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Determinants of share price movements in emerging equity markets: some evidence from America's past

Peter Z. Grossman

Abstract

Emerging equity markets are plagued by poor information, which is a barrier to outside shareholder participation. This paper examines the determinants of share prices of two United States companies over a 14-year period during the late 19th century, when America had an emerging equity market. These two companies withheld all information on profits and assets until the end of the period, yet traded regularly. Overall, the evidence suggests that outside investors received sufficient compensation for their ignorance, and that these outsiders set the market price. An event study shows that when information about company assets was revealed, market returns were significantly changed. Emerging equity markets are plagued by poor information, which is a barrier to outside shareholder participation. This paper examines the determinants of share prices of two United States companies over a 14-year period during the late 19th century, when America had an emerging equity market. These two companies withheld all information on profits and assets until the end of the period, yet traded regularly. Overall, the evidence suggests that outside investors received sufficient compensation for their ignorance, and that these outsiders set the market price. An event study shows that when information about company assets was revealed, market returns were significantly changed.

Introduction

Limited, unreliable information is often cited as a major stumbling block to investment in emerging equity markets (Chuhan, 1992; Bekaert, 1995). Short run, unreliable information can lead to fraud with outside investors as the losers. In the longer term, if public information remains poor, it would seem likely that insider information and behavior would drive prices. Any other scenario raises the question: how would ill-informed outsiders price shares where the risk-adjusted present value of the return on those shares is mainly guesswork?

The question is difficult to answer with respect to contemporary emerging markets precisely because information is unreliable or unavailable. But archival data can provide a perspective on the behavior of past emerging equity markets. The United States in the 19th century was an example of such a market,^(n1) one that was notoriously plagued by poor information. Baskin (1988), for example, notes that accounting data were often "nonexistent or entirely unreliable" (p. 200). Yet with archival records, we can learn a great deal about the actual assets and cash flows of companies and can observe that information with respect to share price movements over time.

In this paper, I examine the share price behavior of two companies, the Adams Express and the American Express, from 1885 to 1898. This is admittedly a small sample, but these two companies (that still exist and trade) had a special distinction: at the start of the period (and for more than a decade previously), they released no public information about earnings and assets. Other firms, such as railroads, did make information on earnings and assets regularly available;(n2) it is uncertain just how seriously investors considered published data. For the two express firms, the revenues and profits of which it is now clear equaled those of major railroads (Grossman, 1996), there was virtually nothing to cloud the issue of information reliability; it simply was not available. Moreover, the express provides an interesting test of the importance of information. In 1898, state laws forced Adams Express to reveal publicly the size of its assets. It is hypothesized that this event should have had little effect if all information – including that available only to insiders – had already been accounted for in the stock price.

Essentially, I will show in this paper: (1) that share price movements were systematically related to general movements in appropriate markets; (2) that market prices before the 1898 event did not contain all information known to insiders as well as outsiders; (3) that outside investors, who generally set the market price, demanded a substantial premium, probably because they did not have all relevant information; and (4) that the 1898 event, which had no real effect on company cash flows, did notably alter share prices and investor returns.

After a brief description of the two express firms and an explanation of how they controlled information, this paper tests for systematic influences and the importance of the 1898 revelation of asset information. For the latter, an event study was run. The results raised several issues including that of efficiency in emerging markets. These issues are discussed in a concluding section.

Control of information

As explained in Grossman (1996), Adams and American express companies were the leading firms in the 19th century railroad express industry that controlled the parcel post system of the United States.(n3) The private express service leased space on railroad cars to provide rapid transport and delivery lot all packages not suitable as bulk freight. Because the express insured the value of the contents it carried, the service specialized in the transport of money and high-valued items. For most of its history the express was dominated by a five-firm cartel, which carried over 80% of all traffic (Grossman, 1996).(n4) Adams and American were the two largest firms, with almost half of all express traffic between them.

Adams and American both had an unusual form of legal organization. They were unincorporated joint stock companies chartered under the laws of New York State (Grossman, 1992), which meant that they could sell stock, but that the shares carried unlimited liability.(n5) The directors of the firms accepted liability because the statutes governing unincorporated businesses provided express firms with certain advantages.

Above all, firms had few legal reporting requirements. Specific information about these companies was, thus, very limited. When the New York Stock Exchange tried to extract earnings information from American Express in 1876, the firm refused to provide it and replied that a listing on the NYSE was a matter of "indifference to us." (n6) The NYSE declined to pursue the matter further and the stock remained listed.

It is important to understand how completely the express firms withheld information. During the period of this study, they never published annual reports or held shareholder meetings. There is evidence to suggest that even some insiders, including members of boards of directors, had less than complete information on the earnings and assets of their firms. (n7) Yet shares of American Express and Adams traded regularly on the New York Stock Exchange and were dispersed among a large number of owners. Bid and asked prices were published daily, trades occurred at least a few times per week, (n8) and there does not ever seem to have been a problem for the market to arrive at a tradable price. (n9)

The express companies could be somewhat "indifferent" toward the secondary market in shares partly because they never sought financing either through debt or equity in the primary markets during this period. After 1868, the companies were entirely self- and bank-financed. It should be noted that their indifference to the market notwithstanding, the companies rigorously maintained their dividends, suggesting that directors wanted to limit the volatility of prices in the secondary market. But the freedom from the primary market undoubtedly contributed to the limits on public information.

