

Don't Buy Shares Without It: Limited Liability Comes to American Express[§]

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Abstract

What is the value of limited liability to the corporation? Financial economists take the value of limited liability for granted and there has been little empirical study of its value. Few natural experiments allow us to estimate the value of limited liability. One of these, however, is the case of American Express Company. It appears that American Express was the last publicly traded unlimited liability firm in the United States, 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.

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1. Introduction

When Karl Malden left the priesthood,¹ and the police station,² he did television ads for the American Express Company (AMEXCO). The name of the firm conveys a potentially important fact, that until well into the 20th century American Express was 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.

Investors in publicly traded companies enjoy limited liability. That is, they are not liable to pay the firm's creditors in the event of insolvency. How important is corporate limited liability? Until recently, and perhaps even today, the commonly held belief was that limited liability was, and is, essential to the modern economy. One publication suggested that 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. 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 with publicly traded shares 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.

The history of the American Express Company (AMEXCO) can shed light on two questions surrounding corporate limited liability. Does limited liability have any detectible effect on

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*.

³ In an editorial it stated that the "nameless inventor of limited liability" was as important to economic development in the 19th century as "Watt and Stevenson." This is high praise indeed, as Watt invented the steam engine and Stevenson the railroad locomotive. *The Economist* (1926), cited in Mahoney (2000).

shareholder risk? Does adopting limited liability affect the value of the firm? Consistent with economic theory, I find that AMEXCO's incorporation and concomitant adoption of limited liability was associated with a decrease in the risk of the firm's shares, and was not associated with any detectable change in shareholder wealth.

There has been little empirical analysis of the valuation, or other, effects of limited liability. Weinstein (2003, 2005) exploits the change in the California Corporate Code that went into effect in 1931 which, among other things, adopted limited liability. Until that time, California was the last significant jurisdiction in which limited liability was not available. Weinstein (2003) is unable to detect any effect of moving to limited liability on share prices. Building on that paper, Weinstein (2005) concludes that the demand for the code came not from corporations, but rather from the organized corporate bar.⁴ Grossman(1995), examined the market for AMEXCO common shares during the 1950's. Although he established that there was an active market for AMEXCO shares, even though they did carry unlimited liability, he did not attempt to determine whether there was any price change associated with the move to limited liability.

Until well into the 20th century, 1965 to be exact, American Express Company was organized "under the common law of the State of New York; not incorporated" (Moody's (1964: 820). That is, there was unlimited shareholder liability for its debts as it was not a corporation with limited liability.⁵ American Express appears to have been the last publicly traded company whose shareholders did not enjoy limited liability.

At roughly the same time that American Express adopted limited liability it was in the process of resolving one of the major financial scandals of the 1960's, the "Salad Oil Swindle." 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 con-

⁴ 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. 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. Esty (1998) compared banks with state and national charters, but did not examine directly the effect of the liability change on the share value of national and state chartered banks.

⁵ AMEXCO did have the ability to own property in its own name, and to sue and be sued in court. Unlike a 19th century partnership, it was a separate legal entity from its shareholders, but the shareholders would be liable to the firm's creditors in the event the firm failed. It had what Hansmann, Kraakman and Squire (2005) call "entity shielding."

tained little oil. This fraud, led to claims against American Express that exceeded the market value of AMEXCO equity⁶. This scandal brought to the fore the fact that AMEXCO had unlimited liability and should, if anything, made investors more, rather than less, concerned about the possibility of eventual failure of AMEXCO.

I proceed as follows. The next section of the paper reviews the economics of limited liability and describes AMEXCO's situation in the 1960's. 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.

2. On Limited Liability and American Express

2.1. Limited Liability

At the start of the 19th century limited liability, when it existed at all, was a right granted by a sovereign or parliament to a specific enterprise for specific purpose. By the end of the 19th century in any individual or group could form a business enterprise for any lawful purpose and have the enterprise enjoy limited liability. As this happened at roughly the same time as a dramatic rise in living standards in the developed world, it was tempting to conclude that limited liability was essential for this economic growth. Such assertions are not convincing. The timing is not quite right. Freely available limited liability did not come to the U.K until 1856.⁷ 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.⁸

⁶ The claims were, eventually, settled at an after-tax cost to AMEXCO of \$32 million.

⁷ 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.

⁸ While it is true that virtually all railroads, canals, and public utilities did have limited liability this may have been 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 the organizers were already required to get an act through parliament, a fairly corrupt (by current standards) body, they found it advantageous to throw in limited liability. Meanwhile, other large-scale enterprises, such as steel mills and much of the Manchester textile industry were organized as partnerships with unlimited liability, but publicly traded shares [Harris (2000)]. While entrepreneurs preferred limited liability, it appears that they were more interested in ensuring that the business had some sort of "entity status;" the right to appear in court and own property separate from that of the investors. This was granted in the Joint Stock Companies Act of 1844 (7&8 Vict. c. 110), without a blanket grant of limited liability. Hansmann, Kraakman and Squire (2005) present a number of historical examples stressing the importance of this "entity shielding."

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 end of the 19th century, every state except California had adopted limited liability.⁹

Modern theoretical analyses of the economics of limited liability tend to conclude that, absent tort — that is, non-contractual — liability, limited liability is of limited value.¹⁰ 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 from the shareholders in the event of a corporate default. The increased value that investors experience from being protected against corporate creditors is offset by lower profits as suppliers charge more for goods and services. 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 of privately contracting for limited liability on the one hand, or privately contracting for shareholder liability on the other. 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. Given the nature of its business, in the mid 1960's American Express would not have faced significant tort liability.

