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The Great Correction of 1929: New Evidence on Investment-Trust Pricing

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Abstract

Superficial consideration of market fundamentals has permitted prominent critics of private enterprise from John Kenneth Galbraith to 2017 Nobel laureate Richard Thaler to maintain that premia on closed-ended funds (that is, investment trusts) prior to the stock market crash of 1929 are *prima facie* evidence of investor irrationality. We provide the first-ever fundamentals-focused inquiry into the pricing of investment trusts that year. Applying multiple empirical methods to a large sample of about three thousand observations, we assess the pricing and fundamentals of two informationally polar types of trusts: transparent trusts whose portfolios were published throughout the year; and blind trusts whose portfolios were unpublished until the third-quarter reporting week. Consistent with the efficient market hypothesis, when new information about blind trusts hit the market, their prices quickly corrected. This was the great correction of 1929.

JEL Codes: G01, G12, G14

Keywords: sequestered information; closed-ended fund; investment trust; irrational exuberance; efficient market hypothesis; principal-agent problem

The business of economists is to find clever fundamental market explanations for events; and our methodology should always require that we search intensively for market fundamental explanations.

—Peter Garber, "Famous First Bubbles"

We do not know why a great speculative orgy occurred in 1928 and 1929.

—John Kenneth Galbraith, *The Great Crash*

I. Introduction

In 1929, the prices of closed-ended funds (that is, investment trusts) boomed and collapsed alongside the prices of US stocks. Prior to the advent of modern online research capabilities, economists undertook superficial inquiries into the market fundamentals and concluded that this boom was an inexplicable speculative orgy, or irrational bubble. The seminal publication of this sort, published in 1991, is the Brad DeLong and Andrei Shleifer article appearing in the *Journal of Economic History* entitled “The Stock Market Bubble of 1929: Evidence from Closed-End Mutual Funds.” Sadly, despite the tremendous advances in research capabilities since 1991, their irrational-bubble conclusion has gone unchallenged. Here, we conduct the first-ever investigation, using a large sample of about three thousand observations regarding the pricing of fifty-nine trusts, of the pricing of closed-ended funds in 1929. We challenge the irrational-bubble conclusion by leveraging modern research capabilities that make it possible to discover the market fundamentals that were in play.

The greatest deficiency in previous studies is their failure to give sufficient attention to the informationally polar investment trusts being traded in 1929. A minority were *transparent investment trusts*; these trusts published their asset portfolios throughout the year. But the majority were *blind investment trusts*; their portfolios were unpublished for most of the year as a result of being free from any requirement to do so up until the third week of October in 1929. By distinguishing between these two types of trusts and by taking into consideration the change in reporting requirement for blind trusts, we are able to compare the relative merit of the irrational-bubble hypothesis and the efficient market hypothesis (EMH).¹

¹ The EMH revolution began with Fama’s (1970) theoretical foundations and the empirical study of Fama et al. (1969, p. 20) demonstrating that stock prices “adjust rapidly to new information.” Since then, the EMH has been upstaged by renowned economists popularizing market anomalies and anecdotes as *prima facie* evidence of investor irrationality; see Robert Shiller (2015), and Akerlof and Shiller (2009). Both of these books, for example, parrot the long-standing assertion that the Dutch tulipmania of 1636–37 is a clear case of investor irrationality. Only centuries after this historic financial upheaval took place did the fundamentals that drove the markets in 1636 and 1637 finally get brought to light; see McClure and Thomas (2017).

According to the EMH, changes in information about financial assets will quickly be reflected in market prices. The publication of the portfolios of blind trusts in the third week of October in 1929 was new information and, hence, according to the EMH, should have brought about a correction in the trusts' prices. In contrast, for the transparent trusts whose portfolios were published throughout 1929, no peculiar price correction during the third-quarter reporting week would be predicted by the EMH. But according to DeLong and Shleifer (1991), the prices of closed-ended funds generally, even transparent ones, were overvalued in 1929 as a result of the irrational exuberance of investors that persisted until it inexplicably disappeared.² In what follows, we provide a fundamentals-focused explanation for the pricing of closed-ended funds in 1929, showing that, consistent with the EMH, the timing of the correction in the prices of blind trusts occurred when new information about them hit the market during the third-quarter reporting week.³

Beyond providing new evidence about the pricing of closed-ended funds during the historic stock market crash of 1929, this paper is important as part of the larger debate about the general reliability of the private enterprise system. It is important to recognize that DeLong

² An anonymous referee asked: Why has the irrational-exuberance view of the closed-ended-fund market of 1929 persisted so long? Two speculations: (1) In 1991, when the DeLong and Shleifer (1991) article was published, online searches of the financial publications of the era were not possible, making it impractical to do the same work we did for this article. Even using modern online capabilities in 2019 and 2020, we could conduct the research needed to directly refute their findings (see the appendixes to this paper) only as a result of (a) spending a significant amount of time sifting through online financial archives, and (b) the specific human capital that David Chandler Thomas contributed, the result of his having been a start-up entrepreneur before earning a PhD in economics in 2015 in the area of accounting, auditing, and initial public offerings. (2) Regarding the distinction between blind and transparent trusts, it has probably seemed unnecessary to study blind-trust premia because the DeLong and Shleifer article, published in the prestigious *Journal of Economic History*, claims to provide evidence of excessive premia on a transparent trust and on trusts at their initial public offerings.

³ Fama (2016) expressed to Thaler his view that perhaps the biggest problem with Thaler's irrational-exuberance/bubble hypothesis is the inexplicability of the timing when alleged irrational bubbles burst: "For bubbles, I want a systematic way of identifying them. It's a simple proposition. You have to be able to predict that there is some end to it. All the tests people have done trying to do that don't work. Statistically, people have not come up with ways of identifying bubbles."

and Shleifer's (1991) conclusion of an irrational bubble has long been emphasized by Richard Thaler, a 2017 Nobel Prize winner:

Historically there have been periods when even diversified funds sold at premia . . . particularly the late 1920s right before the crash . . . These premia pose a serious challenge to agency costs, taxes and other explanations of why funds should sell at a discount. . . . DeLong and Shleifer (1990) found that the median fund in their sample sold at a premium of 47 percent in the third quarter of 1929, right before the crash. The closed-end fund boom that summer was extraordinary, never to be repeated. The boom ended with the Great Crash, as closed-end funds moved to discounts which have remained a rule since then. (Thaler 1992, p. 175)

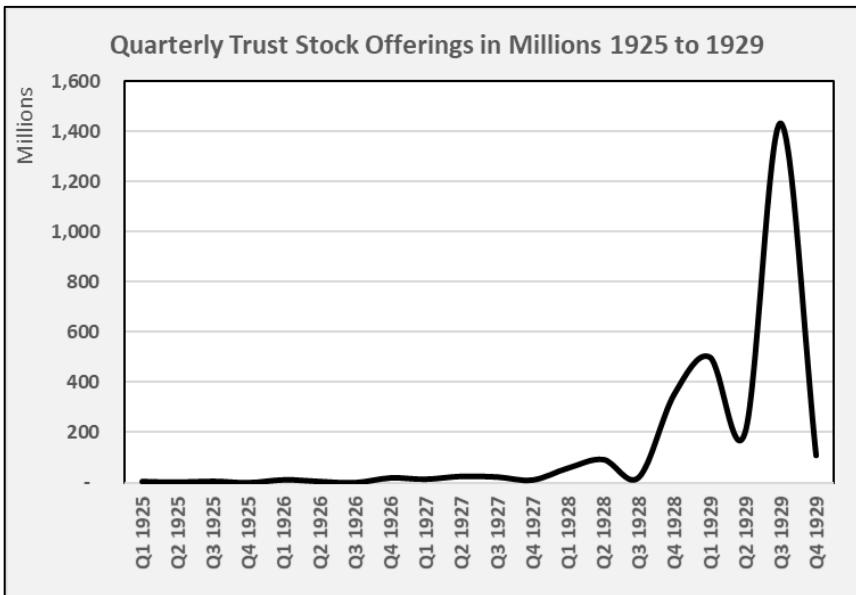
Absent the kind of contravening evidence that we provide, others have followed Thaler, citing the premia on American closed-end funds in 1929 as *prima facie* evidence of an irrationally inspired bubble: "In the third quarter of 1929 a premium of around 50 percent emerged across the board for such funds in the New York Stock Exchange, a premium that vanished after the Great Crash only to be replaced by persistent discount, the normal pattern for such funds to this day in domestic U.S. closed-end stock funds . . . [T]he rise and disappearance of this premium stands as *prima facie* evidence of a bubble in closed-end funds markets themselves" (Ahmed et al. 1997, p. 20).

Rather than following the irrational-exuberance explanation, we take Garber's advice in the epigraph by investigating intensively the market fundamentals in play. To assess the pricing of blind versus transparent trusts in 1929, we compiled a data set of roughly three thousand investment-trust price observations from newspapers and financial publications of the time. We contend that the boom-to-bust change in pricing of blind investment trusts in 1929 was the result of a principal-agent problem involving (1) the rational ignorance of investors (the principals), (2) the rational self-interest of trust managers (the agents), and (3) the nonpublication of the portfolios of blind trusts until the third week of October. Consistent with the EMH, blind-trust pricing switched from premia to discounts relative to the Dow Jones Industrial Average just as new information about these types of trusts hit the market during the third-quarter reporting week. Specifically, the blind trusts unveiled their portfolios in response to new listing requirements implemented by the New York Stock Exchange. Also supporting the EMH, transparent trusts showed no significant price correction relative to the Dow.