Because of these limits, shareholders did not appreciate the underlying asset values of the shares. But because values were great, real returns to investors on these shares throughout the entire last quarter of the 19th century were very large, greater than those on railroad bonds, which Snowden (1990) showed to be, in general, the best investment of the late 19th century (Fig. 1). Snowden argued that high bond returns were unanticipated because of deflationary factors. These factors impacted express returns as well. But part of the high return on express shares seems to reflect compensation for risk -- risk that may have seemed great because shares were not backed by collateral and because of the dearth of reliable information about each firm's prospects. It will be shown later in this article how this risk premium changed as information improved.

Public information on the express

Despite the blackout on key details of the companies' size and performance, the public knew some facts about Adams and American. Four types of information would appear potentially to have had an impact on stock prices.

3.1. Industry growth

Investors could see expansion in the industry that could be at least partly quantified. The growing numbers of agencies and offices were highly visible. The size of traffic was not

specifically reported anywhere before 1890, but even before that time, any businessperson could discern that express traffic was expanding rapidly. For example, by the 1880s, between New York and Chicago, there were "all-express" trains; twenty years earlier, the express ran one car, or only part of a car, attached to a passenger train.

In 1890, the size of the business became clearer when the express agreed for the first time to provide information to the US Census. Although express firms gave no information on earnings or revenues, and no useful information on assets,([n10](#)) they revealed an annual package volume of over 115 million items and operations over 174,535 miles of railroad, steamship and stagecoach lines. To an investor, it must have been apparent that the industry was growing along with the American economy.

3.2. Dividends

Both firms paid dividends each year and thus they could have been perceived as bond substitutes. From 1869, the year that both firms were rechartered in the form they retained throughout the 19th century, both American and Adams never omitted a dividend payment in any year. In the case of Adams, it paid \$8 per share per year without fail. This payout was not cut even during severe depressionary periods in the mid-1870s and 1890s. At the same time, the dividend was not increased in the booming 1880s.

Meanwhile, American Express declared a \$6 per share annual dividend in 1869. This was cut to \$3 during a depression year, 1877, and was then raised incrementally back to \$6 by late 1881. The \$6 dividend was retained for the rest of the century. Thus, during the period under study, shares of American, as well as Adams, may have been purchased as bond substitutes.

3.3. Ties to the railroad industry

Express companies were closely tied in the public mind to the railroads upon whom the express service depended. It was not generally the case that railroads controlled express companies.([n11](#)) Still, express companies were identified as part of the larger transportation system, and the prospects for the railroads could have been seen as a reflection of the prospects for the express. Because many railroad and other transport company fundamentals were published and the fortunes of railroads were in the public eye, investors could have used that information to deduce the prospects for the express. Thus price movements in express shares could well have followed the movements in the prices of railroad shares.

3.4. Industry news

Express firms, individually and as an industry, also faced various publicly reported firm-specific, as well as industry-wide, events --both positive and negative. Entry attempts, for example, were well known, although in the period under study only the railroads themselves ever tried to enter the express, and they did so only rarely (Grossman, 1996).([n12](#)) Still,

conflict with railroad entrants meant lost business by one or more carriers. Cartel firms also sometimes engaged railroad entrants in price wars when there were alternative routes between cities.(n13) Most entries were ultimately unsuccessful and firms exited, news which in itself could have had an unanticipated positive impact on express share prices.

There were also dividend changes. Although neither Adams nor American altered their dividends from 1885 through the end of the century, other firms in the industry did cut or raise payouts. The smaller United States Express, for example, cut its dividend three times, and raised it twice, between 1889 and 1895. It may be assumed that investor perceptions could have been affected by any dividend changes in the industry. These changes, which provided an indicator about the state of the industry as a whole, could have altered earnings expectations and raised questions about whether dividends for Adams and American would be cut, or raised, in the future.

This information, although far from complete, might nonetheless have provided investors with sufficient data to establish a price of, and make a market in, the shares of the Adams and American express companies. Each of these factors was tested.

Information and stock price movements: a test

What specific information was related to price movements in express stocks? Share price movements of Adams and American were tested against variables that were known or at least generally discernible to examine systematic influences on express share prices. Toward that end, price changes between 1885 and 1896 were regressed against variables that captured the kind of public information noted in the previous section.

The period 1897 through 1898 was examined separately. On February 10, 1898, Adams announced it would issue 4% bonds equal to 100% of the par value of its stock and would distribute the bonds to shareholders. This dividend resulted from asset-reporting requirements imposed specifically on Adams by several state statutes.(n14) For the first time, outside shareholders learned the true size of Adams's assets. It also might have been assumed that if Adams had concealed information concerning its assets so too did the other express firms. Overall, then, from February 1898 onward, it may be assumed investors in all express shares were better informed than they had been in previous years. This event permitted a test of the impact of important new information. An event study was run for both Adams and American on data surrounding this information revelation.