Note that we are concerned here with advantages to *limited liability*, not with the potential advantages of the corporate form of organization. Lamoreaux (2004) and Lamoreaux and Rosenthal (2004, 2005) provide empirical analyses, and a theory of, the choice between partnership and corporate forms of organization. Blair (2003) argues that the main advantage of the corporate form was the inability of investors to exit the enterprise in a manner that would impair the capital (physical and monetary) of the enterprise. For the corporate form exit is by sale of shares, not by dissolution. This emphasis on the limited ability of investors to exit in a manner that imperiled the “going-concern” value of the enterprise is also central to recent work by Hansmann,

⁹ 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.

¹⁰ See, e.g. (Carney (2000); Halpern, et.al. (1980); Hansmann and Kraakman (1991); Leebron (1991)).

Kraakman and Squire (2005) who argue that “enterprise shielding”, the inability of investors’ creditors to attach enterprise assets has been central to the rise of the business enterprise. While all of this holds for the modern corporation with limited liability, it also held for AMEXCO. Grossman (1987, 1992) provides a detailed history of AMEXCO. He notes that most of the major express companies of the mid 19th century did not choose to incorporate. He attributes this to the increased flexibility and secrecy accorded to companies rather than corporations at that time.¹¹ Much of this rationale had disappeared by the 1960’s, as even though it was not a corporation, it did have to file the normal SEC reports.

American Express, which started as a parcel delivery company in the middle of the 19th century was, by the start of the 20th century a financial institution of considerable size. 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:

...AMEXCO retained its status as an unincorporated stock association, which by definition spared it from what the lawyers¹² 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.”

Although its shareholders faced unlimited liability, as of December 31, 1963 AMEXCO had over 4 million shares in public hands, and 24,055 shareholders (Moody’s 1965:887). These shares traded in the Over the Counter (OTC) market, and both individuals and financial institu-

¹¹ Lamoreaux and Rosenthal (2006) suggest that, in fact, the lack of well-established fiduciary duty law meant that minority shareholders in corporations were relatively unprotected. Even so, by not incorporating the managers of AMEXCO were able to keep more information from the public than would have been the case had they incorporated.

¹² Their law firm at the time, Carter, Ledyard & Milburn, continued represent AMEXCO through the time of its incorporation in 1965.

tions held them, suggesting that sophisticated investors were willing to invest in an unlimited liability entity.¹³

AMEXCO was not different just because its shareholders faced unlimited liability. It was also different because, unlike any other public firm, it did not operate under a modern, well developed, and widely understood, corporate code. To the extent that well developed corporate law provides a positive externality, we would expect to see a value increase associated with incorporation. Further, there may be an externality simply in being like other firms. AMEXCO may have faced an “asterisk effect.” Even if it were relatively costless to evaluate the potential liability, investors would have had to think about the fact that evaluation was easy. After incorporating AMEXCO is just like the other firms.

AMEXCO paid other penalties for being an unlimited liability company. A memorandum from Governor Rockefeller’s counsel (Corbin, 1964),¹⁴ lays out in some detail some non-liability related impediments that incorporation removes. These include: (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;¹⁵ (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);¹⁶ (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. Further, to the extent that in that pre-NASDAQ environment listing on the NYSE was of value, this would only be available if AMEXCO was a corporation.

¹³ 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 AMEXCO 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 AMEXCO.

¹⁴ The wording of the Corbin memorandum suggests that these points came from a draft provided by “the company (‘s)’” counsel at the time, Carter, Ledyard & Hilburn.

¹⁵ That is, it cannot take advantage of the externalities associated with well-developed corporate law.

¹⁶ Delaware law did permit such a merger and the memo suggests that this provision might lead American Express to move its domicile to Delaware.

Thus, for all of these reasons, we would expect to find a positive share price reaction to incorporation even if limited liability, *per se*, was not of value.¹⁷

Economic theory also predicts that a move to limited liability will reduce the systematic risk of the firm's shares. The reason for this is simple. The value of limited liability lies in the right of the shareholders to walk away from excess liability, in effect, to exercise the "bankruptcy put," to hand the firm over to its creditors at a zero price, rather than come up with any shortfall out of their own pocket. In effect, then, limited liability shares are equivalent to a portfolio consisting of unlimited liability shares and the bankruptcy put. Once we note that puts, by their very nature, have negative systematic risk (β), it must be that case that limited liability equity has lower systematic risk than unlimited liability equity in the same firm.

At about the same time that it was planning to incorporate AMEXCO was enmeshed in the "Salad Oil Swindle." After World War II AMEXCO established a small, separately incorporated, subsidiary engaged in field warehousing. 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. The client would post these as collateral for borrowing. The business never made or lost much money and by the early 1960's AMEXCO had decided to sell it. 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. The relation was, by 1963, the only source of profit at AEW [Grossman (1987, 307)]. By June of 1963 the subsidiary, now organized as American Express Field Warehousing Limited, Inc. (AEFW)¹⁸ had only one client—DeAngelis, and 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" was actually water. Had AMEXCO but checked it would

¹⁷ In the real world the net effect of incorporation would, in principal, reflect both the positive and negative aspects of such a move. However, I have not found any contemporaneous reports of any anticipated negative reaction.

