory might suggest, in fact there was an active market. The market was sufficiently active that a number of open-end mutual funds owned shares in AMEXP.[16] This is

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[14] It is an empirical question that is difficult to evaluate simply by measuring the incremental value associated with limited liability. In a world with limited liability the general equilibrium is different as all firms choose (tort) riskier production technologies. Even if one could show that per-capita income is higher with limited liability, if the economy is populated with risk-averse agents their utility of wealth could be lower if the incremental risk associated with the riskier production processes was not completely diversifiable. Further, if tort victims are, on average, less wealthy than shareholders limited liability also affects the distribution of income which may matter to some.

[15] For example, when, in the period from 1929-1931 firms could obtain limited liability by a simple procedure, there is no evidence that they rushed to do so. This fact is based on statistics covering both public and private firms.

[16] Shabecoff (1963) notes that "…a total of 25 investment companies owned 278,600 shares, or 6.3 per cent of the all American Express shares outstanding as of Oct. 1. These companies included both closed-end companies and mutual funds of open-end investment companies." The article specifically cites the Dreyfus Fund as owning shares. A similar article in the Wall Street Journal (1964) stated that Putnam Growth Fund, George Putnam Fund, Fidelity Capital Fund and Managed Funds had sold shares of AMEXP at the end of 1963, while at the same time some other funds increased their holdings. This story reports that at the end of 1963 44 institutional investors held 301,000 shares of AMEXP.

important because it means that sophisticated managers were willing to invest in an unlimited liability company. It is inconceivable that these managers were not aware that AMEXP's investors did not enjoy the protection afforded by limited liability.

Even if I find that moving to limited liability, in 1965, was associated with a significant change in the value of AMEXP, it would not mean that limited liability was, in general, a value maximizing form of organization. It would also be a mistake to conclude that any valuation effect of the move to limited liability by AMEXP in 1965 was identical to that which would have occurred if *all* firms had moved to limited liability in 1965. In 1965 AMEXP was almost certainly the last publicly traded firm in the United States with any form of unlimited liability. As such it was "the skinny kid with the funny name" and there might well be what one of my colleagues terms the "asterisk effect."[17] After adopting limited liability AMEXP is just like the other firms and, even if it were relatively costless to evaluate the potential liability, investors would have had to think about the fact that evaluation was easy. Moreover, AMEXP paid another penalty for being an unlimited liability company. As a joint stock company it faced legal impairments (other than potential shareholder liability) that were not faced by a corporation. A memorandum from American Express' counsel to Governor Rockefeller's counsel (Corbin, 1964),[18] lays out some non-liability related impediments that incorporation removes, including: (1) a lack of clear-cut statutory and decisional law regarding company, as opposed to corporate, activities, leading to increased uncertainty about the legality of company actions; (2) ease of registration of new shares for raising additional capital or for use in mergers (indeed, at that time, New York Law did not permit a company to merge with a corporation);[19] (3) potential inability to bring suit in states where suit by a foreign joint-stock company is difficult and (4) difficulty by regulators in dealing with a company rather than a corporation.

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[17] Larry Harris, personal conversation, July 27, 2004.

[18] The wording of the Corbin memorandum suggests that these points came from a draft provided by "the company." AMEXP's counsel at the time was Carter, Ledyard & Hilburn.

[19] Delaware law did permit such a merger and the memo suggests that this provision might lead American Express to move its domicile to Delaware.

1.3. On the history of American Express

The history of American Express provides another situation which can be used to examine the value of limited liability. Grossman (1987, 1995). provides a detailed history of American Express and some evidence on the market for its shares prior to 1965.

At its founding American Express was, not surprisingly, an express company. At the time of its founding about 1850, and until the early 20th century, the United States Post Office did not have a parcel service. Package and large document services were provided by a small number of express companies that organized, from 1850 on, one of the most effective and long lasting cartels in American history (Grossman 1992). With one exception the firms in this cartel all were organized as unincorporated joint stock companies rather than as corporations.

Grossman (1992) argues that this form of organization provided significant advantages to management. Consider American Express. As a company governed by New York Companies Law in 1850, and as revised in 1894, AMEXP's board enjoyed much more power than it would have had AMEXP been incorporated: 1) the board was not elected by the shareholders, but rather was self perpetuating, 2) there was no requirement for shareholder meetings, and 3) there was no requirement to provide reports to the shareholders on the firm's performance. The express companies were immensely profitable over this period[20] and it appears that keeping their profits secret served as a barrier to entry. Because of the secrecy available through this organizational form, it was easy for the board to advance corporate funds to individual members to advance their own private interests. Grossman (1992, 305) reports that loans to board members (often later forgiven) and support for private ventures was common at AMEXP. One would think that such actions make it harder for AMEXP to raise money, and indeed it probably did. However, this was of no consequence, as AMEXP, though publicly traded, did not return to the equity markets for new capital.[21] The express business required little in the way of assets, simply wagons for deliveries. The heavy capital expenditures were made by the railroads with which the express companies contracted to carry the parcels. Even after the Interstate Commerce Commission was established the express companies were able to maintain their unique position, as they were

[20] Through the late 1880's Grossman estimates profit margins in excess of 30% with return on capital "of at least 10% and in some years 30% or more…" Grossman (1992, 303).

[21] Lamoreuax and Rosenthal (2004) examine the state of corporate governance in partnerships and corporations in the 19th century.

not considered "common carriers." It was not until 1906 that the ICC gained any authority over the express companies, and by then the express business was fading as the Post Office initiated parcel post service. By 1918 the express companies were out of the express business, as a result of the effective nationalization and reorganization of the express business during World War I Grossman (1987 p. 156).

By the time it exited the express business, however, American Express was no longer primarily an express company. Rather, it had become a financial intermediary. When AMEXP was founded the services offered by the Post Office were limited. For example, it was not until the creation of third class mail, in the 1860's that the Post Office delivered newspapers and magazines, prior to that time this had been the more-or-less exclusive province of the express companies Grossman (1987 p. 80). In 1864 Congress authorized the creation of the postal money order which severely damaged the cash delivery business of the express companies [Grossman (1987 p. 80)]. In the middle of the 19th century only the wealthy had personal checking accounts and physical delivery of cash was commonplace. American Express entered the money order business in 1881. AMEXP had a nationwide network of over 4,000 offices to sell these money orders (MO's) and almost form the start they were profitable (Grossman 1987 p. 84). The experience with money orders lead, in 1888 to the creation of the Traveller's Cheque (TC). By the time AMEXP got out of the express business after World War I the TC and MO lines were more than sufficient to support the firm.[22] The important point to understand about these lines of business is that, like a bank, AMEXP could invest the float. Both MO's and TC's were purchased and paid for before they were cashed. AMEXP invested the funds received and did quite well by it. Also, by the time AMEXO left the express business it had formed an international network of offices to support the MO and TO business[23]. An interesting aspect of both of these lines of busi-

[22] At the time it exited the express business AMEXP did keep express contracts with two small *intra*state railroads. Under New York law only banks and transportation companies could sell their own MOs and TCs. As AMEXP had no domestic banking franchises they had to keep a toe in the express business in order to keep issuing financial paper[Grossman (1987, p. 156)].

[23] It was also able to maintain an *international* express business even after it was barred from the interstate express business.

ness is that there were relatively low barriers to entry. Thus, it was important to keep the true performance of the TC and MO secret.[24]

By the turn of the 20th century, then, American Express was a major financial institution. In 1903 it had capital and surplus of about $28 million, exceeded only among banks by National City Bank of New York, and $4.5 million higher than that of the second largest bank (Grossman, 1987 p. 126). Further, it was the equivalent of a major bank without the encumbrance of a bank charter and attendant regulation, or the restrictions imposed by the corporate form. Grossman (1987 p. 182) describes the situation in 1919:

> …AMEXP retained its status as an unincorporated stock association, which by definition spared it from what the lawyers[25] called the "annoyance or interference of disgruntled shareholders," and regulation of its "quasi-banking" activities. Since that form of organization still protected the company from many laws and prying eyes, the lawyers considered it the company's "most valuable asset."