For the first test, percentage changes in the monthly average price of shares in Adams and American express companies were regressed against monthly percentage changes in three specific variables that might have affected investors' perceptions of the prospects for the express firms: the average of daily bank clearances outside New York City, the yield on high quality railroad bonds, and the movements of a contemporaneous transportation stock index, the Dow 12. I also examine the effects of negative and positive publicly reported news events.

The complete equation is given by:

$$(1) \Delta \text{PRICE} = \text{Alpha} + \text{Beta}_1 \Delta \text{BANK}_{-1} + \text{Beta}_2 \Delta \text{BOND} + \text{Beta}_3 \Delta \text{DOW} + \text{Beta}_4 \Delta \text{NEGNEWS} + \text{Beta}_5 \Delta \text{POSNEWS}$$

The first independent variable, bank clearances outside New York (ΔBANK_{-1}), would measure how responsive express share prices were to the changes in the economy overall. As commerce expanded, so too did transport, and indeed express revenues so far as they can be ascertained through archival records did rise over the long term in concert with the US economy. Therefore, the first variable tests whether investors, denied information on the fundamentals of the companies, considered instead the fundamentals of the country as a whole as their guide to the prospects for express firms, and used the pace and direction of economic growth to influence changes in express share prices.

Bank clearances outside New York provided a coincident indicator of changes in the economy that had a high correlation with later GDP series (Macaulay, 1938), and unlike GDP numbers, bank clearances were readily observed at the time. Indeed, the series (from Moore, 1961) was taken directly from contemporaneous data that was published in *The Commercial and Financial Chronicle*, and so would have been available to late 19th century investors. By excluding New York, a large quantity of purely financial transactions were removed from the measure. The test used a seasonally adjusted monthly average (Moore, 1961) because some seasonal variation, which would have been discounted by investors, could distort a statistical test. Also, because the stock market is a forward-looking indicator whereas clearances are a coincident measure, the series was lagged one month. Changes in clearances should, of course, be positively related to changes in express share prices.

Interest rates could also have been a determinant of changes in express share prices. Dividends gave some indirect indication of earnings as well as a definite, measurable return. Moreover, dividends were of considerable importance to 19th century investors, who often appear to have sought shares that were close substitutes for bonds (Graham and Dodd, 1940; Baskin, 1988). Although each express firm's dividend tended not to rise above a certain level, if earnings were poor, dividends could have been cut or eliminated entirely. Consistent dividends would have signaled a history of earnings at least able to support that payout and, if maintained through both good and bad economic times, the stock could reliably have been thought to have had a stable, debt-like return. Further, the greater the reliability of the dividend, the lower the risk that either equity market fluctuations or published firm- and industry-specific news would have led to a dividend reduction. However, if the shares were considered bond-like, interest rate changes would likely have negatively affected express share prices. For this test, share price changes were regressed against changes in the bond rate (ΔBOND). The rate series used in the test was based on the yield of an index of high-quality railroad bonds that would have been well known to investors of the day (Macaulay, 1938).

It might be wondered why railroad bonds were used instead of risk-free US government securities. The basic reason is given by Macaulay (1938) in his classic work on the historical movement of US interest rates. The yields on treasury securities were, according to Macaulay, distorted by banking rules that affected the "circulation privileges" of the bonds. He explicitly ruled them out as a benchmark for 19th century interest rate movements (p. 74). High quality railroad bonds, which traded in a much larger and more active market than that of government securities, was the preferred indicator of fluctuations in market interest rates.

The linkage of express stock prices to share price movements in the market for transportation stocks generally was tested against monthly changes in the Dow Jones 12 stock index (Delta DOW). The index began in 1885, hence the choice of starting date for this survey. This index was especially appropriate to test against express firms because it was largely a portfolio of transport stocks, made up of ten railroads, a steamship company, and Western Union.(n15) Thus, in the Dow 12, there existed a representative transportation-based stock market indicator that would have been directly observed by investors.

The index began to be published in February 1885. Then, after May 1896, the Dow was divided into separate industrial and rail indices, and thus the first set of regressions is run for the entire life span of the Dow 12, which was published regularly in the Wall Street Journal. The period of the Dow 12 was sufficiently large to provide evidence of the relationship of a market indicator to the movement of express stocks.

There was a statistical problem in using the Dow 12. Movements in it and in the bond market were fairly strongly correlated. For changes in these series, the correlation coefficient was -0.5831, indicating possible collinearity in the regression results.(n16) Further analysis suggests that collinearity did not negate the results, although some caution must be maintained in any conclusions.(n17)

Publicly reported events related to each firm and to the express industry as a whole might also have affected investors' perceptions of an individual firm's risks. Even for a company perceived to have been bond-like, negative and positive publicity might have affected the issue's implicit "rating" thus raising or lowering the risk premium investors would have demanded. The response of the share prices to these news reports would also demonstrate the importance of the public information that shareholders did receive.