¹⁸ AEFW was a *new* entity, incorporate in the summer of 1963 to conduct the DeAngelis business after AMEXCO sold the rest of operation.

have known that at the same time that they had issued receipts for over 800 million pounds of oil, which exceeded the aggregate inventories in the entire U.S.¹⁹

In late November, 1963 DeAngelis' firm went bankrupt when it was unable to make some required deliveries.²⁰ AMEXCO shares fell from 60 to 40 in a matter of days. By the end of 1963, it appeared that aggregate claims against AEFW might exceed the market value of AMEXCO.²¹ In principle, the fact that AEFW was a separately incorporated subsidiary meant that AMEXCO would not be responsible for its liabilities. However, there were (and still are) legal rules which might override this separation. This created uncertainty for any trader trying to value AMEXCO.²²

If AMEXCO 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 [AMEXCO] would have enough money to cover the lawsuits." In any event, AMEXCO 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)²³

To get a sense of the magnitude of AMEXCO's potential liability, I present AMEXCO's consolidated Balance Sheet for December 31, 1963 in Table 1. This Balance Sheet consolidates American Express Co. with its wholly owned subsidiary, American Express Co. Inc. that operated a banking network outside of the United States. While press reports suggested that AMEXCO had ample reserves of marketable securities to handle any potential liability, this is

¹⁹ 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. This implies that AEFW was insolvent *at the date of incorporation*.

²⁰ 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.

²¹ On December 31, 1963 the New York Times reported that claims "may total \$150,000,000" (Ranzal, 1963). On that day AMEXCO 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.

²² One argument that might have made the veil easier to pierce is that it appears that AEFW was, in fact, insolvent when it was organized by AMEXCO. This is not a situation where a subsidiary was healthy when organized and then lost money and became insolvent. This is a situation where creditors could reasonably argue that the organizer of AEFW, AMEXCO, knew, or should have known, that its main asset, the warehouse receipts, were not worth what AMEXCO claimed it was worth.

²³ Settlement talks dragged on through mid 1965. The final suits were not settled until the early 1970's or later.

not clear.²⁴ The consolidated balance sheets lists marketable securities with a market value of \$345.2 million, this is only a bit more than their book value of \$338.5 million. Moreover, the banking subsidiary held \$103 million of that amount at that banking subsidiary against deposit liabilities of \$401.5 million. Further, AMEXCO had TC and other Letter of Credit obligations of \$470.1 million. Put another way, the book value of its equity was \$58 million, even if we allow for the difference between market and book value of its investments we would only add another \$7 million or so. Thus, consistent with Grossman's take, neither the book, nor the market, value of AMEXO equity suggests that AMEXCO would clearly be able to survive.

2.2. Incorporation

By the mid 20th century AMEXCO was essentially a bank empowered to print a private currency, the Traveler's Cheque (TC). While it engaged in travel services, its main source of income was the profit on the float associated with the TC's. Even before the Salad Oil Swindle, top management at AMEXCO had decided to incorporate. The advantages that AMEXCO had enjoyed by not incorporating were now of limited value. Interestingly, a memorandum sent to Gov. Rockefeller by AMEXCO's counsel, which I cited earlier, does not place emphasis on limited liability as being of inherent value. Rather, the discussion focuses on the costs of AMEXCO of being *different* from other large firms. As AMEXCO, under Clark, sought to modernize, and grow by acquisition, "fitting in" might have value even if limited liability, *per se*, would not.

AMEXCO faced another set of problems. It needed to incorporate in a manner in which the new corporation would be the old company but with limited liability. The normal method of merging the company into a dummy corporation would not accomplish this, nor would sale of all assets to a new corporation.²⁵ If the corporation was, legally, a new entity, that could open up all of the franchises that AMEXCO had to sell its main product, TCs, to possible fights over renewal and change in each of the states. Further, incorporation under existing law would mean that,

²⁴ For example, McVicker (1963) suggests that AMEXCO has sufficient marketable securities and other assets to cover the liabilities. However, his estimate of the excess of market value over book value of these securities is too high by at least \$14 million, includes securities held at the separately incorporated banking subsidiary.

²⁵ If the corporation was, legally, a new entity, that could open up all of the franchises that AMEXCO had to sell its main product, TCs, to a possible fight over renewal and change in each of the states.

AMEXCO would have to give up the name “American Express Company.”²⁶ Thus, a special 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.

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

I examine share price reaction to a number of events during AMEXCO’s change from unlimited to limited liability. Some of these events, which I take from the company’s public records and/or reports in the Wall Street Journal, are public. In some cases, however, the events were either private, or were not reported publicly 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 AMEXCO to incorporate.

The first event of which we have any information is a meeting that took place on January 31, 1964²⁷ between Howard Clark, the CEO of AMEXCO, and Sol Neal Corbin, the counsel to then Governor Nelson Rockefeller. This was a private meeting and I only know about it because Clark refers to it in his letter to Corbin on 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 AMEXCO’s law firm, and requesting comment. On February 18, 1964, Assemblyman Preller introduced the same bill. This was reported in the daily calendar of events, which was the first public reference to the act. The bill was reported in the Assembly on March 4. It had its third reading on March 5, and passed the Assembly on March 11. It was sent to Senate Corporations Committee on March 12. Again, none of these events was reported in the mass media at the time they occurred. It was not until March 19, 1964 that there was any mention of this legislation in

²⁶ Under New York law that dated to 1912, any corporation formed would have to have “Corporation”, “Corp” or “Ltd.” as the last word in its name. This was problematical for AMEXCO as all outstanding Traveler’s Checks, and many of the franchises that AMEXCO held, were in the name of “American Express Company.” AMEXCO feared, that there would a run on the bank. 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; or that vendors would refuse to accept TC issued by the new entity. 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, AMEXCO was going to walk away from the payment obligation.