In 1929 Chase National Bank (and its securities affiliate in those pre-Glass-Steagle days, Chase Securities Corporation) obtained control of AMEXP, purchasing 97% of the stock in a tender offer. Chase's intent was gain complete control, but this was not to be.[26] Eventually, in 1934, Chase spun off the shares of AMEXP that it controlled into an independent corporation, Amerex Holding, which was, for a while, listed on the NYSE. The holding company was dissolved in 1950 and once again AMEXP was a widely held and traded company (Grossman, 1987). There were no further changes on legal structure or control until AMEXP incorporated in 1965.

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[24] Grossman (1987, 207) describes the situation in 1928 as follows: "The strangest aspect of the float was the few outside the company knew about it and fewer still appreciated its importance. Nearly every AMEXP employee worked in travel, which made no money, while a handful of staffers…made all the money….For the next thirty-five years, no one in the company talked about the float publicly for fear that banks and other travel companies, realizing how lucrative it was, would get into the business." AMEXP's market share at that time was over 50%.

[25] Their law firm at the time, Carter, Ledyard & Milburn, continued represent AMEXP through the time of its incorporation in 1965.

[26] Chase could not get control for a few reasons. After the tender offer AMEXP became a subsidiary of Chase Securities, however there were still 4,702 outstanding shares of AMEXP. AMEXP's status as an unincorporated company meant, that approval of all shareholders was required to merge AMEXP into Chase, which was difficult. An additional complicating factor was Chase's corporate structure, in which shares of Chase Securities (the entity into which AMEXP would be merged) could be traded only as part of a unit that included shares of Chase National Bank.

1.3.1. The Salad Oil Swindle

At about the same time that it was planning to incorporate AMEXP became enmeshed in one of the great financial scandals of the 1960's, the Salad Oil Swindle. After World War II AMEXP got into the field-warehousing business. Clients would store inventories in warehouses controlled by American Express Warehousing (AEW), which would then issue warehouse receipts guaranteeing that the inventory was in the warehouse and the client would post these as collateral for borrowing. Of course, the subsidiary, and possibly AMEXP, could be liable if the inventory was not actually there. The business never made or lost much money and by the early 1960's AMEXP had decided to get out of that business. However, fate intervened. During the early 1960's AEW established a very profitable relation with one particular client, Anthony DeAngelis who controlled a number of companies the most important of which was Allied Crude Vegetable Oil. As the name suggests, DeAngelis traded edible vegetable (primarily soybean) oils. These were stored in tank farm in Bayonne, New Jersey. This account was, by 1963, producing all of the profit at AEW [Grossman (1987, 307)]. In June of 1963 AMEXP sold AEW and all its business relations save that with DeAngelis. At that time it established a new subsidiary, American Express Field Warehousing Limited (AEFW) whose sole client was the DeAngelis interests. At the time AEFW was established, it had capital of $100,000. AEFW had issued receipts for 805 million pounds of oil (which then had a value of about $.10 per pound), against supposed holdings of 850 million pounds.

Unfortunately for AEFW, most of the "oil" had the caloric content of water. In fact, it was water.[27] The oil was kept in particular tank farms at the Bayonne facility and monitored AEFW employees. Unfortunately, these same employees also worked for DeAngelis (in fact, he paid them more than AEFW did). Moreover, had AMEXP but checked it would have known that at the same time that they had issued receipts for over 800 million pounds of edible oil, the U.S.

[27] Until researching this paper I had assumed that the swindle worked because oil floats on water. In fact it took a little more than that. DeAngelis had modified the tanks so that small cylinders filled with oil were right below the access ports on top of the tanks. A dipstick used to check the amount of liquid in the tank would be in a cylinder filled with oil even if the rest of the tank was filled with water. Moreover, the tanks were joined by an underground system of pipes that AEFW never controlled. Of the supposed 850 million pounds of oil it appears that there were, in fact, no more than 3.5 million pounds. This number is derived from 1) the fact that AEFW has assets at the time it failed of $368,684 (The Wall Street Journal, March 26, 1965) and 2) that the price of soybean oil was on the order of $.10 per pound.

Census Bureau reported that aggregate inventories of Salad Oil in the entire U.S. were less than that amount.[28]

In the fall of 1963 AMEXP grew concerned about its exposure to DeAngelis, which amounted to at least $80 million. At that time the aggregate market value of AMEXP's equity was on the order of $250 million, with a book value of $78,635,777 as of Dec. 31, 1963. AEFW decided not to issue any more receipts to DeAngelis. Unfortunately for "Tiny" the cut off came just as he was attempting to corner the soybean oil market and had great need for liquidity. Unfortunately for AEFW DeAngelis found a pad of blank AMFW warehouse receipts and exercised his skilled penmanship.

The oil hit the lettuce in late November, 1963[29] when DeAngelis was unable to make some required deliveries and his firm was forced to enter Chapter 11. AMEXP shares fell from 60 to 30 in a matter of days. By the end of 1963 it appeared that aggregate claims against AMFW might exceed the market value of AMEXP.[30]

The extent of AMEXP's liability, and hence the potential for a shareholder assessment is not clear. From the very beginning AMEXP claimed that since AMFW was a separate corporate subsidiary of AMEXP there was no liability. AMEXP then took the position that it would negotiate a settlement with the claimants as it did feel a moral (but not legal) obligation to make some restitution and protect its good name.

AMEXP, in fact, faced may have faced significant legal liability. Any liability would depend on the plaintiff's ability to "pierce the corporate veil." AMEXP contended that it would be able to defeat any attempt to pierce the AMFW corporate veil to its sole shareholder, AMEXP but this is not clear.[31]

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[28] The latest report available at that time (U. S. Dept. of Commerce, 1963) reported a total of only 788.1 million pounds of *both* crude and refined soybean oil in the entire country.

[29] The first report appears to have reached the market sometime in the early afternoon of November 22, 1963. Other events of that day quickly dominated the news and the market closed, not to reopen until November 26th.

[30] On December 31, 1963 the New York Times reported that claims "may total $150,000,000" (Ranzal, 1963). On that day AMEXP closed at $38.75 per $5 par share for an aggregate market value of about $162,000,000. Later estimates of the claims were even higher.

[31] Veil piercing is one of the fuzzier areas of corporate law. In general the court will conduct a two pronged test before deciding to pierce. First, the court must conclude that failure to pierce would further some fraudulent activity, a test that is clearly met here. Next the court would look for various indicia of a separate corporate exis-

If AMEXP were to be liable, the exposure was, potentially, large enough to force liquidation. Grossman (1987, p. 325) notes that in the early weeks of the scandal "Clark and the lawyers were unsure whether [AMEXP] would have enough money to cover the lawsuits." In any event, AMEXP did enter settlement negotiations and did, eventually, settle the claims for a total payment of $60 million, which amounted to only $32 million after taxes (Grossman 1987 p. 327)[32]

1.3.2. Incorporation

By the early 1960's top management at AMEXP wanted to incorporate. They started working on a plan of incorporation but the "Salad Oil Swindle" discussed above delayed incorporation until 1965. Incorporation presented a unique set of legal problems, and a political problem that was exacerbated by the scandal. For most firms in AMEXP's situation converting to a corporate form would have been fairly easy. A new corporation would be formed and this new corporation would simply acquire all the assets and assume of the liabilities of AMEXP. For American Express, however, this route was potentially too costly. As noted by the New York City Bar:

> While the same result could have been achieved through the formation of a new corporation and a sale of assets to it or by merger with a Delaware Corporation, we understand that these routes were not attractive to American Express Company, which desires to continue operations as a New York entity and which would have encountered difficulties in some states where certain phases of its operations (e.g., the sale of travelers checks) are permitted under "grandfather" statues. (Committee on State Legislation Association of the Bar of the City of New York. New York State Legislative Annual, 1964)

AMEXP needed to incorporate in a manner in which the new corporation would be the old company but with limited liability. Merger into a dummy corporation would not accomplish

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tence. However, there are some facts which suggest that the outcome of any such litigation was much more problematical. For example, plaintiffs were likely to argue that AMFW had been undercapitalized at the time it was created and that American Express knew, or should have known, that it was insolvent at its inception. In the summer of 1963, when AMFW was created, it had issued receipts to DeAngelis for over 800 million pounds of oil, an amount which, it turns out, exceeded the total stock of vegetable oil in the U.S. AMEXP's defense would have to be that they had been mislead by a rogue employee, (only September of 1963, did Howard Clark the President of AMEXP learn that Donald Miller, the President of AEFW had invested in one of DeAngelis' companies (Grossman, 1987 p. 316)) but that may well not have been sufficient to defeat the veil piercing action.