The reports, taken from contemporary news accounts, were treated in the test as separate dummy variables (NEGNEWS, POSNEWS), the first, testing the effect of negative public reports, the latter positive ones. Negative reports, of which fifteen examples were identified, consisted of: lowered dividends by both the United States Express Company and Wells Fargo; and three notable entry attempts by railroads (two in 1886), as well as a periods of price cutting that resulted largely from the railroad entry attempts (see Appendix). This study placed each event in the month when it was noted in public records. It is, of course, possible that some investors (perhaps the most important investors) could have had the

information earlier, perhaps several months before the general public. But there was no clear indication of when these events might have been known to insiders.

Altogether, eight positive news items were also observed, and these are included in the POSNEWS variable. These items included dividend increases by other firms in the industry, a favorable Supreme Court ruling, exit by a railroad entrant, and the cessation of intracartel conflict (see Appendix).⁽ⁿ¹⁸⁾

Results

5.1. 1885-1896

The first set of results reveal that changes in the prices of Adams and American Express stock were systematically related to movements in other markets. Table 1 shows that for Adams bond interest rate changes were significant at 0.05; bank clearances were weakly significant (0.10), whereas the stock market, though the correct sign, was not significant. Neither news variable was statistically significant, and the positive news term was the wrong sign.

The results for American Express (Table 2) showed some notable differences. Movements of both interest rates and the stock market were the expected signs and were statistically significant (at 0.01). The coefficient for bank clearances, though of the correct sign, was not statistically significant. Again, the two news terms -- though both were the correct signs in this instance -- were not significant.

The differences in the results for American and Adams are not surprising. Although both firms had ties to the railroads, only American of the two was perceived to carry substantial stock market risk that might have been observable through the price changes in railroad shares. American's historical dividend record implied that it was less stable as a fixed income investment than was Adams. American had reduced its dividend in 1877, a year of particular weakness for railroads and the stock market generally. In fact, a modern index of 19th century stock prices places the low of the stock market for the entire last quarter of the century in June 1877, the exact month that American announced its dividend cut (Moore, 1961). Investors might then have logically expected that the probability of a dividend omission or reduction by American in the future was related to the performance of the transportation industry and the market generally. Thus a transportation stock market indicator was relatively more important for American than for Adams, the company whose dividend did not change even at the market's low. Adams, in contrast, traded like a perpetual bond⁽ⁿ¹⁹⁾ throughout the period, deemed by the market as likely to keep a stable return for the foreseeable future. It could thus have also been expected that changes in interest rates would be more important with respect to the price of Adams shares. That the stock market variable was not statistically significant suggests that investors did not see Adams as facing notable stock market risk.

The lack of any apparent relationship of either stock to the news terms suggests that none of the events were important enough in the public eye to change public perceptions of the firms. Indeed, examination of the data shows very little change in price variance even on the days when these news items were announced. Of course, some events (e.g., dividend changes by other cartel firms) might have been anticipated and these changes cannot be easily captured in monthly averages. However, there is little evidence to suggest that the public reports listed in the Appendix had any appreciable impact on share prices of American and Adams express companies. Close inspection of the data reveals no event that led to any unusual changes in share returns.

5.2. Information shock: event study

However, one key event was studied separately. As noted, in February 1898, Adams revealed the true extent of its assets; outside investors learned that the company held highly liquid assets – mostly railroad bonds and stock – worth substantially more (about 50%) than the market value of the company. This event provides a useful benchmark to examine how this information affected the stock price and what it suggested about how the price had been set previously. The event is especially interesting because even though a dividend of bonds was distributed to shareholders, there was really little direct gain to shareholders, and no change in either the scope or the activities of the firm. The dividend on the stock had been \$8 per share of common stock before the bond dividend; afterward, the stock dividend was cut in half, while \$4 was paid on each (\$100 par) bond. Actually, at first only insiders knew that the payout would be unchanged. But it can be assumed that if the price of Adams stock was determined by insiders, the news overall would have had little impact. Indeed, if all inside information was in the price, it may be hypothesized that there should not have been a run-up in the combined stock and bond price before or after the information was revealed.

Admittedly, there was some confusion at first as to whether or not the stock dividend would be cut, and the fact that there was heavy volume in February may well indicate insider selling (to take advantage of an information asymmetry) to outside investors ignorant of the company's plans. But once the company made its policy clear, if the price had previously included all known information, it would be expected that the stock would have returned to roughly the same relative price and yield it held with respect to the market before February 10.

To test whether there was a fundamental change in the market valuation of Adams and American express shares as a result of this public revelation, an event study was undertaken. Of course, the basic idea of event-study methodology is to measure the abnormal returns that result (or do not result) from a particular event. Although there are variations on how such studies are conducted, this paper followed a standard approach outlined in Campbell et al. (1997): First, a normal return was calculated for a period before the event, designated the estimation period. This provided parameters to measure deviations of the actual return from predicted values, if they existed, during the event window.