²⁷ I found no earlier reference in the press that even vaguely suggested that AMEXCO was planning to incorporate.

the Wall Street Journal, which reports that the Assembly has passed the bill and that there is optimism that the bill will pass the Senate. The Senate did pass the bill on March 25, 1964, but not until there was a supplemental memo from the Carter, Ledyard firm (Carter, Ledyard & Milburn 1964b) stating that AMEXCO had no intention of incorporating until 1965. This gave the Legislature time to amend the act in the 1964 session. 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 was written unless there was some opposition. One likely possibility is that there was a fear among the public that incorporation would enable AMEXCO to shield its shareholders from any liability arising from the Salad Oil Swindle.²⁸ After the bill passed the Senate each of the relevant department heads and elected officials wrote an internal memo to the Governor advising him on whether or not to sign the bill.²⁹ The most important of these was probably from Atty. General Louis Lefkowitz on April 7, 1964. He expressed no opposition to the bill. Gov. Rockefeller signed the bill on April 16, 1964. The Wall Street Journal reported this on April 21, 1964.

On February 23, 1965 the AMEXCO board approved a proposal to forward, with their support, a plan of incorporation to be voted on at the next shareholder's meeting. No public media reported this act. 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 that approved the plan took place on April 27, 1965 (reported in the Wall Street Journal the next day). The actual incorporation took place on June 10, 1965 (and again was reported in the Wall Street Journal the next day).

3. Data and Empirical Analysis

3.1. Predictions

As discussed earlier, theory predicts that moving from unlimited to limited liability will reduce the systematic risk of the equity. Moreover, as the returns on the two components of limited liability equity, the bankruptcy put and the unlimited liability equity, measured over any non-infinitesimal time interval, are not perfectly correlated we also expect to see a reduction in the

²⁸ 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 from the Salad Oil Swindle.

²⁹ This appears to have been the general practice and was not specific to this bill.

unsystematic risk. Thus, we predict that moving to limited liability reduces both systematic and unsystematic risk.

One might think 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 Modigliani-Miller (1958) 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 more compensation for risk bearing. This will increase interest and other expenses in such a way as to offset the effect of reduced risk on share value.

The Salad Oil Swindle may confound empirical tests of the effect of limited liability on systematic risk. However, the SOS involved a small operation that AMEXCO was already getting rid of. Thus, it is unlikely that the swindle and the demise of AEFW would have had any effect on the systematic risk of AMEXCO's assets.³⁰ However, the SOS may increase the unsystematic risk of AMEXCO as news specific to the potential liability reached the market.³¹

The traditional view of limited liability 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 AMEXCO, the value of AMEXCO shares might well rise simply because it brings the liability of AMEXCO's shareholders in line with that of other companies and thus eliminates the "asterisk" effect.

Incorporating may increase the value of AMEXCO's equity by transferring wealth from existing creditors to shareholders. To the extent that default is possible, and contract renegotiation takes time, moving to limited liability produces a transfer of wealth to shareholders from contractual claimants. While virtually all of AMEXCO's liabilities arose from contract, they were virtually all short term and thus we would not expect any such wealth transfer. As of December 31, 1963 of approximately \$950 million in liabilities, all but \$50 million was clearly short term and the remaining \$50 million is labeled "Other liabilities" so it may well be short

³⁰ This hypothesis is tested below.

³¹ A perusal of all news stories on the Salad Oil Swindle shows that they were generated by the progress of lawsuits, criminal prosecutions, and settlement negotiations.

term. Of the \$50 Million, \$36 Million is on the balance sheet of American Express Co. Inc., an incorporated subsidiary that conducted banking activities outside of the United States.³² There was no long-term debt listed on its balance sheet.³³ Thus we expect to find little, if any, uncompensated risk shifting to creditors.

3.2.Data

I draw inference about the value of limited liability by examining the share price of American Express. During this time AMEXCO 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. The primary source of share prices was the Wall Street Journal. Occasionally I used the New York Times to check prices that appeared to be erroneous. Some questionable quotes remained and these were checked with I used prices provided by an executive of American Express.³⁴

3.3.On Methodology

In any event study the researcher must model the statistical process generating the returns on the security in question. In a single-firm event study such as this is, the issue is even more acute, as the power of the tests may be low because there is only one firm in the sample. Studying AMEXCO at this time presents some interesting problems.

First, AMEXCO traded in the pre-NASDAQ OTC market. Because the daily returns for this market is not available in machine readable form, the return generating process for these shares is not well studied. How then to deal with the fact that this an OTC traded stock? We know that infrequent trading is likely to be present. The norm in event studies is to model the

³² American Express Co., Inc. represented about half of the total assets of AMEXCO.

³³ Because there was no long term debt we cannot attempt to measure any wealth transfer from debtholders by examining bond prices.

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

return generating process for the shares in question using a simple market model, perhaps with additional lagged market indices as additional explanatory variables.

Further, because of both the salad oil swindle, and uncertainty about the nature of trading on the OTC I want to use a more general model of residual variance than that provided for in OLS. Thus, I explored a number of different potential models incorporating conditionally heteroskedastic residuals before settling on those that I used.³⁵

In Table 2 I present the results of estimating the return generating process applied to daily and pseudo-weekly (5-day compounded daily) returns.³⁶ Both of these models use the S&P500 as the market index.³⁷ From the non GARCH daily models (not presented) we concluded that that using only the contemporaneous market return would considerably understate AMEXCO's systematic risk, but that one lagged market return was sufficient. The use of these two lags in the AR process was sufficient to eliminate the autocorrelation in the estimated residuals. Likelihood Ratio tests indicated that the residuals are heteroskedastic. The GARCH(1,1) process on the error terms deals 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 this model we can see that AMEXCO has a β of about 1 (that is, the sum of the contemporaneous and lagged market effects is roughly 1), a result that is reinforced by the pseudo-weekly (5 day compounded) returns model in the right column of Table 2

The return generating process used in this paper, then is:³⁸

³⁵ I estimated models with only contemporaneous and lagged market effects, with various autoregressive processes on the error terms, and models that permit GARCH processes for the error terms. While a number of models had similar properties, those presented in Table 2 are parsimonious models of the return process. The significance of the lagged market terms beyond 1 varies in different models. Using more complex models, with more lag terms or higher order GARCH terms, did not affect our inferences.