[32] Settlement talks dragged on through mid 1965. The final suits were not settled until the early 1970's or later.

this, nor would sale of all assets to a new corporation. If the corporation was, legally, a new entity, that could open up all of the franchises that AMEXP had to sell its main product, TCs, to a possible fight over renewal and change in each of the states. Further, under New York law that dated to 1912, any corporation formed would have to be called a "Corporation", "Corp" or "Ltd." as the last word in its name. That is, AMEXP would have to give up the name "American Express Company." The problem for AMEXP was that all $500 million in outstanding Traveler's Checks, and many franchises that AMEXP held, were all in the name of "American Express Company." AMEXP feared, with some reason, that there would a run on the bank; that holders of TC's would fear the possibility that they would find them unusable in some foreign country where the new entity, with a different name, was not known. It might also be the case that some understood what was going on, but feared that somehow, in substituting a new guarantor for the TC's, AMEXP was going to walk away from the payment obligation. Thus, a law was required that permitted a stock company to incorporate without forming a new entity and without changing its name. While this would be fairly easy to do, the situation was complicated by the Salad Oil Swindle. There was a fear that any move by American Express to limited liability would be perceived as an attempt to avoid liability for the losses from the swindle.

1.3.3. Details of the path to incorporation – The event dates

I will examine share price reaction to a number of events during AMEXP's change from unlimited to limited liability. Some of these events are public, and are taken from the company's public records and/or reports in the Wall Street Journal. In some cases, however, the events are private, or were not publicly reported until some time had passed. The New York State Library maintains a folder for each bill that passes the New York state legislature. This bill folder contains copies of all memoranda, communications, drafts, and the like. I use this data to get a detailed history of the legislation that enabled AMEXP to incorporate.

The first event of which we have any information is a meeting that took place on January 31, 1964 between Howard Clark the CEO of AMEXP and Sol Neal Corbin, the counsel to then Governor Nelson Rockefeller. There is not public record of this meeting, but it is referred to in a letter form Clark to Corbin that is dated April 7, 1964. On Feb. 10, 1964 Corbin sent a memo to his assistant, Christoph Schmidt, to which was attached a draft of the bill that was written by AMEXP's law firm, and requesting comment. On February 18, 1964 the same bill was intro-

duced by Assemblyman Preller. This is the first public reference to the legislation, as it would have been reported in a daily calendar of events. The bill is reported in the Assembly on March 4, has its third reading on March 5 and passes the Assembly on March 11 and is sent to Senate Corporations Committee on March 12. Again, none of these events is reported in the media at the time they occurred. It is not until March 19, 1964 that there is any mention of this legislation in the Wall Street Journal, where Assembly passage is reported and it is reported that there is optimism that the bill will pass the Senate. The Senate does pass the legislation on March 25, 1964, but not until there is a supplemental memo from Carter, Ledyard stating that the firm has no intention of incorporating until 1965. This gives the Legislature time to amend the act in the Fall of 1964 should it so desire. While there is nothing in the files to indicate that there was serious opposition to the bill, it is hard to imagine why this memo would have been written absent some opposition having arisen. One likely possibility is that there was a fear among the public that incorporation would enable AMEXP to shield its shareholders from any liability arising from the Salad Oil Swindle.[33] After the bill passed the Senate there is a series of internal memos to the Governor advising him on whether or not to sign the bill. Presumably the most important of these is from Atty. General Louis Lefkowitz on April 7, 1964 in which he expressed no opposition to the bill. Gov. Rockefeller signed the bill on April 16, 1964, a fact which was not reported in the Wall Street Journal until April 21st of that year.

At that point the ball was in AMEXP's court. On February 23, 1965 the AMEXP's board met and approved the proposal to forward, with their support, a plan of incorporation to be voted on at the next shareholder's meeting. This meeting was not reported in media. The proxy statement containing the proposal, and the associated letter from the firm to its shareholders, are both dated March 25th but were not reported in the Wall Street Journal until March 30th. The shareholders meeting took place on April 27, 1965 (reported in the Wall Street Journal the next day) and the proposal was approved. Finally, the actual incorporation took place on June 10, 1965 (and again was reported in the Wall Street Journal the next day).

[33] In fact, all drafts of the Act, as well as the version as signed by Gov. Rockefeller, made it clear that limited liability would only apply to obligations arising *after* incorporation, and thus shareholders remained liable for any potential liability arising form the Salad Oil Swindle.

2. Data and Empirical Analysis

2.1. Predictions

2.1.1. Effect of limited liability on systematic and unsystematic risk

We expect that moving from unlimited to limited liability will reduce the systematic risk of the equity. The reason for this is clear. By eliminating the possibility of returns that are less than -100% limited liability reduces the risk of the equity. To the extent that the firm's assets have positive systematic risk, these extreme negative returns would be more likely when the market return was low. Thus, a move to limited liability should reduce AMEXP's β.

This is actually easy to see if we recall the definition of β_i for any security i:

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2} = \rho_{im}\frac{\sigma_i}{\sigma_m}$$

Moving to limited liability reduces both the correlation coefficient and the standard deviation of the assets return and thus must reduce the β.

It might be thought that this reduction in β should lead to a reduction in the cost of equity capital and a rise in share price. However, this is not the case. As is the case when a firm levers up in the basic MM world, a move to limited liability does not reduce firm risk, it only affects how that risk is shared between contractual creditors and shareholders. As the contractual creditors bear more risk, they will require compensation which will increase interest and other expenses in such a way as to offset the effect of reduced risk on share value.

Empirical tests of the effect of limited liability on systematic risk may be confounded by the Salad Oil Swindle. However, as the salad oil swindle involved a small operation that involved little in the way of assets and that AMEXP was already getting rid of, it is unlikely that the swindle and the demise of AEFWL would have had any effect on the systematic risk of AMEXP's assets.

Adopting limited liability is also likely to have an effect on unsystematic risk. The same argument that predicts a decline in systematic risk will also predict a decline in unsystematic risk. However, it is reasonable to expect that the time when the Salad Oil Swindle was pendant is will be a time of increased unsystematic risk, as important news on the likely claims would reached the market in a manner that is uncorrelated with what the market was doing.

2.1.2. Effect of limited liability on share price

The traditional view of limited liability outlined above is that in a regime of limited liability firms are worth more than they are in a regime of unlimited liability. However, Weinstein (2003) was unable to detect an effect of the move to limited liability on the value of California corporations. Even if limited liability *per se* has little or no inherent value to AMEXP, the value of AMEXP shares might well rise simply because it brings AMEXP's the liability of AMEXP's shareholders in line with that of other companies and thus eliminates the "asterisk" effect.

Moving to limited liability may, however, increase the value of AMEXP's equity in the short run even if it has no long run effect. To the extent that default is possible, moving to limited liability produces a one time transfer of wealth to shareholders away from contractual claimants. This transfer lasts only as long as it takes the contract to either expire or be renegotiated. While virtually all of AMEXP's liabilities arose from contract, much of them (e.g., the TCs) were very short term in nature and thus we would expect any wealth transfer to be small.

2.2. Data

I draw inference about the value of limited liability by examining the share price of American Express. American Express was traded over the counter during the relevant period. During our time period AMEXP did not trade on any exchange, but rather in the OTC market. I collected daily share prices for American Express and closing values of the Dow Jones Industrial Average for the period from December 31, 1959 to January 4, 1967. I also collected levels for the S&P500 from The Standard and Poor's Security Price Index Record from December 31, 1959 until July 2, 1962. After that date CRSP initiates daily return series for the S&P500 and I use their data. All hand collected data was put through screening programs to detect questionable quotations which were then checked against the prices presented in the New York Times, and/or prices provided by American Express Corp.