To provide the parameters for the event study, a market model regression was run and a beta coefficient estimated for Adams and American for a 60-week estimation period -- from September 1896 through October 1897. The test used weekly rather than monthly data to assess more clearly the immediate impact of the event on the stock price.(n20) The equation related the return on a given security i at time, t , to the market return m or:

$$(2) R_{it} = \text{Alpha}_i + \text{Beta}_i R_{mt} + \text{Epsilon}_i$$

This test yielded a beta for Adams for the estimation period of 0.185 (significant at 0.01), whereas for American the value of beta was 0.110, (significant at 0.05).(n21)

Second, an event period of 31 weeks -- 15 weeks before and 15 week after the announcement week (beginning February 10, 1898) -- was delineated. Using the parameters from the estimation period, the abnormal returns for both shares were measured and analyzed. The abnormal returns Epsilon^* in each period take the form of:

$$(3) \text{Epsilon}^{*, \text{sub } i} = R_i - \text{Alpha}_i - \text{Beta}_i R_m$$

And if indeed there was no real effect on the prices of Adams or American -- as hypothesized earlier -- the sum of the abnormal returns should be statistically indistinguishable from zero over time.

Fig. 2 and Table 3 illustrate the abnormal returns for both American and Adams. For Adams the break in the cumulative abnormal return (CAR) at the event week is extreme. As Table 3 reveals, in the immediate aftermath of the announcement the abnormal return was in fact over 0.30. The z-statistic of nearly 6.0 is highly significant at 0.001 (Table 3) and strongly rejects the original hypothesis that the abnormal return for the event window is not statistically different from zero. The change in the CAR for American Express for the immediate announcement period was also significant, albeit at 0.10, implying that the market believed in the likelihood that American had been undervalued as well.

The Adams results were noteworthy in at least two other respects. First, the week before the announcement the abnormal return was rather large, with a z-statistic that falls just beyond the 0.10 significance level, and can be considered at least marginally significant at 0.15. This raises the possibility that there was some trading activity by insiders just before announcement, which in turn suggests that insiders were aware that the shares were undervalued.

Second, after the announcement, returns fell substantially over the next three trading periods, even before it was announced that the dividend would not change. This result indicates a possible "overreaction," a phenomenon discussed extensively in the literature (e.g., DeBondt and Thaler, 1985).(n22) There was in general a great deal of volatility during the three-week period until it was announced that the overall dividend for the stock and bond would be the same, at \$8, as it had been for the stock alone. On several individual

trading days, price changes were between 0.05 and 0.10. However, statistically, over the last two weeks, the standardized average cumulative return (SCAR) is at most marginally significant.(n23)

Still, Fig. 2 shows that the information shock did fundamentally alter share prices of both companies (and Adams especially). In later weeks, the abnormal returns for both firms seem to have stabilized and, as Table 3 shows, changes were not significantly different from zero. But prices were higher, reflecting the one-time revelation of public information.

As clear as these results are, it must be recalled that the earlier tests showed that Adams was more closely tied to the bond market than the stock market. Therefore, the observed abnormal return on the stock could have merely reflected some change in the bond market. However, as Figs. 3 and 4 show, the yields on Adams and American changed drastically relative to bonds as well. Fig. 3 illustrates monthly changes in the yield of Adams relative to railroad bonds. In this case, the bond index is the same one that was utilized in the first set of regressions.(n24) On February 8, two days before the public announcement, the yield on Adams Express shares was 4.79%. By March, after it became clear that Adams was not going to pay more than \$8 in combined stock-bond dividends, the yield on Adams securities was 3.9%. In other words, despite the public announcement that the dividend would not increase, the yield was 89 basis points lower than it was two days before the announcement revealing the company's assets. As the figure shows, on average from January to March there was a 116 basis point change! Where previously Adams was priced so that its yield was at a premium to railroad bonds, after the announcement the reverse was true and it remained true thereafter.

These data strongly suggest: (1) that the market price of Adams in particular reflected a premium that outside shareholders demanded to hold Adams in a state of relative ignorance; (2) that the share prices of the two companies were systematically undervalued for a long time; and (3) that the revelation of assets represented a piece of vital information that fundamentally affected market valuation. If the market had been purely an insider market, and the price had carried strong efficiency characteristics, there should have been little change in the stock even after the announcement, but that was hardly the case.

Adams's revelation also affected perceptions of American's fortunes. Although American did not raise its dividend, distribute bonds to its shareholders, or even reveal (for the time being) the size of its assets, the action by Adams gave American's outside shareholders reason to assume that the company was wealthier than anyone previously had thought. Note in Fig. 4, its yield relative to railroad bonds fell by 40 basis points in February and drifted lower by another 20 points during the ensuing weeks.