³⁶ I only report some of the results for both sets of returns. However, I have carried out all tests using both sets of returns with no change in inference. Moreover, while I report a simple OLS model for the pseudo-weekly returns, more complex return-generating processes had no effect on inference.

³⁷ For comparison purposes Grossman (1995), using weekly data and the DJIA as his market index, provides an estimate of the AMEXCO's β of .51 during the 1950's.

³⁸ In principle one could also add dummy variables to the equation for h_t . Evidence presented in Table 3 shows that, in fact, residual variance is increased during the period of the salad-oil swindle. To the extent that I assume that the variance of the e 's is constant, when in fact it has increased, I am biasing myself toward finding significant abnormal returns.

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

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 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 autocorrelated error terms that procedure will cause problems. Introducing a dummy variable for day t drives the estimate of v_t to 0, which affects subsequent v 's. Using dummy variables for subsequent days is thus problematical. Further, because it would drive the estimate of v_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 researcher is interested in whether or not an event affected the value of a security.³⁹ 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 model) the conditional variance (h_t) the estimation 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 reestimate the model over the period ending at t and use the one-step ahead forecast of

³⁹ Of course, there is no reason why an event study could not focus on potential effects of events on higher moments, but in most cases, and in this study of the value of limited liability, it is the first moment that is of import.

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 biased 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 $t+1$. I take this approach.

Before proceeding to the results it is reasonable to ask, *ex ante*, whether it is likely that using this more complex return generating process will lead to improved inference. The first question to ask is whether the conditional variance, the h_t , do, in fact, vary over time. I estimated the GARCH model over the entire period ending on June 9, 1965. For comparison I also estimated the same model with the same assumed lag structure on error term, but with a constant residual variance. Figure 1 presents the time series of the square root of the ratio of h_t to the MSE from the constant residual variance model.⁴⁰ Clearly, the ratio exhibits considerable variation. While the mean value is .93 (suggesting that, on average, we will have a more precise estimate of the abnormal return), the ratio varies from .55 to 5.43, suggesting possible differences in t -statistics of a factor of 10.⁴¹ 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 in 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, a few outliers where the ratio is far greater than one, indicating that t -statistics would be

⁴⁰ 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, and thus on the t -statistic itself if the estimated coefficients did not change.

⁴¹ The reader should be a tad careful in evaluating this result because, unlike the actual implementation of the GARCH model presented in Table 5, for the purpose of this analysis I estimated the model over the entire period, rather than changing the estimation period for each event.

smaller. Thus, for most days we expect to have a greater ability to detect abnormal returns. Moreover, should any of the days with extreme conditional variance be an event day using a constant residual variance model might well lead to mistaken inference.

4. Empirical Results

4.1. The effect of limited liability on risk

In Table 3 I present tests of the hypothesis that limited liability had no effect on AMEXCO's systematic risk.⁴² The situation is complicated by the fact that the salad oil swindle is going on just before AMEXCO incorporates. Let LLDUM be a dummy variable that takes a value of 1 after AMEXCO shareholders vote to incorporate (that is, after April 28, 1965)⁴³ 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).⁴⁴ Then I modify the first equation in (1) to be:

$$\begin{aligned}
 R_t = & \alpha^o + \alpha^1 LLDUM + \alpha^2 SOSDUM \\
 & + \beta_0^0 R_{M,t} + \beta_0' (SOSDUM \times R_{M,t}) + \beta_0'' (LLDUM \times R_{M,t}) \\
 & + \beta_1 R_{M,t-1} + \beta_1' (SOSDUM \times R_{M,t-1}) + \beta_1'' (LLDUM \times R_{M,t-1}) + v_t
 \end{aligned} \tag{2}$$

I also estimated a similarly modified version of the pseudo-weekly model. I estimated both of these models with and without dummy variables for the effect of the Salad Oil Swindle (SOSDUM).

From the results presented in Table 3 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 AMEXCO. 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 $F(1, 1747)$ value of .52 and is clearly not significant. 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

⁴² AMEXCO made no major acquisitions during the time period covered by our data, thus it is reasonable to assume that the systematic risk of AMEXCO's assets did not change.

⁴³ Changing this to the actual date of incorporation does not affect the results.

⁴⁴ Again, changing the ending date to the final date when all litigation was settled does not change the results.

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 4 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 AMEXCO had limited liability (LLDUM). The CEV is an estimate of h_t in (1). I present this analysis in the middle column of the table. The results are consistent with the prediction that idiosyncratic variance is higher during the salad oil swindle and lower after AMEXCO incorporates and obtains limited liability. Perhaps, however, the change in the CEV was not driven by anything to do with AMEXCO, but rather by changes in market volatility. In the right column of Table 4 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.

4.2.Limited Liability and Share Returns

I present, in Table 5 abnormal returns on 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 AMEXCO, 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 was 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

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

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 AMEXCO was seeking limited liability and the memorandum itself provides no new information. AMEXCO 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 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.