II. Investment-Trust Pricing in 1929: A Fundamentals-Focused Inquiry

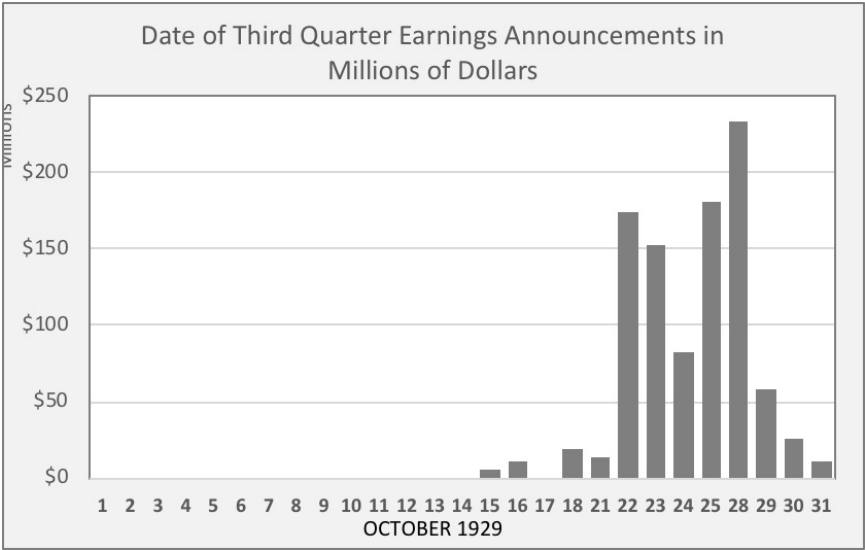
As shown in figure 1, investment trusts, new to America in 1927, boomed during 1928 and 1929. The relative newness of the trusts to American investors in 1929 means that significant histories of dividends, and other performance measures, were unavailable to help investors judge the reasonableness of share prices. As mentioned above, a minority of the closed-ended funds were transparent trusts; again, these publicly disclosed their portfolios, operating much like contemporary closed-end funds do today. But the majority of closed-ended funds in 1929 were blind trusts; their portfolios were unpublished, blinding investors to the valuations and quantities of underlying assets.

Figure 1. Quarterly amounts raised by trusts through stock offerings



Notes: This graph reports the dollar amounts (in millions) of stock offerings issued by investment trusts from the first quarter of 1925 to the fourth quarter of 1929. The data source is the appendix of trust stock offerings as published in *Keane's Manual of Investment Trusts* (Keane 1930, pp. 2211–233).

Figure 2. Reported earnings initially impacted by new New York Stock Exchange listing requirements



Source: Financial sections of the *Brooklyn Daily News* in October 1929

For transparent trusts, share prices were informed by the information on the underlying assets in trusts’ portfolios. For these, the informational requirements of the EMH were met. The market for these trusts operated in essentially the same manner as the market for today’s closed-end funds, which typically trade at a discount to the market values of their portfolios (because of, and varying with, market frictions and management costs).

On the other hand, for the blind trusts of 1929, the informational requirement of the EMH did not obtain prior to October 23–29 (third-quarter reporting week). Until that time, blind-trust managers successfully promoted the idea that portfolio compositions were sequestered from the public so that trusts could maintain a competitive advantage via their trade-secret portfolio compositions. Because the informational requirement of the EMH was unmet during the first three quarters of 1929 for the blind trusts, we study the market for these trusts separately, in more detail, and with expectation of neither accuracy nor efficiency.

A. A Principal-Agent Explanation of Blind-Trust Premia in 1929

The American boom in investment trusts in 1928 and 1929 came in the closing years of a long bull market and an extraordinary period for

an expanding middle class whose membership manufactured products from automobiles to washing machines, extended railroad capacity, dammed major rivers, electrified America, and more. During this prosperous era, the stock market attracted many naive investors who lacked the knowledge and wherewithal to either create a diversified portfolio on their own or hire a professional investment adviser.

Under these circumstances, blind-trust managers promoted their trusts as a safe and affordable way to buy into diversified portfolios managed by skilled professionals. Furthermore, blind-trust promoters argued persuasively that portfolio allocations were trade secrets: “During the 1920s, investment trust promoters argued that an investment trust had tangible assets—its portfolio—and intangible assets—the skills of its professional management. If a fund revealed its portfolio, they argued, its managers would be unable to earn a fair return on their expertise: investors would simply trade to copy the fund’s portfolio and avoid paying the management fee. Because these promoters looked on a fund’s portfolio as a trade secret, portfolios were rarely published and net asset values rarely calculated” (DeLong and Shleifer 1991, p. 682). Next, we present a principal-agent explanation for the premia on blind trusts that prevailed during the first three quarters of 1929, involving (1) the rational ignorance of shareholders (the principals) and (2) the rational self-interest of blind-trust managers (the agents).

i. The Rational Ignorance of the Principals (the Blind-Trust Shareholders)

Rational ignorance, a fundamental principle in finance and economics for over fifty years, offers an explanation for why investors in the 1920s purchased shares in blind trusts. Because acquiring knowledge takes time, a scarce resource, people rationally choose to be uninformed about all sorts of things. A large literature in finance and economics explains the beneficial separation of corporate ownership by dispersed minority shareholders and control by managers, assuming explicitly that shareholders will be rationally ignorant about multitudinous mundane matters to which management attends on their behalf: “Shareholders are characterized as rationally ignorant because of the large costs associated with staying informed about the corporation’s internal affairs and the very small expected benefits to the individual shareholder of being informed” Henry Butler (1989, p. 107). This, of course, is not because ignorance is a good thing. It is, rather, because as the division of labor expands, the opportunity cost of the time associated with acquiring the expertise to engage in

enterprises outside one's area of specialization rises. Time-cost explains why it is rational for so many investors today to place money into mutual funds or into the hands of specialized financial advisers.

Rational ignorance provides a plausible explanation for the blind-trust boom of 1929. Investment trusts, blind and transparent, were new to America (see figure 1). Errors, naturally, are more common with new products, financial and otherwise, because acquiring information in the short run is more costly than in the long run.⁴ It is often quite rational to learn by *trial and error*. The upward trend of blind-trust prices throughout most of 1929 meant that the *trial* of investing in them had yet to expose the *error* in having done so.⁵ Additionally, investment-trust promoters of the time also emphasized the large time-cost of constructing and managing a portfolio that would match the level of knowledge attained by the specialists overseeing the trusts. As Galbraith (1954) details, the trusts of 1929 successfully promoted themselves by emphasizing the sagacity of mobilizing the collective "business intellect of the country," including the acumen of professors in economics and finance, to initiate and adjust portfolios to take advantage of changes in markets, research, and insider expertise.⁶

⁴ *Harper's*, a widely distributed magazine of the era, highlighted benefits to potential investors:

The managers of an investment trust will work out a sound investment plan . . . they will have a good reason for every investment they make. . . . [T]hey will be in touch constantly with every investment, be familiar with changing conditions, and be prepared to swap one investment for another whenever in their opinion conditions demand such action. . . . [T]hey are familiar with the financial structure and the management of the corporations whose securities they purchase, and that they adjudge both to warrant their confidence. They will keep in close touch with conditions in these individual enterprises as well as with the economic conditions generally. And obviously they will see to it that their investments are properly diversified . . . How many laymen are there who could do all these things for themselves, even if they had the time? Figure it out from the layman's point of view. He has money to invest, and he wants it invested safely, profitably, and in something that has a ready market. He may decide for himself what securities fulfill these requirements, and he may hit it right. Or he may not. The investment trust offers him an opportunity to enjoy the services of trained experts, men who will take his investment problems out of his hands and solve them confidently and profitably to his financial benefit. (Paul Tomlinson 1929, p. 1063)

⁵ As an anonymous referee put it, this is a case of systematic errors that were not irrational.

⁶ "By 1929 the investment trusts were aware of their reputation for omniscience, as well as its importance, and they lost no opportunity to enlarge it. To have a private

It is also worth considering the American experience with investment trusts in the context of the British experience. Investment trusts emerged in Great Britain in the 1860s, but as shown in figure 1, they were still new to the United States in the mid-1920s. The promoters of investment trusts in the United States in 1929 often noted the success they had enjoyed in Great Britain from the early 1900s onward. When these promoters did acknowledge that the British trusts had gone through a boom and bust in the late nineteenth century, they ascribed the difficulties to incompetent leaders who had diversified inadequately or committed acts of fraud.

Further, American promoters enhanced the emotional resonance of their sales pitch by arguing that the trusts' success hinged upon "great men"—that is, leaders who possessed superior character, scientific knowledge, and connections—an idea in the tradition of the "captains of industry" rhetoric that soared during the nineteenth-century Industrial Revolution. This emphasis on great men plausibly dissuaded rationally ignorant investors from seriously considering the role that disclosure requirements resulting from eighteen acts of Parliament (the Companies Acts of 1862–1908) played in the more conservative management practices of British trusts.⁷

ii. The Rational Self-Interest of the Agents (the Blind-Trust Managers)

Regardless of whether blind-trust managers actually believed that their portfolios had to remain unpublished as proprietary trade secrets, their actions fueled a principal-agent problem that was largely absent in the transparent funds (and is absent in contemporary

economist was one possibility, and as the months passed a considerable competition developed for those men of adequate reputation . . . It was a golden age for professors. The American Founders Group, an awe-inspiring family of investment trusts had as a director Professor Edwin W. Kemmerer, the famous Princeton money expert. The staff economist was Dr. Rufus Tucker, also a well-known figure. . . . Still another great combine was advised by David Friday, who had come to Wall Street from the University of Michigan. . . . A Michigan trust had three college professors—Irving Fisher, Joseph S. Davis of Stanford, and Edmund E. Day then of Michigan" (Galbraith [1954] 1997, 54–55).

⁷ Additionally, the history of the British blind pools (trusts) is something that even now is difficult to delve into. It was no small effort for us, even with the twenty-first century's internet at our disposal, to learn, for example, that by the mid-1920s virtually all of the British trusts were transparent trusts. The cost to investors in 1929 of discovering the details of the nineteenth-century history of the British blind pools was large indeed, and the propensity of investors to be rationally ignorant, of course, worked against incurring any such large costs.

closed-ended funds). As we show in section 2.C, blind-trust managers (agents) in the 1920s were significantly more likely than transparent-fund managers to grant themselves shares or options to purchase shares. This meant, of course, that blind-trust managers more often benefited personally from rising share prices in comparison to the managers of transparent trusts. Importantly, these trusts were closed-end funds. This means that by the initial public offering, management had raised all its capital with the important exception of that derived from options. To the extent that managers held options or owned shares, it was in their rational self-interest to remain silent when the shares of their trusts were overvalued.⁸ For these reasons, it should come as no surprise that empirically we find that during 1929 blind-trust shares showed significantly greater price variance than transparent trusts and that blind-trust share valuations remained above the market value of their underlying assets.