The main source of share prices was the Wall Street Journal. In a few cases the price presented in the Wall Street Journal appeared to be a typo and these prices were then checked with

those reported in the New York Times. Some questionable quotes remained and these were checked with prices provided by an executive of American Express.[34]

2.3. On Methodology

This paper belongs to the genre of "single-firm" event studies that has arisen in the last few decades as researchers have focused on the story of a single event that happens to a single firm.[35] The problem facing the researcher in any event study is essentially one of signal extraction. Against a noisy background the researcher attempts to detect a reliable signal. When a researcher examines the abnormal return from some model for a single security at a single point in time what the researcher sees is the sum of the signal and the noise. The great insight of Fama, Fisher, Jensen and Roll (1969) is that if a researcher obtains estimates of the abnormal return for a number of securities at different points in calendar time, the noise will be significantly reduced, leaving just the signal. This is what makes the event study industry possible. However, noise reduction by diversification across time and securities is not possible for the kind of event study we conduct here. There is one firm, and one point in calendar time. Moreover, if – as is the case here – economic theory predicts little or no effect from the event, the researcher has an obligation to her readers to construct the most powerful test possible. Thus, we devote some effort to fitting the appropriate return generating process to our data.

There are two reasons to believe that the traditional one-factor market model will not be sufficient for AMEXP. First, as already discussed, AMEXP was traded in the pre-NASDAQ OTC market. We cannot be sure how frequently the shares traded, which suggests that lagged market returns will be significant.[36] Moreover, because we do not have last-sale prices, but rather close of day bid-ask prices it is likely that the residuals from market-model regressions, even those with lagged values of the market return, will be serially correlated due to bid-ask bounce.[37]

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[34] There were a few days where the bid price exceeded the ask price. On the price sheets kept by AMEXP there was a notation that the bid and ask as reported had been inverted.

[35] This type of event study also gets used heavily in litigation.

[36] The literature on this issue includes the important pieces by Scholes and Williams (1977) and Dimson (1979).

[37] There is one further complication. It appears that on Feb. 15, 1965 the NASD changed the way it reported the Bid and Ask Prices. The Bid-Ask spread on AMEXP at that time was almost always between 2½ and 3 points. On Feb. 15, 1965 (a Monday) the reported spread dropped to 0, from 2 ¾ the previous Friday. On Feb. 16 the spread was ½ and it stayed close to that value for the rest of the data set. This does not appear to be unique to AMEXP. I collected a 10% sample of all OTC shares traded on each of the three days (98 issues). The mean spread

Thus, we will explore models of the return generating process that include possible residual autocorrelation.

Moreover, there is no reason to believe that the residual variance is constant. Indeed, given that our estimation period must include a time when there was significant information coming out about the salad oil swindle[38] it is likely that the returns are hetersokedastic. This suggests the possibility that a GARCH model may be appropriate. One advantage of modeling the return generating process in this way is that one of the outputs of this estimation is an estimate of the *conditional* residual variance. If this conditional variance can be used in estimating the significance of any abnormal returns inference is drawn that takes into account the changing variance.

In Table 1 I present estimates of the return generating process for AMEXP, using the S&P500 as the market index.[39] The first five models use OLS and examine the importance of lagged market returns in the return generating process. From these I conclude: (1) that using only the contemporaneous market return considerably understates the systematic risk; and (2) that one lag in the market return appears to be sufficient to capture the significant lagged market returns. However, it does appear that the residuals still exhibit considerable autocorrelation. The estimated residual autocorrelations at lags 1 and 2 are -.21 (t=-6.63) and -.07 (t=-2.21) respectively. As shown in model 6, the use of these two lags in the AR process was sufficient to eliminate the first-order autocorrelation in the estimated residuals. Even after estimating the return generating process with an AR(2) structure on the residuals, LR tests clearly reject the hypothesis that the residuals are homoskesdastic. The next model, uses a GARCH(1,1) process on the error terms to deal with heteroskedasticity. As opposed to some other approaches that might be used to deal with this problem, this approach has the added advantage of producing conditional variance estimates that can be used in the event study part of the paper. Relying on model (7) we can see

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on the 12th was 1.63, on the 15th it was .62 and on the 16th it was .65. The t-statistic for the difference between the 12th and the 15th is 8.10, while that for the difference between the 15th and 16th is only .38. Thus, is appears that the change in AMEXP's reported spread was unrelated to anything that is specific to AMEXP. As an added check, most of the results in this paper have been replicated using Bid-to-Bid returns and the inferences drawn were unaffected.

[38] In the first days of the swindle AMEXP shares lost approximately 50% of their market value.

[39] For comparison purposes Grossman (1995), using weekly data and the DJIA as his market index, provides an estimate of the AMEXP's β of .51 during the 1950's.

that AMEXP has a β of about 1 (that is, the sum of the contemporaneous and lagged market effects).[40]

The main return generating process used in this paper, then is:

$$\begin{aligned} R_t &= \alpha + \beta_0 R_{M,t} + \beta_1 R_{M,t-1} + \nu_t \\ \nu_t &= \varepsilon_t + \lambda_1 \nu_{t-1} + \lambda_2 \nu_{t-2} \\ \varepsilon_t &= \sqrt{h_t} e_t \\ h_t &= \omega + \psi \varepsilon_{t-1}^2 + \theta h_{t-1} \\ e_t &\sim N(0,1) \end{aligned} \tag{1}$$

Examination of equation (1) reveals two interesting features that suggest some changes to common event-study methods. First, consider the effect of the autocorrelated error term. If the return generating process generating process had been a simple market model, with no autocorrelation, then one could easily have estimated the effect of a given event by introducing one, or more, dummy variables into the regression. Drawing inference from dummy variables is the same as drawing inference from the residual for that given day or days. However, in the presence of autocorrelated residuals this is no longer the case. The reason is simple. The effect of including a dummy variable is to drive the estimated residual for that day to 0. But, in the presence of autcorrelated error terms that procedure will cause problems. Introducing a dummy variable for day t drives the estimate of ν_t to 0, which affects subsequent ν's. Using dummy variables for subsequent days is thus problematical. Further, because it would drive the estimate of ν_t to 0, it would also impact the estimate of ε_t.

A second problem arises in the choice of estimation period. Assume that the event occurs on day t, and either the researcher does not know if it occurred before or after the close of trade, or she does know, for example, that it was not publicly reported until day t+1. Further assume that there was no leakage of the event before it occurred. The researcher, in drawing inference, is going to be interested in the abnormal return for day t and for day t+1. If the researcher is using the formulation in equation (1), and wishes to use (as would be the rationale for choosing this

[40] I also estimated AMEXP's β using "pseudo-weekly" (5 trading day) returns. The contemporaneous β in this regression was .92 (t=7.0), which is roughly equal to the sum of the contemporaneous and lagged β's in the daily regressions. When I tested for a lagged market effect the contemporaneous β was .90 (t=6.8) and the lagged β was .27 (t=2.1). In neither case did the Durbin-Watson statistic indicate serially correlated residuals.

model) the conditional variance (h_t) the estimation period the estimation period should end at time t-1 and the one-step ahead forecast of h_t would be used to draw inference about the information content of the event. What about testing for abnormal return on day t+1? While one might think that the researcher should reëstimate the model over the period ending at t and use the one-step ahead forecast of h_{t+1}, that would be a mistake. Assume that there is some price effect at time t due to the event. This means that the residual, v_t, will be abnormally large. In principal there are two possible reasons for the large residual, the information content of the event, and an increase in the variance. The GARCH algorithm cannot distinguish between these two and by the nature of the model will raise estimate of the conditional variance at time t+1. This overstatement of the conditional variance at t+1 will mean that any t-statistic computed using this variance is biases towards 0. In effect, the price reaction at time t contaminates the estimated conditional variance at time t+1. The only way to avoid this contamination is to estimate the return generating process over a period ending at time t-1, use the one-step ahead conditional variance in computing the t statistic for day t and using the two-step ahead forecast of the conditional variance to compute the t statistic at time t+1.

2.4. Empirical Results

2.4.1. The effect of limited liability on risk

In Table 2 I present tests designed to test the hypothesis that limited liability had no effect on AMEXP's systematic risk.[41] The situation is complicated by the fact that the salad oil swindle is going on just before AMEXP incorporates. Let LLDUM be a dummy variable that takes a value of 1 after AMEXP shareholders vote to incorporate (that is, after April 28, 1965)[42] and SOSDUM a dummy variable that takes on a value of one during the time that the Salad Oil Swindle is known but its effect unresolved (Nov. 20, 1963 to June 22, 1965).[43] Then we modify the first equation in (1) to be:

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[41] AMEXP made no major acquisitions during the time period covered by our data, thus it is reasonable to assume that the systematic risk of AMEXP's assets did not change.