None of the events associated with passage through the lower house of the New York legislature, the Assembly, has significant Abnormal Returns associated with it.⁴⁸ The bill was introduced in the upper house (the Senate) on March 12, 1964. With a single exception, none the events associated with Senate passage and signature by the Governor has significant Abnormal Return. That exception is the significant negative AR March 25, 1964. This is interesting because two events occurred on that day. One, which was unlikely to convey information to the market, was the final passage of the bill through the Senate. The other was the supplemental memorandum from the Carter, Ledyard firm. Neither the memorandum nor the passage was reported in the Wall Street Journal. To the extent that the news of the day was the memorandum and the in-

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 34 $\frac{7}{8}$ - 36 $\frac{3}{4}$, 35 $\frac{7}{8}$ - 38 and 37 $\frac{1}{4}$ - 39 $\frac{3}{8}$ respectively. There does not appear to be anything unusual about these prices.

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 apparent 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 or two. However, this significant AR appears to be due to a misreported Ask price on February 20. The Bid prices on Feb. 19, 20 and 24 were 39, 38 $\frac{1}{8}$ and 38 $\frac{3}{4}$ respectively, while the Ask prices were 41 $\frac{1}{4}$, 46 $\frac{3}{8}$ 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.

ference from it that there was opposition to the act, the negative AR suggests that traders viewed incorporation as a positive event for AMEXCO's shareholders and were concerned about the delay in incorporation.

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 of dinner and would have tied up the directors through the close of trading.⁴⁹ The board meeting was not reported in the press and thus any information reaching the market would have to have come either from directors themselves or from AMEXCO 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 AMEXCO 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 caused by leakage from AMEXCO employees or board members would have occurred before the meeting, not after.⁵⁰ There is no evidence of a run up 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. For these reasons I believe that the AR on February 23rd is spurious.

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

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.

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.

Thus, the preponderance of the evidence is consistent with the theory that limited liability, *per se*, was of limited value to American Express.

One final question remains about the empirical results. I devoted significant time and effort to modeling the return generating process. Did it matter? In Table 6 I compare the results from Table 5 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, but not so large as to affect inference.

4.3.A Brief Digression on Liquidity

One comment on an earlier version of this paper suggested that, perhaps, the effect of limited liability was to reduce the spread on AMCEXO stock. I examine this possibility. On two separate dates, January 10, 1963,⁵¹ and June 10, 1965 I collected Bid and Ask prices for all OTC shares reported in the Wall Street Journal. For each date, in results not reported but available from the author, I estimated a regression model in which the dependent variable was the percentage spread (the Bid – Ask spread divided by the average of the Bid and Ask prices), and the independent variable was the inverse of the average of the Bid and Ask prices. For the 1963 date prior to the move the limited liability the residual for AMEXCO was negative, that is AMEXCO's spread was lower than that predicted by the regression. Out of 471 stocks, 401 (85%) had residual spreads larger than AMEXCO's. This provides no support for the proposition that AMEXCO's spread was larger than would be expected due to its unlimited liability. Simi-

⁵¹ This is roughly one year prior to the start of the move to limited liability, and before the Salad Oil Swindle. Moreover, it is not a Monday. As Grossman (1995) noted, the press reported more OTC prices on Mondays than on other days, presumably including many low volume/low interest stocks. As he noted, AMEXCO was quoted every day, suggesting that it traded more frequently.

larly, for the June 1965 regression, AMEXCO's residual spread is again negative. Of 773 stock in this regression, 694 (90%) had larger residual spreads than AMEXCO. This provides some, though slight, evidence that AMEXCO's spread declined, relative to other OTC stocks, after the move to limited liability. However, a reasonable alternative explanation is that the more than 40% increase in the number of shares trading OTC with reported share prices means that the standard for having share prices reported had declined and that most of the newly reported firms were smaller, and frequently traded than AMEXCO. The change, then, was in the benchmark, not in AMEXCO. Thus, even that slight bit of evidence for an affect associated with the move to limited liability is dubious.

5. 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 economic theory moving to limited liability reduced both systematic and the unsystematic risk of AMEXCO shares. 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 AMEXCO with better defined legal governance, removed any "asterisk effect," and made it possible for merger to be carried out using AMEXCO common as the medium of exchange. Of course, one can argue that there is little to be learned from a single case, and that may be true. The problem is that one case is all there cases there are from this time period. Further, our results are consistent with Weinstein (2003) and reinforce the principal finding that limited liability may be of less importance that has been commonly believed.

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: Consolidated Balance Sheet for American Express Company (Dec. 31, 1963)¹

Assets		
	Cash on Hand and in Banks	266,637,122
	Loans and Discounts	172,410,264
	Accounts receivable and accrued interest	51,660,293
	Security Investments (at cost)	443,775,028
	U.S. Depository Bonds (contra)	35,000,000
	Reaquired Stock	1,436,565
	Investment in Subsidiaries	3,580,002
	Land, Bldg., Equip.	14,347,038
	Customers' Acceptance Liability	18,873,203
	Other Assets	<u>12,486,135</u>
Total Assets		1,020,205,650
Liabilities and Owner's Equity		
	Traveller's Checques, etc.	470,126,789
	Customer's Deposits ²	366,490,835
	U.S. Depository Bonds Liability (contra)	35,000,000
	Acceptances Outstanding	18,903,238
	Other Liabilities	50,989,231
	Capital Stock & Surplus	<u>78,695,557</u>
Total Liabilities and Owner's Equity		1,020,205,650
Market Value of Securities Investments		450,500,000
Market Value of Equity		172,865,998
Book Value Liabilities / Book Value Equity		11.96
Book Value Liabilities / Market Value Equity		5.45

¹ This Balance Sheet consolidates American Express Co., Inc. a 100% incorporated subsidiary that conducted banking operations outside of the United States. As of 12/31/63 the book value of its assets as \$496,497,530.