Discussion and conclusion

The results of this study raise several issues. First, the case adds another datum to the vast literature on market efficiency (Fama, 1970, 1991), and more particularly to the studies of

efficiency in emerging markets (e.g., Civelek, 1991; Gordon and Rittenberg, 1995). However, tests in contemporary emerging markets are often problematic because actual data of firms are not reliably known at the time the tests are carried out. This study did not set out to prove efficiency, but by using historical data, the study has been able to explore how well market valuations reflected all possible facts about two 19th century US companies. Clearly, the strongest efficiency arguments must be rejected, because the data suggest that both stocks were systematically undervalued because investors lacked relevant information. It is not immediately clear whether weaker forms of efficiency are in evidence; the precise delineation of efficiency characteristics of these and other historical cases requires further investigation.

The study also raises questions about investor behavior: for example, it may be asked why outside shareholders would let themselves be held in ignorance. Or given ignorance, why did they invest? But when the context, as well as the return, is taken into account, the results are not surprising. This was an emerging equity market where information was known to be poor. To invest meant to accept the risk entailed by the lack of information. However, investors were compensated for this particular risk. In other words, the price reflected what was known and what was not known about the companies.⁽ⁿ²⁵⁾ Shareholders can be said to have accepted the greater risk of no information on assets or earnings by receiving a high return, which historically proved better than they would have received on a seemingly safer (or at least better understood) alternative such as railway bonds.

The study also leads to speculation as to motivation of insiders: why were they willing to let the market clearly undervalue the stock they held? But this, too, has a plausible explanation. As Grossman (1992) argues, insiders believed that by keeping the public generally, and the railroads particularly, ignorant, they gave their companies advantages in setting contract terms with railroads and thus made their firms ultimately more profitable. Insiders also knew if they liquidated their firms, they would be able to realize the value they knew existed. Of course, this meant that if they sold shares before liquidation, they would have failed to gain some of that value. But anecdotal evidence suggests most insiders were individuals who had long-term commitments to the companies in question (Grossman, 1987).

Finally, this study of express shares also tells us something about how pricing takes place over time in emerging markets. It seems clear that many of today's investors in emerging markets (particularly foreign investors) have used the same kind of historical and proxy data used by their 19th century counterparts to determine purchases of emerging market equity issues (España, 1995). These issues, like express shares, have also yielded above-average returns (at times), but clearly also have carried significant risks in part because so little about them has been known. It seems that the promise of high returns but the problem of poor information has been driving recent investment decisions in markets such as those of Russia and China.

The example of the express shares also shows how risks and returns can change over time. First, investors may find that long-term historical data about how a company's shares perform relative to various markets and the economy as a whole can provide a basis for estimating a return and a level of risk. Second, data often improve over time for many reasons, legal reporting (as in this case) being but one of them. There are certainly many reasons generally for emerging markets to strive for improvement in the quality of information. Firms that want to attract more outside investment benefit as a rule through more and better information; alternatively, when incentives remain for firms to restrict information, they can continue to compensate outside shareholders for the added risk of ignorance. Either way emerging economies can continue to attract investment and offer viable markets for company shares.

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Notes

(n1.) There are a number of works that treat the evolution of U.S. equity markets. For example, see Davis and Cull (1994).

(n2.) Railroads issued reports as often as every month. These were carried in the financial press. Indeed, the reports of major railroads typically appeared on the front page of The Wall Street Journal.

(n3.) The express lost control of the parcel post in 1913, when the Post Office Department was finally permitted to offer a package delivery system.

(n4.) The three other major express firms were not included in the study for specific reasons. The Southern Express was closely held and did not trade. United States Express (called the "States") was operated by the family of Thomas C. Platt who, while president of the States, was also a sitting United States Senator. Thus political factors might have impacted the price movements of its shares; these effects would have been difficult to determine. Wells Fargo was not included because it, unlike Adams and American, had a limited liability charter. Although the special charter permitted the firm to withhold some information, it was required to hold annual shareholder meetings. Shareholders were able possibly to glean somewhat more information about it as a result. Also, after 1887, due to a federal government inquiry into railroad practices in the west, it became known that the Central Pacific and Southern Pacific railroads held a controlling block of Wells Fargo shares. (See transcripts of the U.S. Pacific Railway Commission hearings, August 10, 1887.)

(n5.) Four of the five major express firms started as New York-chartered joint stock companies. Wells Fargo received a very favorable limited liability charter from the Colorado territory and incorporated in 1866; the Southern was chartered at the direction of the Georgia Supreme Court in 1861. Adams, American Express, and United States Express companies retained their New York unlimited liability charters throughout the 19th century (Grossman, 1992).

(n6.) Noted in the "Minutes of the Executive Committee of the American Express Company," February 3, 1876, American Express (hereafter, AE) archives.

(n7.) For example, in some years, in the Minutes of the Board of Directors at American Express, statements of earnings are blank; in other years, earnings simply are not mentioned in the record. Only the five members of the Executive Committee at American Express appear to have known, on a quarterly or annual basis, the extent of the company's profits. There was one report given to the board in 1888 showing 10-year net earnings of \$26.24 million. It is the only contemporaneous long-run earnings report in the record (AE Archives).