[42] Changing this to the actual date of incorporation does not affect the results.

[43] Again, changing the ending date to the final date when all litigation was settled does not change the results.

$$
\begin{aligned}
R_t = {} & \alpha^o + \alpha^1 LLDUM + \alpha^2 SOSDUM \\
& + \beta_0^0 R_{\mathrm{M,t}} + \beta_0^1 SOSDUM \times R_{\mathrm{M,t}} + \beta_0^2 LLDUM \times R_{\mathrm{M,t}} \\
& + \beta_1 R_{\mathrm{M,t-1}} + \beta_1^1 SOSDUM \times R_{\mathrm{M,t-1}} + \beta_1^2 LLDUM \times R_{\mathrm{M,t-1}} + \nu_t
\end{aligned} \tag{2}
$$

I also estimated a similar model with pseudo-weekly data (that is, holding period returns over 5 trading days), except that in this case I simply used OLS and did not include any lagged market terms.[44] Both of these models were estimated with and without dummy variables for the effect of the Salad Oil Swindle (SOSDUM).

From the results presented in Table 2 it appears that the Salad Oil Swindle did not have a measurable effect on β, while the incorporation did, in fact, lead to a decline in the systematic risk of AMEXP. The coefficient on the interaction of SOSDUM and either the contemporaneous (in model 1 or 2) or lagged market return (in model 1) is zero. A test of the hypothesis that the sum of the two coefficients is 0 (in model 1) has an F value (NDF=1, DDF=1747) of .52 and is clearly not significant.

When we turn to the effect of limited liability on β the story is different. In the daily models (models 1 and 3) with or without the SOS dummy variable the interaction with the limited liability dummy variable is significantly different from zero for the lagged market effect. F-tests of the hypothesis that the sum of the two interaction terms with LLDUM and the contemporaneous and lagged market index returns are significant at the 1% for both models 1 (F(1,1747)=10.57) and 3 (F(1,1750)=8.67). Using the pseudo weekly data and recognizing that the alternative hypothesis is that the interaction term is negative, we again reject the hypothesis of no change in β at the 5% level. If we ignore the sign of the prediction, rejection is at the 10% level (models 2 and 4).

Now we turn to the predictions concerning unsystematic risk. In Table 3 I present the results of regressing the Conditional Error Variance (CEV) from estimating model (1) in Table 2 on indicator dummy variables for the time period of the salad oil swindle (SODUM) and the time that AMEXP had limited liability (LLDUM). The CEV is an estimate of h_t in (1). This analysis is presented in the middle column of the table. The results are consisted with the prediction that variance is higher during the salad oil swindle and lower after AMEXP incorporates and obtains

[44] In results not reported lagged market terms were not significant in modeling pseudo-weekly returns.

limited liability. It is possible, however, that the change in the CEV was not driven by anything to do with AMEXP, but rather by changes in market volatility. In the right column of Table 3 we control for this by subtracting the square of the contemporaneous return on the S&P 500 index (an estimate of the variance of the market return) from the CEV. While the coefficients change a bit, there is no change in the inference concerning the relation between unsystematic risk and both the salad oil swindle and the change to limited liability.

2.4.2. Limited Liability and Share Returns

In Table 4 I present all dates that I could find when something associated with the move to limited liability occurred. The first event is the private, and unreported, meeting between Clark and Corbin. The meeting took place on Jan. 31, 1964. As would be expected from such a private meeting there was no significant movement in the price of AMEXP, The AR on that day is -.018 (t=-1.41) and on the next trading day, Feb. 3, 1964 it is -.016 (t=-1.46).[45] The two day abnormal return, however is significantly different from 0, with a t of -2.03. The next date on the list is that of memorandum from Corbin to his assistant, Christoph Schmidt. Again, this was a private event which what not reported in the press. Even though this is a private memorandum, the Abnormal Return for that day is +.035 (t = 2.50) and AR for the next day is .040 (t=2.80). The t for the two day AR is 3.75. There are two ways to interpret the findings for the first two, private, events. The first, and in my opinion more likely, view is that this is spurious, we know that in a study such as this there are likely to be a number false positives (at least 5% of the time). It is difficult to see how these are significant events. Anyone who would have known about the memorandum or the meeting (other than Corbin and Schmidt) would have already known that AMEXP was seeking limited liability and the memorandum itself provides no new information. AMEXP was a sufficiently large and well connected company that its desire to incorporate and the associated legislation would have been taken seriously (indeed passage would have to have been almost a sure-thing). It is hard to imagine Corbin or Schmidt trading on this information, or having the resources to move the price if they did trade.[46] The second possibility

[45] It is not clear whether the meeting referred to took place after the close of trading.

[46] Because the returns are computed from the average of the Bid and Ask prices, they could be influenced by abnormal behavior of the reported prices. In this case, however, the relevant Bid-Ask prices for Feb. 7 – 11, 1964 (the 10th was a Monday) were 34⅝ - 36¾, 35⅞ - 38 and 37¼ - 39⅜ respectively. There does not appear to be anything unusual about these prices.

is that this information was, in fact, news to the market and leaked out very quickly.[47] However, perhaps the best evidence that these returns are spurious is they are of *opposite* sign. If there was really some news reaching the market from these events, both of which increase the likelihood of an incorporation, we should have seen positive performance on both days. The rest of the events associated with passage through the Assembly do not have any significant Abnormal Returns associated with them.[48]

There was, however, a significantly negative AR March 2, 1964. This is interesting because that was the day two events occurred. One, which was unlikely to convey information to the market was the final passage of the bill through the Senate. There was also, however, a "supplemental memorandum" from the Carter, Ledyard firm. The memorandum was a supplement to one sent the previous day and appears to have been designed to assure some opponents of the bill that AMEXP was not going to incorporate until 1965 and thus the New York Legislature would be able to amend this act in the Fall, 1964 term should it choose to do so. I have not seen any evidence of significant opposition to the bill, however it is difficult to see why this memorandum would have been written were there not some. In any event, to the extent that the news of the day was the memorandum and the inference from it that there was opposition to the act, the negative AR suggests that traders viewed incorporation as a positive event for AMEXP's shareholders and were concerned about the delay.

After the legislative action in 1964 there is no action on the limited liability front until 1965. At the Feb. 23, 1965 board meeting the directors approved putting the proposal for limited liability to the shareholders for a vote. While the AR on the 23rd is not unusual, that on the 24th is (AR=2.5%, t=2.04). This is consistent with the view that the moving to limited liability would be value increasing and that the information from the meeting did not become available until after the close of trading on the 23rd. The timing makes sense, as a board meeting would likely have been followed by some sort dinner and would have tied up the directors through the close of

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[47] It should be noted that, at that time, the law on insider trading was not as well developed as it is today.

[48] However, there is a very significant abnormal return on February 20, 1964. This is two days after the apparant date that Assemblyman Preller introduced the act and, as that date was inferred from the date stamp on the initial copy of the Act, it might be off by a day a two. However, this significant AR appears to be due to a misreported Ask price on February 20. The Bid prices on Feb. 19, 29 and 24 were 39, 38⅛ and 38¾ respectively, while the Ask prices were 41¼, 46⅜ and 41. Thus, the positive AR on the 20th (followed by negative AR on the 21st) is probably the result of a misreported Ask price.

trading.[49] Of course, the board meeting was not reported and thus any information reaching the market would have to have come either from directors themselves or from AMEXP employees who would have been involved in preparing the minutes. I am not inclined to believe in either source. First of all, the item would have to have been on the agenda which would have been prepared by AMEXP staff and passed out to board members *before* the board meeting. That the board would approve the proposal could not have been much in doubt. Thus, any price reaction to the proposal is would have occurred before the meeting, not after.[50] There is no evidence of a runup in price during either of the two weeks prior to the board meeting. Thus, there is no evidence of any leakage prior to the board meeting. Further, when we examine the share price performance around the time of the proxy statement for the shareholders meeting there is no evidence of any significant reaction to these events. There is evidence of abnormally large *negative* returns at the time that the shareholder meeting is reported in the *Wall Street Journal*, but this is almost certainly related to other news that came out at the shareholder meeting concerning, among other things, the Salad Oil Swindle. In any event, this abnormal return is of the wrong sign if one wants to believe that moving to limited liability was associated with a significant increase in the value of American Express.