² These are deposits at banks owned by American Express Co., Inc.

Table 2: Estimation of Return Generating Process for AMEXCO

This table presents the results of estimating the versions of the market model that are used in this paper. The dependent variable is the daily (or pseudo-weekly) return on shares of American Express Company, while the independent variable is the daily (or pseudo-weekly) return on the S&P 500 stock index (SPRET). SPLAG is the lagged return on the S&P500. Returns are computed from the mean of the Bid and Ask prices reported in the Wall Street Journal. I estimated the regressions using data from Jan. 2, 1960 – Dec. 31, 1963. t-statistics are presented in parentheses below each estimated coefficient. The daily model is estimated using an AR(2) and GARCH (1, 1) process on the error term. The R^2 for that model takes into account both the structural model and the autocorrelation of the error terms. The pseudo-weekly model is estimated using OLS.

Model	Daily-GARCH	Pseudo-Weekly OLS
Constant	-.0002 (-.33)	.0008 (-.25)
SPRET	.2305 (7.21)	1.0158 (5.66)
SPLAG	.8746 (18.05)	
AR(1)	-.1795 (-4.78)	
AR(2)	-.1055 (-3.03)	
ARCH (0)	.00002 (10.23)	
ARCH (1)	.2654 (10.87)	
GARCH (1)	.6646 (26.90)	
Sum of SPRET and SPLAG terms	1.051	1.016
Observations	1004	200
DW		1.937
R^2	.1858	.139

Table 3: The Effect of Limited Liability and the Salad Oil Swindle on the Risk of AMEXCO

This table presents the results of estimating the daily and pseudo-weekly return generating processes augmented by dummy variables. LLDUM takes the value of 1 after SODOM takes the value of 1 during the time that The parameters of the daily model daily models 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 SOSDUM	-.008 (-.15)	.185 (.39)		
SPLAG x LLDUM	-.320 (-3.72)		-.313 (-3.94)	
SPLAG x SOSDUM	-.089 (-.71)			
NOBS	1761		1761	
R ²	.17	.13	.17	.13

Table 4: Test of Conditional Prediction Error Variance

The dependent variable in these regressions is the conditional error variance (CEV) from model the model presented in equation (2) [the estimate of h_t from equation (1) in Table 3], 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 5: The Path to Limited Liability

This table reports the abnormal returns (and t-statistics) for various dates associated with AMEXCO'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 using the daily return model in Table 2. 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	3 rd 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
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

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
3/25/64	Senate: Reported, 3 rd reading, passed. Memo from AMEXCO Counsel stating that AMEXCO 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
4/27/65	AMEXCO 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	AMEXCO Incorporates	6/11/65	.011 (1.03)	.009 (.83)	1.31

Table 6: 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 5 with alternative models of the return generating process. The left columns present the results from Table 5. 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 ⁵⁶			OLS with lagged betas ⁵⁷			AR(2) - ML ⁵⁸		
Date	Abnormal Return on Day 0 (t-in parentheses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parentheses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parentheses)	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
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

⁵⁶ These results are taken from Table 5

⁵⁷ These results are based on residuals from an OLS model with models that are available from the author upon request 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.

⁵⁸ These results are based on estimation of model 6 in over the period starting on January 5, 1960 and ending one trading day prior to date in the first column of the row.

	GARCH ⁵⁶			OLS with lagged betas ⁵⁷			AR(2) - ML ⁵⁸		
Date	Abnormal Return on Day 0 (t-in paren- theses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parentheses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)	Abnormal Return on Day 0 (t-in parentheses)	Abnormal Return on Day+1 (t-in parentheses)	t-statistic for (Day 0 +Day 1)
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
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 the daily return generating process in Table 2 to the Mean Squared Error obtained from estimating a model with an AR(2) term but no GARCH terms. The estimation period ends on June 9, 1965.