With no information about portfolio holdings nor communication from management, there was no basis for arbitrage to drive blind-trust share prices into alignment with the value of their portfolio holdings. In contrast, if a blind trust's share price fell below the fundamental value, it was in its manager's self-interest to publish the details of its holdings, allowing market forces to bring prices back in line with the underlying portfolio's value.⁹

B. The Blind-Trust Premia Were Rational but Inaccurate

Considering the rational ignorance of investors and the rational self-interest of blind-trust managers, the blind-trust premia that prevailed in the 1920s were rational but inaccurate. "Irrational," according to De Long et al. (1990), refers to the misperceptions made by noise traders in reaction to *observable fundamentals*. The anomalies literature argues that pricing of closed-end funds is often inconsistent with efficient pricing—pricing that is in line with the information available. In their theory, De Long et al. hypothesize that there are two types of agents: sophisticated investors and noise traders. Although both consider fundamentals, they interpret the information differently. Sophisticated investors are rational and correctly perceive the fundamentals, whereas noise traders are irrational in that they

⁸ Evidence of this is found in table 9, which is explained in detail in section 2.C.v.

⁹ Given the incentives of managers of blind trusts, in conjunction with the rational ignorance of investors, the premia on the shares of these trusts were, as an anonymous reviewer put it (see footnote 4), a case where systematic error occurred that was not irrational.

misperceive the fundamentals and, further, do so with sufficient persistence to (1) interfere with the efficiency of market pricing generally and (2) explain a number of specific anomalies.¹⁰

Neither this model of noise-trader irrationality nor the model of accurate equilibrium pricing applies in the case of the blind trusts because the requisite information to test either—the market values of their portfolios—was unavailable during most of 1929. As long as the blind-trust portfolios remained sequestered (unpublished), (1) the information that the EMH says must be present for accurate and efficient pricing was absent and (2) the information assumed available by the noise-trader model of DeLong et al. (1990) was unavailable.

C. Empirical Analyses of Blind vs. Transparent Trusts of 1929

Tuesday, October 29, was the most devastating day in the history of the New York stock market . . . the worst thing that happened on this terrible day was to the investment trusts. Not only did they go down, but it became apparent that they could go practically to nothing.

—John Kenneth Galbraith, *The Great Crash*

This section provides the first-ever empirical inquiry into investment-trust pricing in 1929 that distinguishes between blind and transparent trusts. The mechanism that caused the great correction in blind-trust prices in 1929 was new information that hit the market during the third-quarter reporting week.

i. The Price-Correction Mechanism

Throughout most of 1929, the portfolios of blind trusts were not published because their “promoters looked on a fund’s portfolio as a trade secret” (DeLong and Shleifer 1991, p. 682). Additionally, a principal-agent problem, as explained above, created by management compensation tied to the price of trust shares, incentivized blind-trust managers to keep portfolio information unpublished so long as share prices remained above market value.

¹⁰ Campbell and Kyle (1993) create a model in which exogenous noise, due to the risk aversion of “smart money” traders, provides a reason why asset prices might deviate from those anticipated by the EMH. Consistent with the De Long et al. (1990) assumption that noise traders know, but misperceive, fundamentals, Campbell and Kyle (p. 27) find that “the type of noise that appears to be empirically important is highly correlated with fundamental value.”

On June 6, 1929, however, the board of the New York Stock Exchange, seeking to increase transparency, expanded *future* trust listing requirements to include two new items of disclosure. First, on its *next* annual report, a trust must disclose the value and quantities of securities held, based on market price or fair appraisal of their security holdings. Second, the trust must include a quarterly-report supplement with statements showing either market or cost-based valuations of companies for which it held “majority interest in the voting stock,” thereby defined as subsidiaries (*NYSE Stock List Commission Report* of 1929; reprinted in Keane 1930, p. 1587). Interestingly, the board also addressed the excessive leverage (subsequently highlighted by Galbraith and other scholars of the 1929 crash) albeit in vague terms;¹¹ to become or continue being listed on the New York Stock Exchange, unfunded debt beyond “prudent limits” could not be maintained (*NYSE Stock List Commission Report* of 1929; reprinted in Keane 1930, p. 1586).

Although tentative approval of the new requirements occurred on June 6, their impact on market fundamentals occurred with the release of financial reports for the quarter ending September 30. Before releasing these reports to the public, each firm had to close its books, make adjusting entries, and complete an independent audit. Thus, the reporting week was the last week of October.

Figure 2 shows the difference between the end-of-quarter date and the date of reporting. This evidence is crucial to understanding the timing of the infamous stock market crash and the applicability of the EMH.

The impact on market prices of new information regarding the portfolios of blind trusts began after market closing on October 22. Companies typically release their earnings reports after the market closes. Therefore, reports released on Monday, October 28, affected prices on the following day (October 29).

¹¹ Galbraith’s ([1954] 1997) book offers an anecdotal narrative that is inattentive to details that would allow much of it to be examined for correctness. He admits on an unnumbered page in “A Note on Sources” that “much of the story of 1929 is to be found in the general and financial press of the time. Systematic citation of these sources would involve endless references to the same papers. This I have not done. It means in general that if no source is given, the reader can assume it was in the New York Time[s], the Wall Street Journal, and the other papers of general circulation of the day.” In contrast, this paper and its appendixes cite sources extensively so that future researchers, should they so desire, can assess by replication the veracity of its findings and conclusions.

Figure 2 shows, by release date, earnings reports in millions of dollars. On these days, the blind trusts exposed their portfolio holdings to public scrutiny for the first time. We designate the portfolio disclosures by blind trusts, instigated by the revised New York Stock Exchange listing requirements, as the informational-change mechanism. We designate reporting week as the threshold in our analyses of the before and after impact of this mechanism of informational change.

ii. Primary Hypotheses

The EMH implies transparent trusts traded at prices reflecting their underlying portfolios throughout 1929. In contrast, as we have seen, there was no informational basis, prior to October 21, upon which blind trusts' pricing could accurately reflect the value of their portfolios of assets. In short, with the asset holdings of the blind trusts unpublished, the information the EMH requires for accurate pricing was unavailable to investors.

The informational asymmetry both decreased the accuracy of trust pricing and increased its variance. Additionally, per the EMH, when the blind-trust portfolio information became public, trust share prices should adjust to reflect portfolio value. To test these hypotheses, we conduct (1) a difference-in-differences panel study to estimate the change in share prices upon portfolio disclosure and (2) two regression discontinuity in time (RDiT) designs to track price changes going into and coming out of reporting week (the threshold) and to estimate the discontinuity of blind- and transparent-trust prices on disclosure. All regressions indicate a drop of about 28 percent in blind-trust prices net of market changes.

iii. Data

To test our hypothesis that new information about blind trusts inspired corrections in their prices, we compiled data on both blind and transparent trusts. Our sample consists of all trusts listed on the major exchanges with regularly published daily share prices during 1929. We sampled both blind and transparent trusts. If our hypothesis is correct, it is the prices of blind trusts, rather than transparent trusts, that corrected because the emerging information was most pertinent to blind trusts. Table 1 lists the fifty-nine trusts in our sample (twenty-six transparent trusts and thirty-three blind trusts) and the following firm characteristics used in our three validation tests: (1) the year of organization, (2) whether management compensation was tied to the

value of the firm's equity, and (3) the ratio of debt to equity (leverage). We compiled these data from financial information sources published between 1928 and 1930. The year-of-organization and management-compensation data lend insight into the behavior of blind-trust managers vis-à-vis the managers of transparent trusts.

Commentators have suggested that inordinately high leverage was responsible for the boom in the prices of trusts. For example, John Kenneth Galbraith ([1954] 1997, pp. 56–57) blamed trust price variability on excessive leverage, whose downside risk was generally overlooked by irrational investors before the crash.¹² Neither Galbraith nor anyone else has offered statistical analysis of trust leverage and pricing. In contrast to all previous researchers, we include the leverage ratio (the ratio of debt to equity) as a control variable in our empirical analysis to empirically assess the question of leverage. We examine the balance sheets of all trusts in our sample to determine their leverage ratios (see table 1).

¹² The introduction to the fifth edition of Murray Rothbard's (2013) book on the Great Depression was written by Paul Johnson. There Johnson echoes Galbraith's narrative about the speculative orgy involving investment trusts in 1929, describing them as the "crazy trusts . . . that gave the boom [in corporate share prices] an additional superstructure of pure speculation" (p. xiii). Ironically, what Rothbard had to say in the introduction to the first edition of his book described Galbraith's book as a "slick, superficial narrative of the pre-crash stock market" (p. xlii). We agree with Rothbard for reasons touched on in footnote 11 and, as a result, disagree with Johnson's view.