(n8.) Annual volume for the previous year was published each January in the New York Times from the mid-1890s onward for all NYSE stocks. Turnover of the shares of both express companies was in the range of 10 to 20% or 1000 to 3000 shares per month. Daily trade data beginning in the 1880s reveal that generally express shares traded a few times per week in varying lot sizes from a few shares to several hundred.

(n9.) There is, of course, a literature on the influence of less-than-fully informed, or "noisy," shareholders on market behavior (e.g., Black, 1986). But this case is unusual because of the degree to which outside shareholders were without access to basic information and because insiders permitted shares to be undervalued over the long term.

(n10.) The firms reported that they owned physical capital worth a little over \$5 million. They did not report that they owned stock and bond portfolios worth tens of millions of dollars.

(n11.) This was true for Adams and American. As noted, Wells Fargo was controlled by railroad interests.

(n12.) In the early history of the express industry, entry was relatively easy and hundreds of express firms were created. But as Grossman (1996) explains, later there were formidable barriers to entry, and the cartel was largely successful in blocking all attempts. Still, known entry attempts could have been considered costly to the firms by outside shareholders.

(n13.) There were "common routes." That is, there were often different railroads (and express companies serving them) that could travel between two large cities exclusively over their own lines. For example, three railroads, and three different express companies, could get to Chicago from New York without changing lines. Express firms could have competed with one another over these routes, but they tended to cooperate instead. But if a railroad took over one of

these lines, the express firms could have engaged the rail line in a price war. See Grossman (1996).

(n14.) Adams explained that they were taking this step because of "attacks to which the company has been subjected at the hands of the Tax Commissioners of various states." Reported in *The Commercial and Financial Chronicle*, February 12, 1898 (p. 339).

(n15.) The Dow was, at the start of the series, actually comprised of fourteen stocks including the following railroads: New York Central; Central of New Jersey; Central Pacific; Chicago, Milwaukee & St. Paul; Chicago & North Western; Delaware, Lackawanna & Western; Delaware & Hudson Canal; Lake Shore; Louisville & Nashville; Missouri Pacific; Northern Pacific (preferred); and Union Pacific. Western Union and the Pacific Mail Steamship completed the list. In early 1886, the Central of New Jersey and the Central Pacific were dropped. The index was modified somewhat again in 1894, although the basic balance of rail and nonrail companies stayed the same (Stillman, 1986).

(n16.) It should be noted that Bank Clearances were not strongly correlated with either the stock or bond markets.

(n17.) Further analysis included running these same basic regressions with other railroad industry proxies, including price movements of shares in railroad companies with known ties to Adams or American. Movements of these share prices had much lower correlations with bond interest rates. Basically, these proxies led to the same basic results as those found using the Dow.

(n18.) To see whether these public reports were anticipated, the regressions were run with news terms a month early. No statistically significant relationships were observed.

(n19.) Adams offered a yield that was quite similar to that offered on railroad consols. A survey of such bonds in the July 14, 1891 issue of the *Wall Street Journal* quoted yields ranging from 5.18% to 6.45%. At that time, the yield on Adams Express stock was 5.45%.

(n20.) This test utilized weekly average returns for a trading week defined by trades from Friday to Thursday. The week was construed in this way because the announcement day of the event was a Friday. By using a Friday-to-Thursday week, the data captures trading up to the day before the announcement as well as the week immediately after the announcement. The test was also run using daily data, but although the shares traded every week, on average they traded only two or three times per week, making weekly data more tractable for statistical analysis.

(n21.) Results (S.E. in parentheses):

Adams: $R = 0.000751 + 0.184963 * R_m$

(0.00135) (0.052831) $AR^2 = 0.154$

American: $R = 0.001021 + 0.11015 * R_m$

(0.00121) (0.047855) $AR^2 = 0.065$

(n22.) Indeed, the impression of an overreaction is strengthened by the fact that the largest drop (of about 0.10) came on a single day, the third trading day after the announcement.

(n23.) Again, significant at only 0.15.

(n24.) Average monthly changes are used here because only a monthly bond index was available. However, Adams's yield was measured against yields of some representative bond issues; basically weekly data confirm the picture of Fig. 3.

(n25.) The reputation of managers might also have been a factor in determining investor behavior. Anecdotal evidence, however, does not clarify this issue. The managers were generally secretive men, who shunned the limelight. The most public individual during the period was John Hoey, President of Adams, whose ostentatious lifestyle earned him some negative publicity (Harlow, 1937). One might expect this to have reduced investment in Adams but there is no evidence that it did.

Table 1 Adams Express and share price factors February 1885-May 1896

Legend for Chart:

A - Variable

B - Coefficient

A	B
CONSTANT	0.000609 (0.00139)
Delta BANK _{t-1}	0.045790[*] (0.02718)
Delta BOND	-0.418720[**] (0.17008)
Delta DOW	0.061030 (0.05049)
NEGNEWS	-0.003430 (0.00414)
POSNEWS	-0.004020 (0.00535)

Adj R² = 0.13
D - W = 2.12

[*] Significant at 0.10.
[**] Significant at 0.05.
Standard errors are in parentheses.