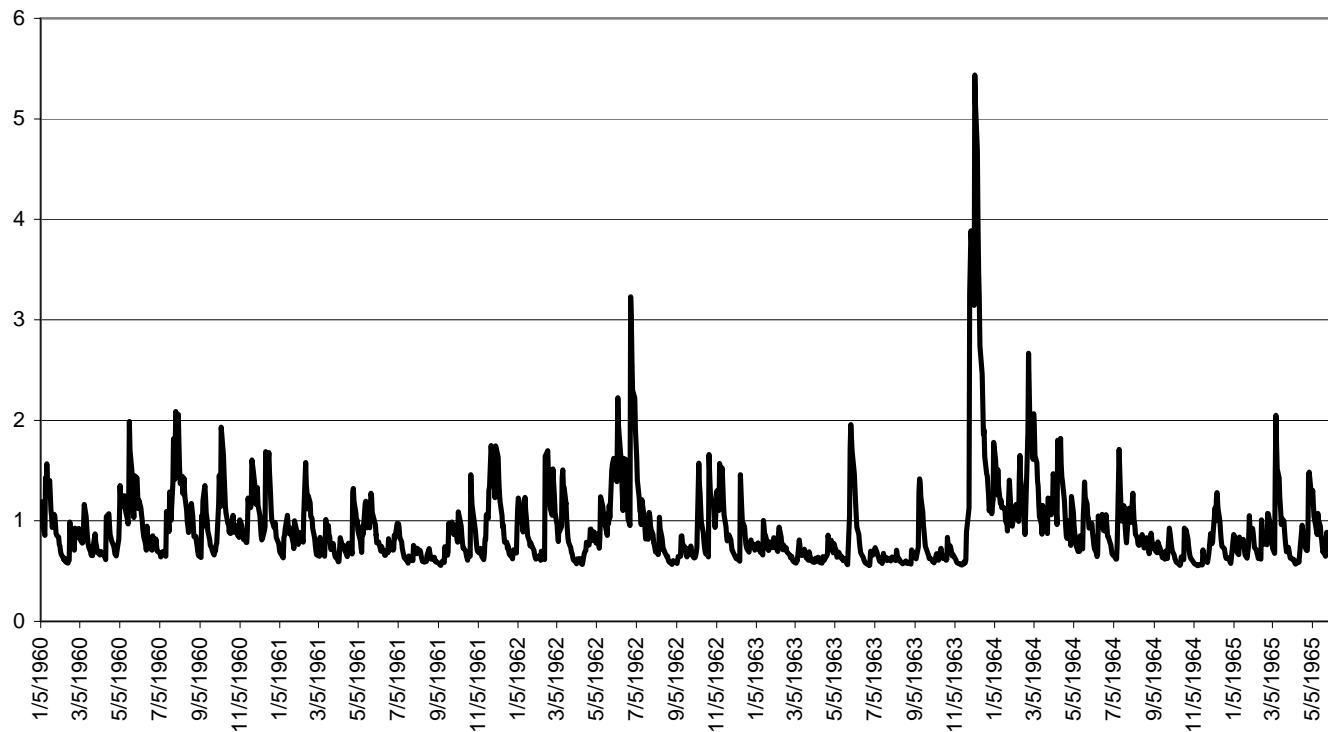
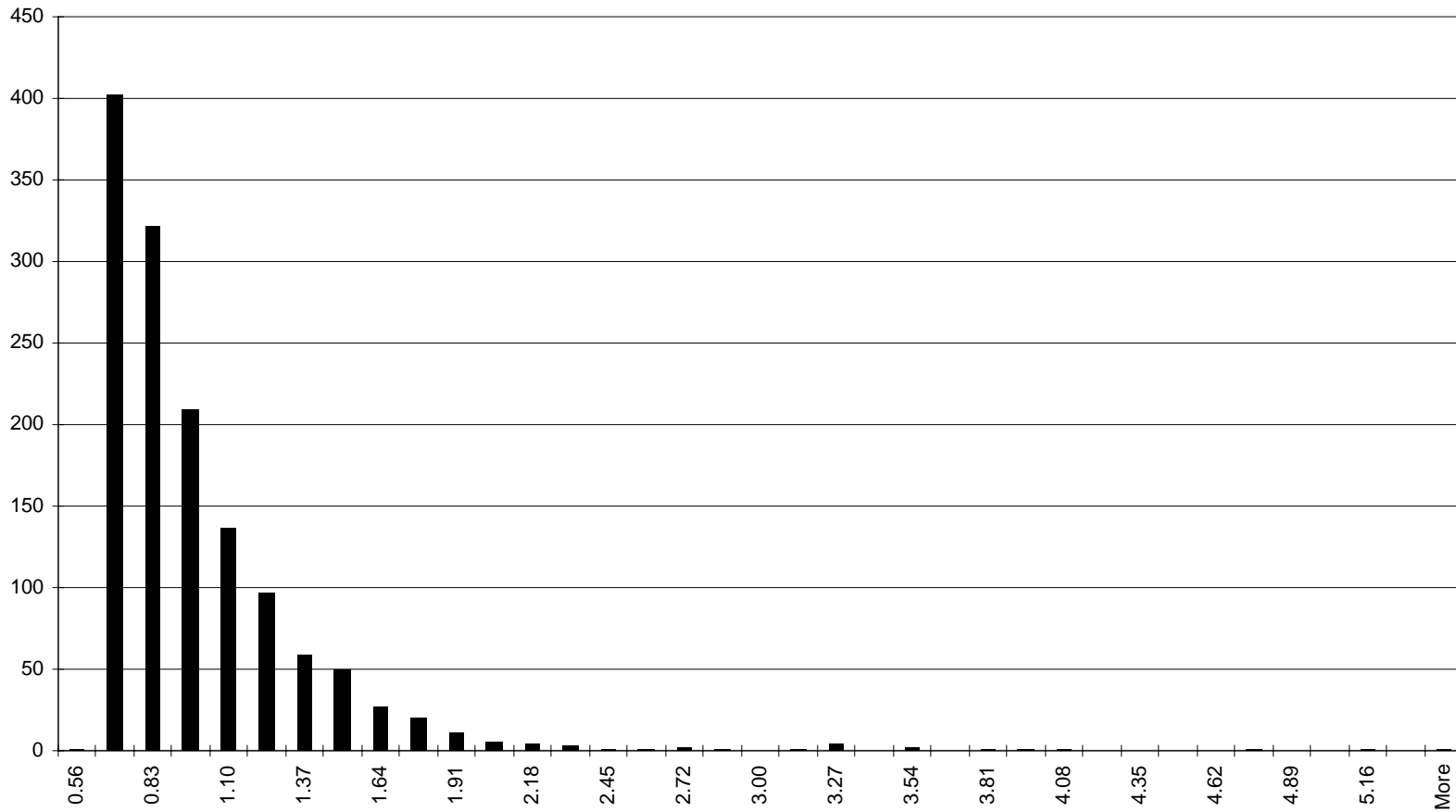


Figure 2: Histogram of $\sqrt{\frac{h_t}{MSE}}$

This figure presents a histogram of the series plotted in Figure 1.



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