Table 1. Sample of trusts and firm characteristics

Name of trust	Type: Blind = 1 Transparent = 0	Year organized	Stock incentives for management?	Equity to leverage
Alliance Investment Corp.	0	1925	No	1.2%
American Founders	0	1928	No	31.9%
American Insuranstocks	0	1928	No	6.6%
Basic Industry Shares	0	1927	No	0.0%
Colonial Investors Shares	0	1927	No	0.0%
Crum & Forster Inc. "B"	0	1914	No	0.1%
Crum & Forster Insuranshares	0	1914	No	0.1%
Diversified Trustee Shares A	0	1924	No	0.0%
Fixed Trust Shares A	0	1927	No	0.0%
Fixed Trust Shares B	0	1927	No	0.0%
General Public Service Corp	0	1925	No	0.9
Granger Trading Corp.	0	1929	No	12.9%
Inland	0	1927	No	2.6%
Insuranshares Corp. NY	0	1928	Yes	11.6%
Investment Trust of NY	0	1928	No	34.7%
Investors Trustee Shares	0	1927	No	0.0%
Massachusetts Investors Trust	0	1924	No	1.6%
North American Trust Shares	0	1928	No	3.4%
Power & Light Securities Trust	0	1926		2.8%
Provident Trustee Shares	0	1928	No	0.0%
Second International Securities A	0	1926	No	2.4%
Second International Securities B	0	1926	No	2.4%
Spencer Trask Fund	0	1929	No	20.4%
Standard Col Trustee Shares	0	1928	No	0.0%
US & International Securities	0	1928	No	25.1%
US Electric Light and Power A	0	1927	No	4.5%
American & Foreign Power	1			75.7%
American Utilities and General A	1	1929	Yes	9.4%

Table 1. Sample of trusts and firm characteristics (*continued*)

Name of trust	Type: Blind = 1 Transparent = 0	Year organized	Stock incentives for management?	Equity to leverage
American Utilities and General B	1	1929	Yes	9.4%
Aviation Securities Corporation	1	1928	Yes	2.7%
British Type Investors	1	1928	Yes	2.2%
Capital Management Corp.	1	1928	Yes	4.2%
Continental Security Corp.	1	1926	No	118.2%
Continental Shares Inc	1	1926	Yes	29.8%
Electric Power & Light Corp.	1			1.8%
Electric Shareholders	1	1929	Yes	5.4%
Globe Underwriters Exchange	1	1929	Yes	23.8%
Incorporated Equities	1	1928	No	67.4%
Incorporated Investors	1	1925	Yes	0.7%
Insull Utility Investors	1	1928	Yes	53.7%
International Carriers, Ltd.	1	1929	Yes	2.8%
Investment Trust Assoc.	1	1924	Yes	3.9%
Investors & Traders	1	1929	No	0.4%
Joint Investors A	1	1926		30.0%
Mohawk Investment Corp.	1	1928	No	3.5%
National Bond & Share	1	1929	Yes	0.2%
North American Aviation	1	1928	Yes	2.1%
North American Investment Corp.	1	1925		1.4%
Reynolds Investing, new	1	1928	Yes	8.5%
Second Incorp. Equities	1	1926	No	72.8%
Securities Corp. General	1	1929		18.7%
Shawmut Assoc.	1	1928	Yes	2.0%
Shawmut Bank Investment Trust	1	1929		1.2%
Sterling Securities	1	1928	Yes	4.3%
Tri-Continental	1	1929	Yes	2.3%
US And Overseas Corp.	1	1929	No	7.5%
United Founders Corp.	1	1929	Yes	1.8%
Utilities Equities	1	1928	Yes	1.5%
Utility and Industrial Corp.	1	1929	Yes	6.8%

Trust boards often gave managers performance incentives as either options to purchase shares or actual shares in the trust. Though initial investors may have benefited from fund managers' operating under such forms of incentive compensation, so long as trust share prices remained above their market value the managers of blind trusts had a reason to continue withholding information on portfolios. In a validation test we compare the methods of compensation for managers of blind versus transparent trusts, expecting to find a higher frequency of endogenous compensation for managers of blind trusts. In a related validation test, we consider the age of the trust to test the hypothesis that during the period of rapidly rising stock prices (1928 and 1929), newly formed firms were more likely to form as blind trusts.

Valid statistical assessment of changes in the price of a financial asset often requires an effort to control for overall swings in the market because the price changes under study may have been mere manifestations of general market trends. To estimate the effect on blind trusts of the informational disclosures that occurred during the reporting week, we control for the general trends in the stock market during the year. Because trust share prices derive their value from their stock portfolios, the share prices of trusts rose and fell during 1929 along with the market.

As a control variable for general trends in the market, we use the Dow. We hypothesize that after controlling for the Dow, there will be a significant difference in the time paths of the blind-trust prices and the general market. We also expect the prices of transparent trusts to closely follow the movements of the general market. As the basis for share prices, we use the daily price quotes for the shares of fifty-nine publicly traded trusts as published in various daily newspapers. This amounts to approximately three thousand daily common-share prices of publicly traded trusts from September 17, 1929, to December 6, 1929. Beginning September 17, our window of analysis includes the twenty-five trading days before the beginning of the third-quarter reporting week, the reporting week itself (October 21 to 29), and the twenty-five following trading days. We gathered daily prices for the Dow from the same sources and adjusted for stock splits in all cases.

The quarterly financial reports for each trust before the reporting week were publicly available in 1929 and reprinted in *Keane's Manual of Investment Trusts* (Keane 1929, 1930) and the *Commercial Financial Chronicle* (1929a, 1929b). We examined the balance sheets and auxiliary tables therein to determine the disclosure status of the

underlying prices and quantities of security holdings. We created a dummy variable (*sequestered*) and, based on these data, assigned each trust a designation of 0 for transparent trusts and 1 for blind trusts. (Zero stands for the absence of hidden information about the underlying assets in the trust.)

A summary of the dependent and independent variables appears in table 2. The month and day variables (of 1929) make up the date of each share price. The primary running variable (*rdday*) contains the distance in trading days before and after the threshold—from negative to positive value (−25 to 25). We constructed an index of the Dow from the daily closing Dow prices after setting the base 100 from the mean of the last three weeks of the study (*DJLA_idx*).

Table 2. Summary variables

Variables	Labels	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
capital	In millions	2,987	12.59	22.89	0.280	127.5
leverage	Leverage ratio	2,987	12.26	22.47	0	118.2
age	Age of firm in months	2,987	19.55	14.59	2	60
price	Daily closing price	2,987	53.20	84.94	4.250	900
sequestered	Indicates sequestered trust	2,987	0.573	0.495	0	1
rdday	RDiT running variable	2,987	-000636	14.91	-25	25
djia	Dow Jones Industrial Average	2,987	295.1	56.79	198.7	372.4
blind	Blind trusts	2,987	0.291	0.454	0	1
transparent	Transparent trusts	2,987	0.210	0.408	0	1

Notes: Data include daily quotes for fifty-nine trusts for twenty-five business days before reporting week and twenty-five business days after reporting week.

Variants of the nominal daily share price (*price*) of each trust, which are the dependent variables for each of our specifications, include (1) a price index (*price_idx*) representing the variance (from a base of 100) of the mean of prices across the last three weeks of the study and (2) a difference-in-differences variable (*DJLA_diff*), calculated as the difference between the price index (*price_idx*) and the normalized Dow (*DJLA_idx*).

iv. Empirical Models

a. Difference-in-Differences Specifications

In our baseline model,

$$\ln y_{it} = \beta \mathbf{Information}_{it} + \alpha \mathbf{X}_{it} + \mu_i + \nu_t + \varepsilon_{it},$$

the dependent variable is the log of the daily share price of trust i on day t . The vector **Information**_{it} includes the indicator variables for blind and transparent trusts. The estimated coefficient on each of these two trust types measures the marginal effect on the share price following the date of disclosure of portfolio data over the prior days. In the case of blind trusts, those prior days were days when the New York Stock Exchange did not require disclosure of portfolio information. We set each binary variable to equal 1 for all days in which the stock exchange required disclosure.

The **X**_{it} vector includes controls for leverage, age of firm, and capital. We compute *leverage* as the ratio of liabilities to shareholder equity and *age of firm* as the number of months from the launch of the trust to October 1929, while *capital* is the amount of money in millions of dollars raised by the firm for investing.

All regressions include trust effects μ_i , and day fixed effects ν_t . The identifying assumption in our model is that pretreatment trust trends are parallel.¹³ We test the validity of our identifying assumption and provide several falsification tests. In all models we cluster the standard errors at the trust level.

b. RDiT Specifications

We choose two RDiT specifications because they address two major concerns: (1) the need to estimate a nonlinear result that allows us to evaluate the daily movements of the two classes of trust share prices to determine whether, and when, they converge, and (2) the need to produce a result that, in theory, is more reliable in predicting a causal relationship between the timing of the disclosure requirements and the discontinuity in the share prices.

To assess the economic and statistical significance of a break in the share prices of 1929 trusts resulting from newly imposed disclosure requirements by the New York Stock Exchange (Keane 1929, pp. 1586–87), we deploy an RDiT design. Our design relies on

¹³ The parallel-trends assumption is not met when trusts are on a different growth path from the market and are more likely to be over- or undervalued (for example, because they invested in a specific industry such as electric utilities).

trading days before and after the reporting week (the threshold) as a running variable according to the following equations:

$$\hat{\beta}_-(h_n) = \frac{\arg \min}{\beta \in \mathbf{R}^{p+1}} \sum_{i=1}^n \mathbf{1}(X_i < \bar{x}) K_{h_n}(X_i - \bar{x}) \{\mathbf{price}_i - \mathbf{r}_p(X_i - \bar{x})' \beta\}^2$$

$$\hat{\beta}_+(h_n) = \frac{\arg \min}{\beta \in \mathbf{R}^{p+1}} \sum_{i=1}^n \mathbf{1}(X_i > \bar{x}) K_{h_n}(X_i - \bar{x}) \{\mathbf{price}_i - \mathbf{r}_p(X_i - \bar{x})' \beta\}^2$$

Here, $\hat{\beta}$ is the coefficient representing the predicted share price at the threshold. Of the two estimates, $\hat{\beta}_-$ represents the predicted mean price at the pretreatment threshold and $\hat{\beta}_+$ the predicted mean price at the post-treatment threshold. The discontinuity estimate is the difference between $\hat{\beta}_+$ and $\hat{\beta}_-$. The indicator functions $\mathbf{1}(X_i < \bar{x})$ and $\mathbf{1}(X_i > \bar{x})$ take on the value of 1 when true. The vector $\mathbf{price}_i$ represents daily share prices i . The vector X_i is the running variable measured in days relative to the reporting week represented by $\bar{x}$. The function $K(\cdot)$ is the kernel function,¹⁴ and h_n is a positive-bandwidth sequence that asymptotically converges to zero. The vector of local-polynomial estimators as represented by $\mathbf{r}_p$ and $\epsilon \mathbf{R}^{p+1}$ is the first unit vector.

We choose the conventional uniform kernel to weight the observations based on an evaluation of price distributions; we also test results using the alternative *Triangular* and *Epanechnikov* kernels. The local nonparametric analyses we use produces results that are robust under various bandwidth choices.¹⁵ We select the mean squared error, minimizing bandwidth as presented in Imbens and Kalyanaraman (2012). Finally, we estimate and report both conventional and robust point estimates.¹⁶

The threshold occurred during the reporting week beginning October 21, 1929. Using RDIT designs, we attempt to derive three estimates of changes wrought by the informational mechanism of the EMH: (1) the price correction required to align the share prices of the blind trusts with the market value of their holdings following reporting, (2) the variance between transparent and blind trusts before and after the reporting week, and (3) the variance of both transparent and blind trusts from the Dow before and after the reporting week.