2.4.3. Is the GARCH Worth the Candle?

It is reasonable at this juncture to ask whether the choice of a more complex error structure in the return generating process made any difference. The first question to ask is whether, in fact, the conditional variance (the h_t) did, in fact, vary over time. I estimated the GARCH model over the period ending on June 9, 1965. For comparison purposes I also estimate the same model with the same assumed lag structure on error term, but with a constant residual variance. In Figure 1 I present the time series of the square root of the ratio of h_t to the MSE from the constant residual variance model.[51] Cleary, the ratio exhibits considerable variation. While the mean value is .93 (suggesting that, on average, we have a more precise estimate of the abnormal re-

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[49] I have attempted to verify the timing of the meeting but have been unable to do so. However, in a private correspondence, Grossman (2004) tells me his belief that during the Clark era (the period in question) board meetings were "serious all day events."

[50] Examination of SEC documents shows no reported trades by officers, directors or large shareholders during this period.

[51] I use the square root of the ratio because this measures the effect that the change in methodology has on the denominator of the t-statistic assuming that the estimated coefficients did not change.

turn), the ratio varies from .55 to 5.43, suggesting possible differences in t-statistics of a factor of 10.[52] Moreover, it appears that the conditional variance is at its peak when we expect it to be at its peak, during the height of the uncertainty about the Salad Oil Swindle, late 1963 and early 1964. Perhaps a better way to get a feel for the potential effect of using the GARCH model is by looking at the histogram of the ratio which is presented in Figure 2. Here we see that the vast majority of the time (over 70%) the ratio is less than one. There are, however, few outliers where the ratio is far greater than one, indicating that t-statistics would be smaller. But, if in fact the variance is hetersokedastic, it is appropriate for this variation to occur and it would be a mistake to use a constant residual variance model.

In Table 5 I compare the results from Table 4 with those that would have been drawn using two alternative models of the return generating process which assume homoskedastic error terms. While we have reason to believe that moving to a GARCH model will potentially lead to different inference the comparison of the inferences drawn from using two alternative return generating processes shows that, at least in this case, it did not. It appears that our events occurred on days when the conditional residual variance was not large. This is borne out by the fact that the t-statistics are, in general, larger when we use the GARCH model than for either of the alternatives. In effect, assuming that the error terms are homoskedastic over the entire period when this is not the case, and thus using a single estimate of the residual variance, means that the researcher is using an estimate of the variance that is contaminated by the effect of some high variance days, even if the event that the researcher is examining occurred on a low variance day. In principle, though this did not happen here, significant AR's would not be detected. Of course, the reverse could occur if the event in question happened to occur when residual variance was high, perhaps reasons unrelated to the event. If, in our application, the event had occurred during the pendency of the salad oil swindle, for example, the failure to consider the then larger residual variance could lead the researcher to believe that she has more power than she really has.

[52] The reader should be a tad careful in evaluating this result. Unlike the actual implementation of the GARCH model presented in Table 4, for the purpose of this analysis I estimated

3. Conclusions

The main contribution of this paper is its examination of the effect of limited liability, in this one case, on share risk and share value. Consistent with finance theory moving to limited liability reduced both systematic and the unsystematic risk. We also show that such a reduction in systematic risk does not occur during the salad oil swindle. More importantly, and consistent with economic theory although not with common perception, we are unable to find any effect on shareholder wealth of moving from unlimited to limited liability for a company without significant risk of tort liability. It is not at all clear that moving to limited liability was value enhancing. This is true even though American Express appears to have been the last unlimited liability company trading the US capital markets. Moreover, it is true even though moving to limited liability provided AMEXP with better defined legal governance, removed any "asterisk effect," and made it possible for merger to be carried out using AMEXP common as the medium of exchange.

Finally, this paper applies a methodology to event studies that allows researchers to draw inference about the information content of a particular event using an estimate of the conditional error variance. This method uses all of the information available about changing residual variance and thus should provide for more power. Although it turned out, *ex post*, that this approach did not make a difference in this application, the results do suggest that, in other situations, it could make a significant difference.

Table 1: Estimation of Return Generating Process for AMEXP

This table presents the results of estimating market models with contemporaneous and lagged values of the return on the S&P500 as independent variables. Returns are computed from the mean of the Bid and Ask prices reported in the Wall Street Journal. All regressions are estimated from Jan. 2, 1960 – Dec. 31, 1963. t-statistics are presented in parentheses below each estimated coefficient. Models 1-5 are estimated using OLS, Model 6 uses an AR(2) process on the error term, and Model 7 uses a GARCH (1, 1) process on the error term in addition to the AR(2) process. The R^2 for models (6) and (7) take into account the both the structural model and the autocorrelation of the error terms.

Model	(1)-OLS	(2)-OLS	(3)-OLS	(4)-OLS	(5)-OLS	(6)-ML	(7)-GARCH
Constant	-.0000 (-.03)	-.0002 (-.44)	-.0002 (-.42)	-.0002 (-.48)	-.0002 (-.51)	-.0002 (-.31)	-.0002 (-.33)
SPRET	.2049 (2.86)	.0948 (1.41)	.1007 (1.49)	.0892 (1.33)	.0878 (1.30)	.0867 (1.34)	.2305 (7.21)
SPLAG1		.8483 (12.62)	.8425 (12.41)	.8570 (12.63)	.8542 (12.55)	.8255 (12.74)	.8746 (18.05)
SPLAG2			.0390 (.58)	.0128 (.19)	.0165 (.24)		
SPLAG3				.1839 (2.73)	.1764 (2.59)		
SPLAG4					.0538 (.80)		
AR(1)						-.2102 (-6.65)	-.1795 (-4.78)
AR(2)						-.0708 (-2.24)	-.1055 (-3.03)
ARCH (0)							.00002 (10.23)
ARCH (1)							.2654 (10.87)
GARCH (1)							.6646 (26.90)
Observations	1005	1004	1003	1002	1001	1004	1004
DW	1.60	1.55	1.55	1.55	1.55	2.00	
R^2	.0081	.1442	.1448	.1480	.1519	.1918	.1858

Table 2: The Effect of Limited Liability and the Salad Oil Swindle on the Risk of AMEXP

These regressions examine the effect limited liability and the Salad Oil Swindle on AMEXP's systematic risk. Models (1) and (3) use daily data with the error term assumed to follow an AR(2) – GARCH(1,1), models 2 and 4 use OLS and psuedo-weekly data returns. The estimation period extends from January 2, 1960 to December 30, 1966.

	With Salad Oil Dummy		Without Salad Oil Dummy	
	Daily (1)	Pseudo-Weekly (2)	Daily (3)	Pseudo-Weekly (4)
Constant	-.000 (-.27)	.002 (.57)	.000 (.84)	.001 (.45)
LLDUM	.001 (.95)	.004 (.87)	.001 (.63)	.004 (.92)
SODUM	.002 (2.21)	-.002 (-.46)		
SPRET	.293 (7.91)	1.066 (6.68)	.260 (9.75)	1.08 (6.98)
SPLAG	.856 (20.71)		.867 (22.10)	
SPRET x LLDUM	-.043 (-.60)	-.552 (-1.85)	-.015 (-.22)	-.543 (-1.83)
SPRET x SOS-DUM	-.008 (-.15)	.185 (.39)		
SPLAG x LLDUM	-.320 (-3.72)		-.313 (-3.94)	
SPLAG x SOS-DUM	-.089 (-.71)			
NOBS	1761		1761	
R^2	.17	.13	.17	.13

Table 3: Test of Conditional Prediction Error Variance

The dependent variable in these regressions is the conditional error variance (CEV)from model (1) [the estimate of h_t from equation (1)] in Table 2, or the excess of that error variance over the squared return on the S&P 500 index (CEVADJ). The estimation period extends from January 2, 1960 to December 30, 1966.