Table 2 American Express and share price factors February 1885-May 1896

Legend for Chart:

A - Variable
B - Coefficient

A	B
CONSTANT	0.000818 (0.00123)
Delta BANK _{t-1}	0.023953 (0.02395)
Delta BOND	-0.496960[*] (0.14988)
Delta DOW	0.145172[*] (0.04448)
NEGNEWS	-0.003580 (0.00365)
POSNEWS	0.004644 (0.00472)

Adj R² = 0.30
D - W = 2.14

[*] Significant at 0.01.
Standard errors are in parentheses.

Table 3 Abnormal returns for the 31-week event period

Legend for Chart:

A - Week
B - Adams Express Epsilon[*]
C - Adams Express z-Statistic
D - Adams Express CAR
E - American Express Epsilon[*]
F - American Express z-Statistic
G - American Express CAR

A	B E	C F	D G
-15	0.00121 0.00815	0.02298 0.17033	0.00121 0.00815
-14	-0.02421 -0.00270	-0.45850 -0.05647	-0.02300 0.00545
-13	-0.00579 0.00565	-0.10962 0.11808	-0.02879 0.01110
-12	-0.00360 -0.00219	-0.06810 -0.04569	-0.03239 0.00891
-11	0.01643 -0.00125	0.31109 -0.02605	-0.01596 0.00766
-10	-0.01054 -0.01155	-0.19966 -0.24128	-0.02650 -0.00388
-9	0.00040 -0.00543	0.00755 -0.11347	-0.02610 -0.00931
-8	0.00350 0.00082	0.06635 0.01711	-0.02260 -0.00849
-7	0.00876 -0.00112	0.16590 -0.02347	-0.01384 -0.00961
-6	0.00217 0.00161	-0.04107 0.03369	-0.01601 -0.00800
-5	-0.00491 0.01298	-0.09289 0.27120	-0.02091 0.00498
-4	0.00876 -0.00097	0.16591 -0.02024	-0.01215 0.00401
-3	-0.00777 -0.00403	0.14714 -0.08420	-0.01992 -0.00002
-2	0.00662 0.00037	-0.12527 0.00776	-0.01330 0.00035
-1	0.06670 0.00107	1.26295 0.02240	0.05339 0.00142
0[a]	0.30713 0.07058	5.81587[**] 1.47507[*]	0.36052 0.07200
1	-0.00823	-0.15590	0.35229

	-0.00990	-0.20689	0.06210
2	-0.06027 0.01456	-1.14117 0.30437	0.29202 0.07666
3	-0.02783 -0.01374	-0.52706 0.28718	0.26419 0.06292
4	-0.00022 -0.00826	-0.00413 -0.17270	0.26497 0.05466
5	0.00155 0.02240	0.02936 0.46805	0.26552 0.07706
6	-0.00675 0.02226	-0.12789 -0.46524	0.25877 0.05480
7	0.00102 -0.02192	0.01929 -0.04580	0.25979 0.03288
8	-0.00033 0.02747	-0.00624 0.57421	0.25946 0.06034
9	-0.00018 -0.04331	-0.00349 -0.90517	0.25927 0.01703
10	-0.01045 0.01865	-0.19792 0.38988	0.24882 0.03568
11	0.00591 -0.00384	0.11184 -0.08029	0.25473 0.03184
12	-0.01882 0.02792	-0.35646 0.58351	0.23590 0.05976
13	-0.00040 -0.00473	-0.00764 -0.09889	0.23550 0.05503
14	-0.00618 0.01148	-0.11704 0.23990	0.22932 0.06651
15	0.00311 0.00605	0.05902 0.12648	0.23243 0.07256

[a] Event week.

[*] Significant at 0.10.

[**] Significant at 0.001.

GRAPH: Fig. 1. Cumulative Wealth-American, Adams, Railroad Bonds

GRAPH: Fig. 2. Cumulative Abnormal Returns for Adams

GRAPH: Fig. 3. Premium on Adams Express Yield Versus Bonds

GRAPH: Fig. 4. Premium on American Express Yield Versus Bonds

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Appendix Publicly reported events faced by the express industry 1885-1896

Negative

Entry attempt	May 1886
Intra-cartel conflict	June 1886
Resumption of conflict	Dec 1886
Further conflict	Jan-Mar 1887
Pacific railway hearings	Aug. 1887
Cartel conflict	Sept. 1887
Cartel conflict	Nov. 1887
Price warfare	Jan. 1888
Cartel conflict	May 1888
Cartel conflict	March 1890
US Express div. cut	June 1890
US Express div. cut	June 1891
Wells Fargo div. cut	June 1894
US Express div. cut	June 1895
Wells Fargo div. cut	Oct. 1895

Positive

Supreme Court ruling	Oct. 1886
Temporary halt to conflict	Nov. 1886
Entrant fails	Aug. 1888
End of cartel conflict	Feb. 1889

US Express div. increase	June 1889
Cartel rate agreement	Oct. 1890
US Express div. increase	June 1891
US Express div. increase	May 1896