¹⁴ Kernel functions tested include *Triangular*, *Uniform*, and *Epanechnikov*.

¹⁵ Bandwidth options tested include *Imbens and Kalyanaraman*, *Calonico*, *Cattaneo*, and *Titunik* and the cross-validation method proposed by Ludwig and Miller (2007).

¹⁶ Following the recommendations of Calonico, Cattaneo, and Titiunik (2014), and Calonico, Cattaneo, and Farrell (2017).

The dependent variables of our two specifications are (1) a price index normalized to the average price over the third to fifth weeks following the reporting week (*price_idx*) and (2) the relative variance of these trust share price indices from a similarly computed index of the Dow (*DJLA_diff*). A control estimate (produced by running these same regression specifications against the two versions of the share prices of transparent trusts) offers an important comparison. Both RDiT specifications use share prices over the twenty-five trading days before the threshold and twenty-five following it. In each regression, we present the conventional, bias-corrected, and robust coefficients and standard errors for comparison purposes. The analysis provided is based on the robust results.

Hausman and Rapson (2018) outline considerations that differentiate RDiT methods from cross-sectional regression discontinuity designs. They suggest using nonparametric linear regression frameworks while avoiding higher-order polynomials and significant time horizons in the RDiT setting since observations distant in time from the threshold may be particularly misleading. Our approach is consistent with these recommendations in that we (1) generate results using nonparametric methods explicitly intended to address concerns regarding distant observations, (2) restrict analyses to either first- or second-order polynomials, and (3) use a short time window (twenty-five trading days on either side of the identified threshold).

v. Empirical Findings

a. OLS-Panel-Study Assessments of Reporting Requirements and Trust Prices

Table 3 shows the estimates from testing the effect of the New York Stock Exchange reporting requirement on the log of trust prices. Each specification includes the two trust models (blind and transparent). The omitted category is days before the requirement for trusts to report their portfolios. All regression models include trust and day fixed effects, with standard errors clustered at the trust level.

In the most minimal specification (table 3, column 1), each of the trust-type coefficients has a negative sign, suggesting the New York Stock Exchange reporting requirement had a negative effect on trust prices. Both coefficients are statistically significant at the 1 percent level. The estimated magnitudes imply that blind trusts are associated with a 47.7 percent ($\exp(-0.649) - 1$) drop in share prices, with a 28.8 percent drop in the share prices of transparent trusts. The size

of these estimates indicates that prices fell by an economically significant amount. At the bottom of each column the net percentage change in the estimated blind-trust share price is presented and calculated as $\exp(\text{Blind} - \text{Transparent}) - 1$. The result of this calculation for column 1 is -29.2 .

Table 3. Impact of portfolio disclosure on investment trusts

Log Price	(1) Blind	(2) Ln_DJIA	(3) Firm traits	(4) Trust trends	(5) Quad trends
Blind Trusts	- 0.649*** (0.0297)	- -0.461*** (0.0356)	-0.335** (0.139)	-0.334** (0.141)	-0.334** (0.143)
Transparent Trusts	- -0.304*** (0.0190)	- -0.116*** (0.0334)	0.00408 (0.153)	-0.00359 (0.154)	-0.000158 (0.157)
Log DJIA		0.504*** (0.0795)	0.504*** (0.0794)	0.506*** (0.0804)	0.504*** (0.0815)
Log of Age of Firm			-0.0233 (0.0184)	-0.0226 (0.0186)	-0.0250 (0.0187)
Log Age of Firm Disclosure			9.04e-05 (0.0285)	0.000175 (0.0289)	0.000405 (0.0294)
Log Capital on Disclosure			-0.0159 (0.0163)	-0.0160 (0.0164)	-0.0168 (0.0168)
Log Leverage on Disclosure			-0.00415 (0.00702)	-0.00417 (0.00710)	-0.00382 (0.00722)
Observations	2,987	2,987	2,987	2,987	2,987
R-squared	0.857	0.861	0.863	0.865	0.869
Trust fixed effects	Yes	Yes	Yes	Yes	Yes
Day fixed effects	Yes	Yes	Yes	Yes	Yes
Trust trends	No	No	No	Yes	Yes
Quadratic trends	No	No	No	No	Yes
Blind trust % correction	-29.2	-29.2	-28.2	-28.1	-28.4

Notes: Statistical significance at the 0.10, 0.05, and 0.01 levels are indicated by *, **, and ***. Standard errors clustered at the trust level in parentheses. The dependent variable is the log share price by trust by day. There are fifty days of prices for each of the fifty-nine trusts analyzed in the study.
‡ Computed as: $\exp(\text{Blind} - \text{Transparent}) - 1$.

Table 3, column 2 adds the Dow Jones Industrial Average as a control variable. We intend for the Dow variable to capture the general trends in the market. The point estimates on this control variable have a positive sign, indicating a strong positive correlation with all price trends in the market and our observations, and are statistically significant at the 1 percent level. Importantly, the point estimates on the two trust types in table 4 remain statistically significant and have the same sign as those in column 1, though they are smaller to account for the approximately 20 percent drop in the market. At the bottom of column 2 is the percent change in the blind-trust prices, calculated as follows: $\exp(\text{Blind} - \text{Transparent}) - 1$. The result of the calculation is -29.2 .

The specification in table 3, column 3 adds control variables for the impact of various trust-level characteristics, such as age of firm, amount of capital raised, and leverage. These variables are interaction variables, multiplied by the disclosure dummy variable, to capture any effect across the change in reporting requirements. The signs on the two trust types remain the same. The blind-trust coefficient continues to have similar magnitudes and levels of statistical significance to the previous specification. In contrast, the coefficient on the transparent trusts drops to almost zero, and importantly the result is no longer statistically significant. The small magnitude and statistical nonsignificance of the coefficient on the transparent trusts is consistent with the predictions of the EMH. Because of the information asymmetry of the blind trusts before the reporting week, the large negative drop and statistical significance of the estimate on the blind trusts are consistent with the EMH. At the bottom of column 3, we present the change in the blind-trust prices: -28.2 percent ($\exp(0.335 - 0.00408) - 1$).

The estimates on the control variables indicate that none of the interaction controls, the age of the firm, the capital raised, or the leverage are statistically significant. This is important in providing an answer to often-raised questions about the role of these variables in the price drops of trusts during that period.

Table 3, columns 4 and 5 present specifications that allow for tests of the parallel-trends assumption. Column 4 includes trust-specific time trends, and column 5 adds trust-specific quadratic trends. In these two specifications, all blind-trust coefficients remain statistically significant and are of similar magnitude to the estimates in the specifications without trust trends. The results from these parallel-

trends specifications suggest that our data are consistent with the parallel-trends assumption.

b. Time-Discontinuity Assessment Using an Index of Trust Prices (price_idx)

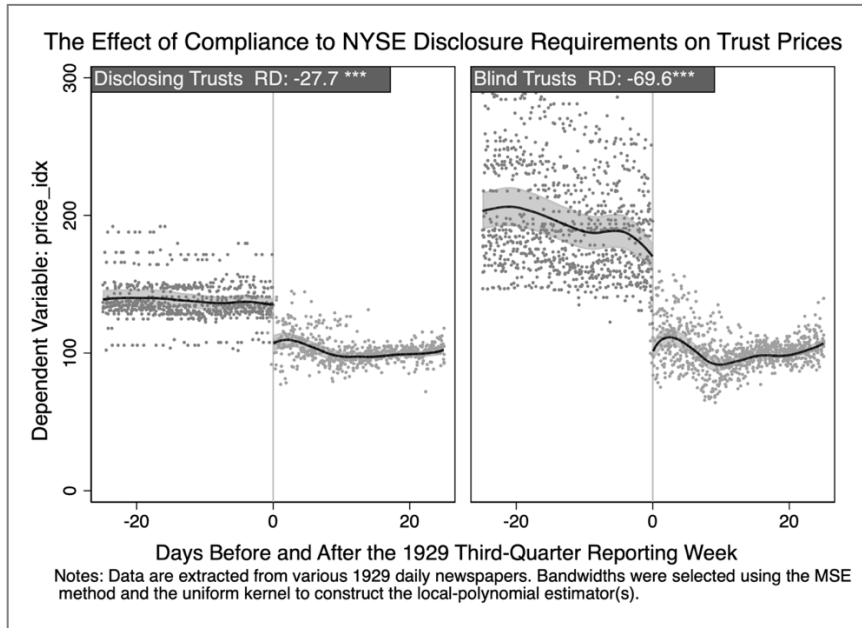
In this assessment, we seek to verify the results from table 3. An RDiT requires normalized observations of similar magnitudes. The key benefit of an RDiT is that it evaluates individual price observations without consideration of an associated trust. This approach creates significantly more observations for the study, producing potentially more reliable results.

In the first RDiT specification, we select the average share price across the third to fifth weeks following the reporting week to serve as the base (=100) for the creation of a price index for each trust’s share prices. We create a separate RDiT for each trust class using the same approach for purposes of comparison. The results of this specification support our hypothesis that a lack of essential information can lead to greater price volatility, and they validate the results found in table 3. The magnitudes of the variance in relative prices, apparent in figure 3 (reflected by the confidence interval and the spread of individual prices), indicate pre-disclosure variation in prices significantly broader for blind trusts in comparison to transparent trusts (shown on the left) (see also tables 4 and 5).