	CEV x 10^3	CPEVADJ x 10^2
Intercept	.1831 (18.07)	.1341 (12.33)
SOSDUM	.1249 (6.71)	.1538 (7.47)
LLDUM	-.0623 (-3.41)	-.0587 (-2.87)
Observations	1761	1761
R^2	.037	.04

Table 4: The Path to Limited Liability

This table reports the abnormal returns (and t-statistics) for various dates associated with AMEXP's incorporation. Events come from three sources, *The Wall Street Journal,* the "bill folder" from the New York State Librarian, and the New York Legislative Record and Index. In some cases the "event" is the *Wall Street Journal* report on an event that happened earlier. Some of the "events" are not public. All abnormal returns are calculated as residuals from Model (7) in Table 1, the t-statistics are computed using the estimated prediction error variance, (the estimated variance of the v_t in (1)) and thus take into account the estimated residual autocorrelation. All regressions were estimated over the period starting on January 4, 1960 and ending the trading day before the date in the first column of the row.

Date	Event	Reported in the WSJ	Abnormal Return on Day 0 (t-in parentheses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)[1]
1/31/64	Discussion between Howard Clark and Corbin (referred to in letter from Clark to Corbin of 4/7/64)	Not public	-.018 (-1.41)	-.016 (-1.46)	-2.03
2/10/64	Memo to Schmidt from Corbin attaching draft bill and asking for comment	Not public	.035 (2.50)	.040 (2.80)	3.75
2/18/64	Chapter 575 [Assembly Int. no. 4688] introduced by Preller	Not reported	-.005 (-.34)	-.005 (-.32)	-.46
3/4/64	Reported in Assembly		-.025 (-.81)	-.002 (-.07)	-.62
3/5/64	3rd reading in Assembly		.002 (.08)	.022 (.77)	.60
3/11/64	Passes Assembly	Reported in WSJ on 3/19/64	.003 (.14)	-005 (-.25)	-.07

[1] Computed as the sum of the two one day t-statistics divided by the square root of 2.

Date	Event	Reported in the WSJ	Abnormal Return on Day 0 (t-in parentheses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)[1]
3/12/64	Senate Corp. Committee	Reported in WSJ on 3/19/64	-.006 (-.31)	.008 (.46)	.10
3/19/64	WSJ Reports on Assembly Passage, "The bill is in the Senate Corporations Committee and its backers believe it has a good change to pass"		-.001 (-.04)	-.017 (-1.04)	-.76
3/25/64	Senate: Reported, 3rd reading, Passed Memo from AMEXP Counsel stating that AMEXP will not consider incorporation until 1965, giving Legislature time to amend the act in the Fall of 1964	Not public	-.028 (-2.20)	.013 (.98)	-.86
4/7/64	Memo from Louis Lefkowitz (Atty. Gen'l of New York) expressing no objection to the bill	Not public	.003 (.14)	-.002 (-.11)	.02
4/16/64	Signed by Gov. Rockefeller	Reported by WSJ on 4/21/64	.020 (.91)	.003 (.15)	.75
4/21/64	WSJ reports that Gov. Rockefeller has signed law		.000 (.06)	.000 (.01)	.05
2/23/65	Board Meeting Approves Proposal to Incorporate	Not public	.001 (.08)	.025 (2.04)	1.50
3/25/65	Date of Proxy Statement for shareholder meeting discloses plan to incorporate	3/30/65	-.001 (-.07)	.010 (.90)	.59
3/30/65	WSJ report of proxy statement		-.001 (-.10)	-.001 (-.08)	-.13

Date	Event	Reported in the WSJ	Abnormal Return on Day 0 (t-in parentheses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)[1]
4/27/65	AMEXP Shareholder Meeting WSJ reports on next day. "American Express Co. Expects to Incorporate Not Later than July" also final numbers on SOS settlement	4/28/65	-.017 (-1.67)	-.041 (-3.82)	-3.88
6/10/65	AMEXP Incorporates	6/11/65	.011 (1.03)	.009 (.83)	1.31

Table 5: Comparison Of The Estimated Effect Of Moving To Limited Liability Using Various Models Of The Return Generating Process

This table compares the GARCH methodology presented in **Table 4** with alternative models of the return generating process. The left columns present the results from **Table 4**. The middle columns use OLS and assume that the residuals are serially uncorrelated. The right set of columns use ML and assume an AR(2) process on the residuals.

	GARCH[1]			OLS with lagged betas[2]			AR(2) - ML[3]		
Date	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)
1/31/64	-.018 (-1.41)	-.016 (-1.46)	-2.03	-.018 (-1.23)	-.020 (-1.30)	-1.79	-.017 (-1.18)	-.019 (-1.30)	-1.75
2/10/64	.035 (2.50)	.040 (2.80)	3.75	.033 (2.15)	.039 (2.54)	3.31	.035 (2.40)	.040 (2.71)	3.61
2/18/64	-.005 (-.34)	-.005 (-.32)	-.46	-.003 (-.17)	-.003 (-.20)	-.26	-.004 (-.24)	-.004 (-.23)	-.33
3/4/64	-.025 (-.81)	-.002 (-.07)	-.62	-.015 (-.96)	.337 (.33)	-.44	-.016 (-1.06)	.004 (.30)	-.54
3/5/64	.002 (.08)	.022 (.77)	.60	.005 (.33)	.022 (1.42)	1.24	-.001 (-.07)	.020 (1.29)	.87

[1] These results are taken from Table 4

[2] These results are based on estimation of model 5 in Table 1 over the period starting on January 5, 1960 and ending one calendar month prior to the date in the first column of the row. This is intended to correspond to a common estimation procedure that excludes a month prior to the event in order to minimize the effect of event related information leakage.

[3] These results are based on estimation of model 6 in Table 1 over the period starting on January 5, 1960 and ending one trading day prior to date in the first column of the row.

	GARCH[1]			OLS with lagged betas[2]			AR(2) - ML[3]		
Date	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)
3/11/64	.003 (.14)	-005 (-.25)	-.07	.000 (.01)	-.007 (-.45)	-.31	.000 (.02)	-.007 (-.45)	-.30
3/12/64	-.006 (-.31)	.008 (.46)	.10	-.007 (-.45)	.008 (.53)	.05	-.005 (-.33)	.009 (.57)	.17
3/19/64	-.001 (-.04)	-.017 (-1.04)	-.76	.005 (.36)	-.014 (-.94)	-.41	-.002 (.15)	-.015 (-1.02)	-.61
3/25/64	-.028 (-2.20)	.013 (.98)	-.86	-.028 (-1.82)	.013 (.85)	-.69	-.029 (-1.90)	.013 (.85)	-.74
4/7/64	.003 (.14)	-.002 (-.11)	.02	.005 (.34)	.000 (.02)	.26	.005 (.34)	.000 (.00)	.24
4/16/64	.020 (.91)	.003 (.15)	.75	.016 (1.02)	.001 (.08)	.78	.017 (1.10)	.002 (.11)	.85
4/21/64	.000 (.06)	.000 (.01)	.05	.001 (.04)	-.000 (-.01)	.02	.000 (.01)	-.000 (-.03)	-.01
2/23/65	.001 (.08)	.025 (2.04)	1.50	.004 (.29)	.028 (1.87)	1.52	.001 (.09)	.026 (1.81)	1.34
3/25/65	-.001 (-.07)	.010 (.90)	.59	-.001 (-.08)	.009 (.64)	.40	-.001 (-.09)	.009 (.64)	.39
3/30/65	-.001 (-.10)	-.001 (-.08)	-.13	.001 (.09)	.000 (.017)	.08	.000 (.02)	-.000 (-.00)	.02

	GARCH[1]			OLS with lagged betas[2]			AR(2) - ML[3]		
Date	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parenthe-ses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)
4/27/65	-.017 (-1.67)	-.041 (-3.82)	-3.88	-.018 (-1.24)	-.042 (-2.80)	-2.85	-.181 (-1.25)	-.042 (-2.87)	-2.91
6/10/65	.011 (1.03)	.009 (.83)	1.31	.009 (.63)	.008 (.58)	.85	.009 (.60)	.008 (.58)	.84

Figure 1: Time Series of $\sqrt{\frac{h_t}{MSE}}$

This Figure presents the time series of the square root of the ratio of the conditional variance (h_t) obtained from estimating return generating process (7) in Table 1 to the Mean Squared Error obtained from estimating return generating process (6) in Table 1. The estimation period ends on June 9, 1965.