Table 4. Discontinuity on the indices of blind-trust prices

Variables	(1) Uniform price_idx	(2) Triangular price_idx	(3) Epanechnikov price_idx
Conventional	-69.72*** (11.37)	-69.61*** (10.46)	-68.90*** (9.825)
Bias-corrected	-69.59*** (11.37)	-70.79*** (10.46)	-69.75*** (9.825)
Robust	-69.59*** (12.49)	-70.79*** (12.45)	-69.75*** (11.60)
Observations	1,711	1,711	1,711
Order loc poly	1	1	1
Order bias	2	2	2
Bandwidth type	msetwo	msetwo	msetwo

Notes. Data are from various 1929 daily newspapers. Bandwidths were selected using the mean-squared-error method and the triangular, uniform, and Epanechnikov kernels to construct the local-polynomial estimator(s). Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Figure 3. Discontinuity of price indices upon disclosure

In table 5, the index of share prices of previously transparent trusts dropped by an estimated mean of 27.71, while the index of blind-trust prices in table 4 fell by an estimated mean of 69.59. The decline in blind-trust indexed prices, calculated by subtracting the estimated decline in the transparent-trust indexed prices, suggests that shares of blind trusts sold at a premium of approximately 41.88 percent ($69.59 - 27.71$) above the value of their portfolios, or a 29.5 percent drop ($41.88/141.88$). All results are significant at the 1 percent level. The latter figure is similar to the percent change in blind-trust prices shown in the bottom row of table 3.

Table 5. Discontinuity on the indices of transparent-trust prices

Variables	(1) Uniform price_idx	(2) Triangular price_idx	(3) Epanechnikov price_idx
Conventional	-26.46*** (4.120)	-28.50*** (5.378)	-28.45*** (5.328)
Bias-corrected	-27.71*** (4.120)	-29.78*** (5.378)	-29.68*** (5.328)
Robust	-27.71*** (4.967)	-29.78*** (6.515)	-29.68*** (6.429)
Observations	1,276	1,276	1,276
Order loc poly	1	1	1
Order bias	2	2	2
Bandwidth type	Msetwo	msetwo	msetwo

Notes: Data are from various 1929 daily newspapers. Bandwidths were selected using the mean-squared-error method and the triangular, uniform, and Epanechnikov kernels to construct the local-polynomial estimator(s). Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In summary, the pre-reporting-week sections of the graphs in figure 3 show, consistent with our prediction, that greater price volatility characterized the blind trusts relative to the transparent trusts. Also consistent with our prediction is the similarity in the trends and variances between the two trust types following the reporting week. The results of our test confirm the prediction that blind-trust prices were more accurate after the disclosure of the portfolio information.

c. Time-Discontinuity Assessment Using Difference-in-Differences Measure of Share Prices and the Dow

In the second RDIT specification, we assess the variance in the price of trust shares from the Dow. We work from the assumption that the significant historical correlation between the Dow and the overall market makes changes in the Dow a valid proxy for changes in the broader market. We use a difference-in-differences measure between an index of the Dow and the trust price indices to arrive at an estimate of the variance of trust prices from the market in general. We normalize the trust share prices against the Dow by recalibrating the Dow over the same period as the trust share prices in the previous specification (the third to fifth weeks following disclosure). We attempt to neutralize the impact of the market crash concurrent

with the reporting week. In addition, the same trust-trait control variables used in the panel study (shown in table 3, column 3) are included in this regression.

The RDiT estimation results for transparent trusts, presented in table 7, show a negative, statistically nonsignificant discount of 4.77 relative to the Dow (a change from -0.98 to -5.75 relative to the Dow). As expected, the results are not statistically significant, because the price of a transparent trust's shares will vary somewhat based on the mix of securities. In contrast, the RDiT results for the blind-trust test, presented in table 6, show a fall of 43.51 and a premium sale price of approximately 38.74 percent ($43.51 - 4.77$) above the value of the trusts' portfolios, correcting from a pre-reporting-week premium of 36.56 percent to a post-reporting-week discount of 2.18 percent relative to the Dow, as the public recalibrated the value of what had been blind-trust shares to the market value of their holdings. We compute the percentage drop in the price of the blind trusts as $38.74/138.74 = 27.9$. This result is close to the percent change of the blind-trust prices shown in the bottom row of table 3, providing further validation of our previous estimations.

Table 6. Discontinuity on the Difference-in-Differences of Blind Trusts and Dow Indices

Variables	(1) Uniform djia_diff	(2) Triangular djia_diff	(3) Epanechnikov djia_diff
Conventional	-40.85*** (7.248)	-39.39*** (7.373)	-39.94*** (7.241)
Bias-corrected	-43.51*** (7.248)	-40.54*** (7.373)	-41.71*** (7.241)
Robust	-43.51*** (8.515)	-40.54*** (9.015)	-41.71*** (8.666)
Observations	1,711	1,711	1,711
Order loc poly	1	1	1
Order bias	2	2	2
Bandwidth type	Msetwo	msetwo	msetwo

Notes: Data are from various 1929 daily newspapers. Bandwidths were selected using the mean-squared-error method and the triangular, uniform, and Epanechnikov kernels to construct the local-polynomial estimator(s). Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 7. Discontinuity on the difference-in-differences measure of transparent trusts and Dow indices

Variables	(1) Uniform djia_diff	(2) Triangular djia_diff	(3) Epanechnikov djia_diff
Conventional	-3.813 (4.430)	-1.516 (4.228)	-1.942 (4.419)
Bias-corrected	-4.769 (4.430)	-2.433 (4.228)	-2.580 (4.419)
Robust	-4.769 (5.395)	-2.433 (5.281)	-2.580 (5.487)
Observations	1,276	1,276	1,276
Order loc poly	1	1	1
Order bias	2	2	2
Bandwidth type	Msetwo	msetwo	msetwo

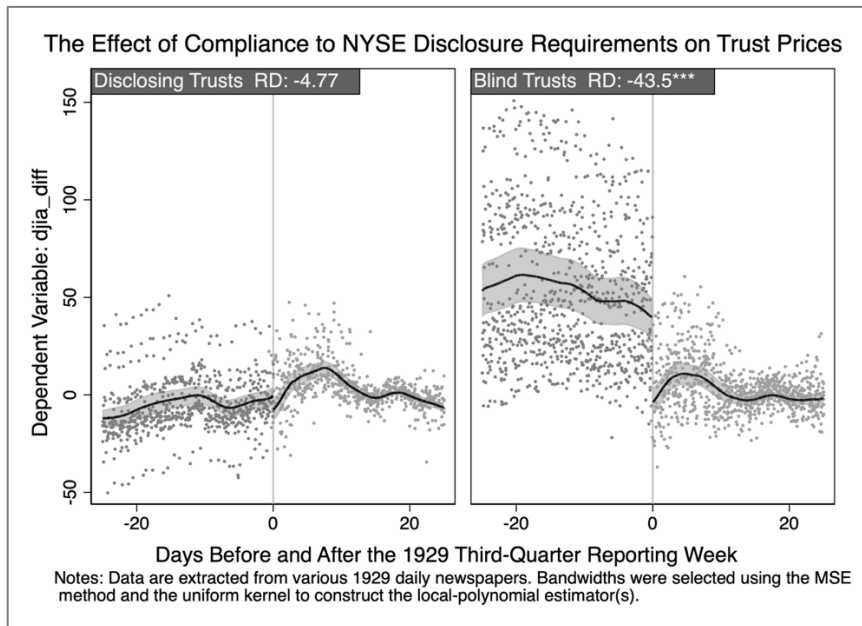
Notes: Data are from various 1929 daily newspapers. Bandwidths were selected using the mean-squared-error method and the triangular, uniform, and Epanechnikov kernels to construct the local-polynomial estimator(s). Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The RDiT results for the blind trusts are statistically significant at the 1 percent level. Figure 4 presents, in graphical form, the results of these specifications. Here we see the significant difference in the variance of the normalized transparent- and blind-trust share prices during the pre-reporting period as compared to the strikingly similar variances following reporting. These results closely resemble the results shown in table 3, column 3. This specification provides a view of the movement of share prices of the two classes of trusts relative to the Dow, suggesting significant pre-disclosure premia on the share prices of blind trusts followed by a correction that brings the share prices and price variance of the blind trusts in line with those of the previously transparent trusts. In contrast to the share prices of the transparent trusts, the prices of the blind-trust shares began to drop several days before the reporting week. This is consistent with the facts that sequestered information about the blind-trust holdings leaked to investors and that insider information was available to the shareholding managers. The share prices of both classes of trusts dropped with the disclosures made during the reporting week, followed by some recovery as investors digested the new information. While, as stated above, the two paths of the trust classes

were different coming into the reporting week, once trust prices fell following the reporting of portfolios, the paths became strikingly similar going forward—consistent with the EMH.

In addition, figure 4 is consistent with our hypothesis about the behavior of blind-trust managers. As we explained, secrecy about portfolios satisfied the self-interest of blind-trust managers so long as share prices exceeded portfolios' efficient values. This is apparent in the right-hand panel of figure 4. Before the reporting week, virtually all observations are above 0 on the vertical axis. The prediction, more generally, is that investors will tend to overvalue sequestered closed-end funds. Alternatively, in the left-hand panel of figure 4, most price points were below 0. This is consistent with our anticipation that the market for transparent trusts in 1929 should operate like twenty-first-century closed-end-fund markets (where funds typically trade at a discount relative to the market values of portfolios as was shown to be true with the revised values of the American & European Securities trust).

Figure 4. Discontinuity in the difference-in-differences measure of investment trusts and the Dow indices



Our panel studies and RDITs indicate that the prices of blind trusts, even after correcting for movements in the Dow, dropped

significantly during the reporting week. This leaves the question whether the corrections in trust prices were consistent with the EMH; following Baur et al. (1996), efficient prices are expected to be below the market value of the holdings in reflection of ancillary costs. In table 8, we provide direct evidence addressing this question, drawn from the balance sheets of six of the studied blind trusts.

Table 8. Price convergence following disclosure by blind trusts

	30-Nov	30-Sept	31-Dec	31-Dec	30-Sept	7-Dec
	Electric Shareholdings	General Public Service	Securities Corp. General	Shawmut Association	North American Aviation	Tri-Continental
Market value (millions)	49.794	40.498	12.262	6.562	17.286	45.277
Shares outstanding (thousands)	1,483	613.3	27.2	397.7	2,000	1,000
Per share (market value)	18 3/4	37 1/4	381 3/4	23 7/8	12 3/16	29
Per share (market price)	18 3/4	31 1/2	370	18 1/4	10 3/8	27
Variance	0.0%	-15.4%	-3.1%	-23.6%	-14.8%	-6.9%
Market drop	50.7%	50.7%	54.3%	36.0%	45.4%	52.6%

Source: Keane (1929, 1930); *Commercial Financial Chronicle*; *New York Times* (1929)

Note that the dates at the top of table 8 are the dates on the financial statements that revealed the holdings of six blind-trust portfolios. These are not the dates when the information became public; more commonly, the information became available about three weeks later (the time required to close the books, perform audits, and so on) before the reporting week. We obtained the balance sheets and underlying portfolios of these trusts from online archive searches of contemporaneous newspaper publications.