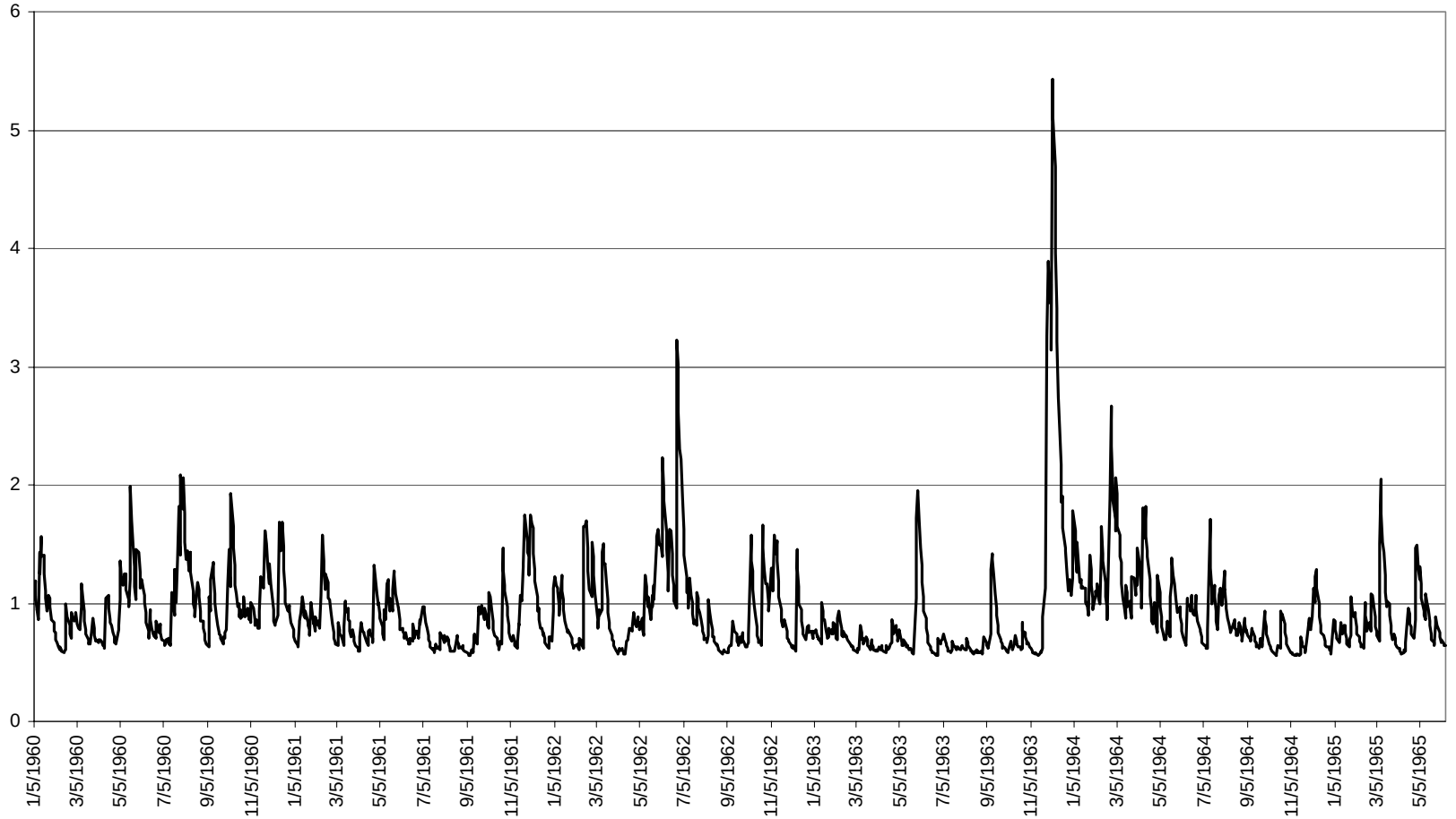
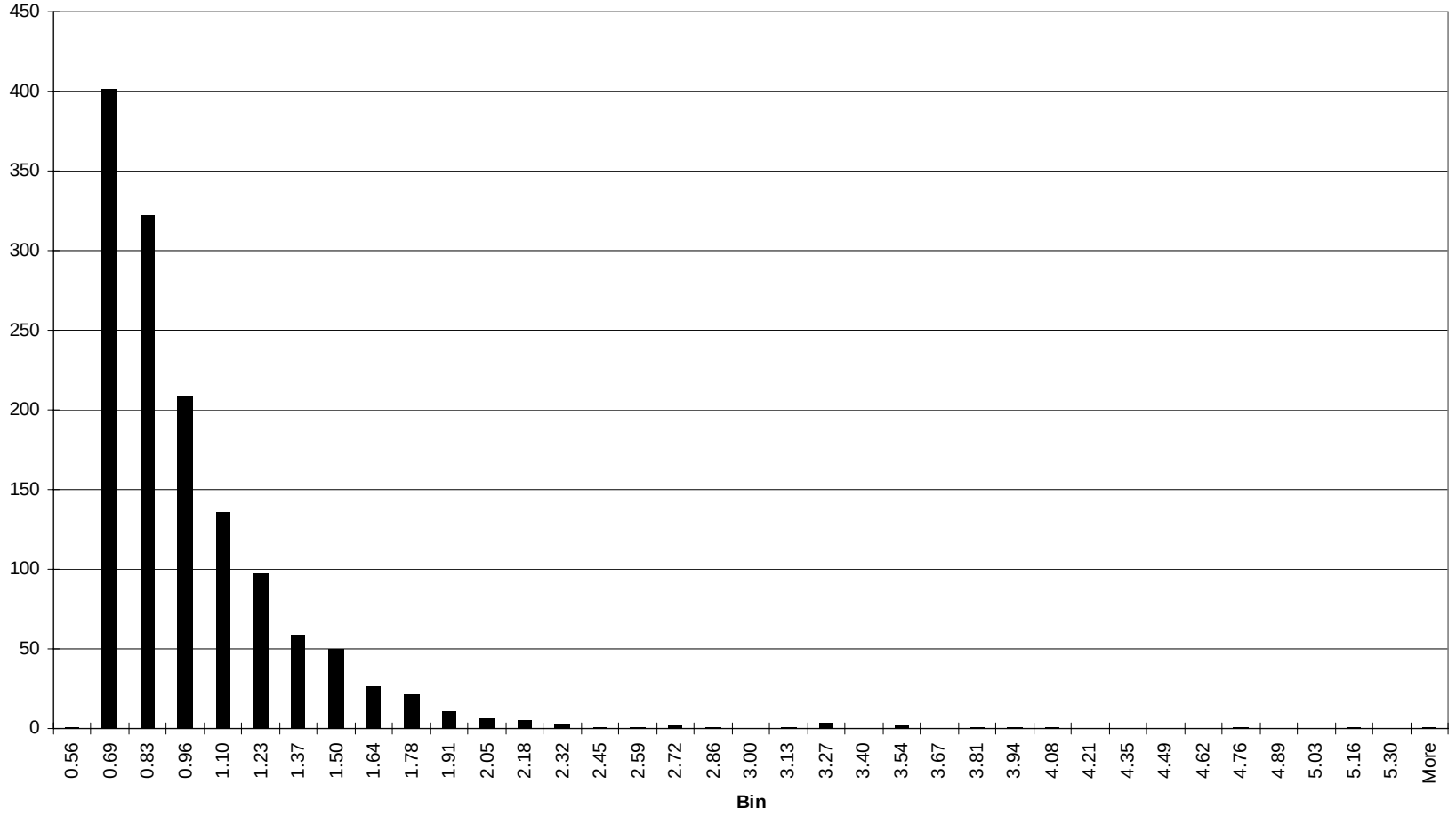


Figure 2: Histogram of $\sqrt{\frac{h_t}{MSE}}$

This figure presents a histogram of the value of the square root of the ratio of the conditional variance (h_t) obtained from estimating return generating process (7) in Table 1 to the Mean Squared Error obtained from estimating return generating process (6) in Table 1. The estimation period ends on June 9, 1965.



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