We use the values in the *Variance* row of table 8 to assess the extent to which actual market price converged to per-share equity market value following the publication of each blind trust's portfolio.

As shown in the table, these values range from 0.0 percent, for the Electric Shareholdings trust, to -23.6 percent, for the Shawmut Association investment trust. As noted earlier, in a study of twenty-three closed-end funds, Baur et al. (1996, p. 39) report that an average discount of 11.6 percent prevailed from 1970 to 1990. Also, Thaler (1992, p. 170) offers similar evidence: “Over the period 1965–1985 the (value-weighted) average discount on a portfolio of major closed-end stock funds in the U.S. was 10.1 percent.” If we use the averages from these studies as a benchmark, then convergence appears to have occurred, on average, for the trusts in table 8 given that the average of the six variance values in the table is 10.63.

Additionally, Baur et al. (1996) provide evidence that once management fees, omitted from Thaler’s (1992) and others’ analyses, are taken into consideration, such discounts are to be expected for efficiently priced trusts. With this in mind, we look at management compensation for the trusts with the variances, shown in table 8, that were the farthest away from the 10.63 average. For the Electric Shareholdings trust, whose variance is 0 percent, we find that there were no management fees whatsoever. Management compensation was entirely in the form of options to purchase shares in the trust, which lost all value following the drop in the share price. For the Shawmut Association trust, with the -23.6 percent variance in table 8, we discover that it had to pay 12.5 percent of its profits to Shawmut Bank, its managing parent. So it is not surprising that this trust, having such a high management fee, converged to an actual market price that varied broadly from its per-share equity, as shown in table 8.¹⁷

d. Frequency Assessment of Manager Compensation by Type of Trust

For this assessment, we use the firm-characteristic data listed in on management compensation incentives to assess the relative frequency

¹⁷ Galbraith ([1954] 1997, p. 169) professes, in the second epigraph of this article, that an inexplicable “speculative orgy” occurred in financial markets in 1928 and 1929. Consistent with this sentiment, in the same paragraph he admits to having no definite idea about when prices declined or about how much they rationally should have declined, waxing whimsically that “sometime, sooner or later, confidence in the short-run reality of increasing common stock values would weaken . . . [setting off] a rush, pellmell, to unload.” By following Garber’s advice (see this article’s first epigraph), we were led, through an investigation of changing market fundamentals, to insights into when and by how much the prices of blind trusts declined. On our evidence, with regard to investment trusts, we disagree with Galbraith’s assertion that the sell-off was irrational, again in his words “a rush, pellmell, to unload.”

of endogenous compensation (rewards for managers tied to share prices) at blind versus transparent trusts. To make this assessment, we create a chi-squared table (Table 9) whose rows distinguish blind versus transparent trusts. The columns segregate trusts by their management compensation packages: (1) those tied to the market value of trust shares, and (2) those not tied to share values. It is clear that blind-trust management compensation was more frequently tied to the market value of trust shares as confirmed by the chi-squared statistic of 27.18 (shown in table 9). This result supports our hypothesis that when trust share prices exceeded portfolio values, blind-trust managers had an incentive to withhold key information about portfolio compositions.

Table 9. Analysis of management share incentives, by trust type

	No share incentives for management	Share incentives for management	Marginal row totals
Transparent trust	22	1	23
Blind trust	6	21	27
Marginal column totals	28	22	50 (grand total)

Notes: The chi-squared statistic is 27.18. This result is significant at $p < 0.01$.

e. Frequency Assessment of Trust Formations (1928 and 1929) by Type of Trust

For the final validation test, we assess our expectation that blind trusts more frequently incorporated in 1928 and 1929, when trust prices were rising more rapidly than in the years prior to 1928, compared with those earlier years. Using the incorporation data found in table 1, we create relative-frequency table 10. The rows of this table separate blind from transparent trusts, and the columns sort trust formations that occurred in 1928–29 from trusts that formed in the years preceding 1928. Blind-trust formation was more frequent during 1928 and 1929, while transparent-trust formations occurred primarily before 1928, as is confirmed by the chi-squared statistic of 8.98 shown in table 10. This result supports our hypothesis with evidence that the formation of blind trusts increased when stock prices were rising more rapidly during 1928 to 1929.

Table 10. Analysis of organization years, by type of investment trust

	Pre-1928	1928–1929	Marginal row totals
Transparent trust	15	9	24
Blind trust	7	24	31
Marginal column totals	22	33	55 (grand total)

Notes: The chi-squared statistic is 8.98. This result is significant at $p < 0.01$.

III. Concluding Comments

Our fundamentals-focused inquiry into investment-trust pricing during 1929 illustrates the sagacity of Peter Garber's advice in the epigraph. Unlike previous researchers, we used a large sample of daily price observations that took account of the informational dichotomy between transparent and blind trusts that existed up until the third-quarter reporting week of 1929. It was then that stock exchange requirements kicked in, requiring that blind trusts begin publishing their portfolios. Our findings indicate that the dramatic switch from premia to discounts on blind trusts in 1929 was a correction in prices resulting from a surge in new information about their portfolio holdings that hit the market during the third-quarter reporting week that year. This was the great correction of 1929.

Beyond the evidence presented above, in appendixes A and B we revisit the pre-internet findings of DeLong and Shleifer (1991) on the American & European Securities trust fund and the initial offering prices of investment trusts in 1929. Again, it is because of our ability to harness online research capabilities that we were able to discover a market fundamental that was overlooked in their work. In appendix A, we reassess the DeLong and Shleifer claim that American & European Securities, a transparent trust, persistently traded at sizable positive premia from June through September of 1929. This appendix presents a postmortem audit based on extensive observations of daily pricing during 1929, refuting the claim that this trust persistently traded at a premium. In appendix B, we reassess the DeLong and Shleifer claim that there were significant premia at initial public offering of investment trusts during 1929. There, we provide a sourced analysis of the initial public offerings that refutes the DeLong and Shleifer claim; no evidence of premia at initial public offering is found. These appendixes bolster evidence in the main text, showing the great correction of blind-trust prices that occurred in 1929. All of our findings support the EMH; none of our findings

can be used to support the widespread current presumption that there was an irrational bubble in closed-ended funds in 1929.

Finally, our results suggest the potential fruitfulness of additional research into the timing of the 1929 collapse in individual stock prices, more generally. The release of the September 30 financial reports between October 21 and 29 incited a significant correction of blind-trust prices. All of this took place contemporaneously with the crash of the US stock market over the week of October 23 to 29. How much the repricing of the blind trusts contributed to the decline in stock market prices more broadly is an important question, but one that lies beyond the scope of this paper. Still, the contemporaneous timing of the two events seems to us an important topic that is ripe for future inquiry.

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Appendix A: Reassessing the Pricing of the American European Securities Trust

To date, the only academic journal publication focusing on the pricing of investment trusts (that is, closed-end funds) during 1929 appears in the 1991 volume of the *Journal of Economic History*. Its authors, DeLong and Shleifer, claim to have found evidence that irrational premia were commonly paid for investment trusts during 1929. Their main evidence consists of two findings: (1) the American & European Securities (AES) investment trust persistently traded at excessive premia during most of 1929; and (2) of the twelve initial public offerings of investment trusts they examined, eleven traded at significant premia on the day of the initial public offering. Absent these findings, there is no solid basis for their claim that the purchases of investment trusts during most of 1929 fall outside the realm of the rational.

Here, we reassess the pricing of AES during 1929 for two reasons: (1) to serve as a validity test for the main finding of the main text (that is, the mispricing of investment trusts during 1929 traces to asymmetric information rather than irrational exuberance); and (2) to check the validity of the pre-internet research methods that constrained the 1990s inquiry that culminated in the DeLong and Shleifer publication (which advances the claim that the rapid decline in stock prices in October 1929 is best classified as a bursting of an irrational bubble). Our reassessment uses contemporary (online) capabilities to examine financial publication archives, capabilities that were not available to DeLong and Shleifer in 1991. In appendix B, we use online capabilities to reassess their claim that excessive premia were paid at initial public offering by investors to purchase investment trusts.

Did investors in AES persistently pay significant premia for its shares during 1929? Although DeLong and Shleifer claim to have provided credible evidence that investors in AES paid excessive (irrational) premia persistently during the months preceding the 1929 stock market crash, our reassessment of their calculations refutes their claim. We must first emphasize that the calculations of DeLong and Shleifer are impossible to replicate. This is because their publication does not explain their calculations. Furthermore, when we emailed them for an explanation, they responded, in 2019, that they would try to find their files and computer printouts, but we have heard nothing from them since then. All that anyone has is the following terse explanation in their publication: “The American European Securities Fund published the net asset value of its portfolio in December 1928 and December 1929. We traced the net asset value of the December 1928 portfolio forward and that of the December 1929 portfolio back. The two portfolios had similar net asset values, and we used a weighted average to construct monthly estimated premia and discounts for American European Securities during 1929” (p. 683). In figure A1, we reproduce the eight end-of-month point estimates provided by DeLong and Shleifer (p. 684) for AES. As seen in the figure, DeLong and Shleifer have

the trust trading at end-of-month premia in June, July, August, and September of, respectively, 6.5, 25.2, 21.7, and 8.6 percent.

To check the finding of persistent premia for AES during 1929, we performed a postmortem audit that allowed us to calculate the actual daily variance of the market price per share from the market value of the trust's portfolio's equity per share. To accomplish this, three steps were required to take into account the fundamentals of AES: First, we determined the daily composition of the fund's portfolio throughout 1929. In addition to the AES portfolios on December 28, 1928, and December 31, 1929, that DeLong and Shleifer say they used in their calculations, we accounted for six sets of portfolio changes that took place during 1929 on the following dates: January 1, 1929; April 21, 1929; June 21, 1929; July 1, 1929; July 11, 1929; and September 25, 1929 (as shown in table A1). Table A1's footnotes provide details about the transactions on these dates and about their sources. Second, we determined the prices of all AES portfolio-held security holdings (common, preferred, options, warrants, subscription rights, and bonds) for all trading days on which the securities were held, accounting for stock splits, dividends, mergers, and acquisitions. Neither these six sets of changes in the portfolio nor the daily price changes of the assets held by AES were factored into the DeLong and Shleifer calculations. Applying the information gathered from our first two steps, our third step used monthly earnings reports to reconstruct daily balance sheets, totaling the daily market value of the AES portfolio, then finding the market value of the portfolio per share for each trading day.

Only after completing the steps described above to take the fundamentals into account was it possible for us to make a valid comparison of the daily variance of the AES market price per share with the trust's portfolio's equity per share at market value. Figure A1 depicts our results (the gray line), along with those of DeLong and Shleifer (the black line). As the figure shows, our results coincide with theirs on only two days: May 31 and December 31 of 1929. Again, there is no way to know for sure how DeLong and Shleifer calculated these relative valuations, but it seems likely they used the value of the AES portfolios as calculated by outside audits, which were available for these two dates. In any case, the important points of comparison are those between these two endpoints. As the figure illustrates, our results, unlike those of DeLong and Shleifer, offer no support for the claim that people who invested in AES during 1929 persistently paid large premia for the shares.

As we have seen, DeLong and Shleifer show end-of-month premia for June, July, August, and September 1929 of 6.5, 25.2, 21.7, and 8.6 percent, respectively. In contrast, our daily postmortem audit found variations on these dates of -6.9, 4.1, -0.9, and -5 percent. Thus, the trend line connecting the DeLong and Shleifer estimates is quite misleading. For example, the line connecting the end-of-month estimates for August and

September suggests an average premium paid by AES investors of 15.15 percent. In contrast, our daily audit shows the average variation between AES share price and portfolio market value per share to be -3.1 percent.

DeLong and Shleifer’s analysis is based upon unspecified, unknown, and unknowable weighted-average methods of calculation that, apparently, fail to consider any of the information available to investors about the composition of AES’s portfolio or changes in its market value. Our results refute the claim that AES investors were irrational. These investors did not persistently pay significant premia for this investment trust from end of June till the end of September 1929. Our results are consistent with the hypothesis that AES investors behaved rationally, in accordance with the efficient market hypothesis.

Figure A1. DeLong and Shleifer estimates (black series) versus actual (gray series)

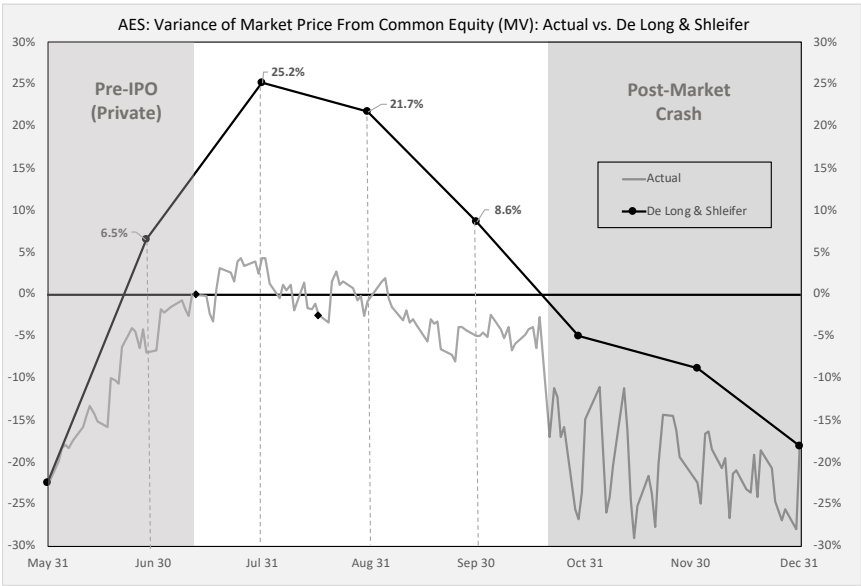


Table A1. American European Securities: 1929 portfolio evolution

Securities	Class	Dec. 31 ⁱ 1928	May 31 ⁱⁱ 1929	June 21 1929	July 1 1929	July 11 1929	Aug 21 1929	Sept. 25 1929	Dec. 31 ⁱⁱⁱ 1929
Albitibi Power & Paper	Preferred	1000							1000
Allied Power & Light Corp.	Common	-	+2000 ^{iv}					-2000 ^v	-
Aluminum Co. of America	Common	500	+700 ^{iv}	+800 ^{iv}					2000
Aluminum Ltd	Common	200					-200 ^v		-
Amerada Corp.	Common	4000	-3000 ^v						1000
American & Foreign Power	\$7 Preferred	5000	-400 ^v	-200 ^v				-2100 ^v	2300
	\$6 Preferred	984							984
	\$7 2nd Preferred	-	+1000 ^{iv}	+1200 ^{iv}		1300 ^{iv}			3500
American Cyanamid	Common B	-		+3000 ^{iv}					3000
American Cities Power	Common A	1000	-1000 ^v						-
	Common B	1000	-1000 ^v						-
American Gas & Electric	Common	5191	+2699 ^{iv}			+110 ^v			8000
American Power & Light	Common	11632	+3368 ^{iv}	+300 ^{iv}				-300 ^v	15000
American Safety Razor	\$5 (unstp)	2600							2600
American Solvents and Chemicals	Common	1000	-1000 ^v						-
American Superpower	Common	-	+2000 ^{iv}						2000
	Sub Rights	2000	-1000 ^v	+4000 ^{vi}				-5000 ^v	-
American Tele & Tele	Common	2000	-1000 ^v	+4000 ^{vi}				-5000 ^v	-
	Sub Rights	2333							2333
Anaconda Copper Mining	Common	-	+2333 ^{viii}	+7 ^{iv}				-2340 ^{viii}	-
Appalachian Electric	Common	-	+1000 ^{iv}	+1400 ^{ix}				-1000	1400
Associated Gas & Electric	Sub Rights	-	+1000 ^v	-1000 ^{ix}					-
	\$7 Preferred	2200							2200
	Preferred	700	-700 ^v						-

Notes: The table reports six changes between the trust’s beginning and ending portfolios.

Table A1. American European Securities: 1929 portfolio evolution (continued)

Securities	Class	Dec. 31 ⁱ 1928	May 31 ⁱⁱ 1929	June 21 1929	July 1 1929	July 11 1929	Aug. 21 1929	Sept. 25 1929	Dec. 31 ⁱⁱⁱ 1929
Atlantic Coast Fisheries	Common	1000	+1000 ^{iv}					-2000 ^v	-
Cities Service Company	Common	2550	-2550 ^x		+5000 ^x				5000
	\$6 Preferred	5000							5000
Colombia Gas & Electric Co.	Common	2500	+3750 ^{xi}						3750
	Com Part	-			+3750 ^{xii}				3750
	Sub Rights	-		37500 ^{xi}	-37500 ^{xiii}				-
Commonwealth Edison	Common	2000				+250 ^{xiv}			2250
Commonwealth & Southern	Common	-			+88725 ^{xv}	+3000 ^{xv}		-1725 ^v	90000
Commonwealth Power Corp.	Options	-			+44363 ^{xv}	+1500 ^{xv}		-34898 ^{xiii}	11474
	Common	8250			-8250 ^{xv}				-
Consolidated Gas Co. of NY	Common	20000				+12955 ^{vi}		+3295 ^{xvi}	36250
Consolidated Gas of Baltimore	Common	550	+55 ^{xvii}						605
Consolidated Railroad-Cuba	6% Priority	-	+1000 ^{iv}						1000
Continental Gas & Electric	Preferred A	1750				+1500 ^{iv}			3250
Detroit Edison	Common	-		+500					500
Edison Co. of Boston	Common	-	+500 ^{iv}					-500 ^v	-
Electric Bond and Share	Common	4000	+8000 ^{xviii}			+2000 ^{xviii}			14000
	Sub Rights	-		+12000 ^{xviii}		-12000 ^{xviii}			-
Electric Power and Light	Common	10000							10000
	2nd Preferred	3000							3000
	Options	4000							4000
Engineers Public Service Co.	Options	-	+2000 ^{iv}						2000
Florida Power & Light	\$7 Preferred	500	+500 ^{iv}						1000

Notes: The table reports six changes between the trust's beginning and ending portfolios.

Table A1. American European Securities: 1929 portfolio evolution (continued)

Securities	Class	Dec. 31 ⁱ 1928	May 31 ⁱⁱ 1929	June 21 1929	July 1 1929	July 11 1929	Aug. 21 1929	Sept. 25 1929	Dec. 31 ⁱⁱⁱ 1929
Ford Motor of Canada	Common A	200	+740 ^{xix}	+120 ^{xix}				-220 ^v	660
	Common B	-	+400 ^{xix}					-400 ^v	-
	Sub Rights	-	+400 ^{xix}	-400 ^{xix}					-
Foster Wheeler Corp.	Common	-					+1000 ^{iv}		1000
	\$7 Preferred	-					+250 ^v		250
Fraser Company Ltd.	Common	2000	+134 ^{iv}					-108 ^v	1049
	Sub Rights	2000	-2000 ^{viii}						-
General Baking Corp.	Common	500	-500 ^v						-
	Preferred	1000	-1000 ^v						-
General Electric Co.	Common	5000	+1000 ^v						6000
General Gas & Electric	Common A	11544	-11544 ^{xs}						-
	Common B	300	-300 ^{xs}						-
	Div Part	12000	-12000 ^{xs}						-
Great Western Sugar	Common	-	+1000 ^v						1000
Gulf Oil of Pennsylvania	Common	4000							4000
Gulf States Utilities Co.	\$5.5 Preferred	500							500
	\$6 Preferred	1500							1500
	Common	-		+1700 ^{iv}					1700
Humble Oil	Common	2733	-2733 ^v						-
Independent Oil & Gas	\$7 Preferred	-	+1000 ^v						1000
Intercontinents Power	Common	600	+3200 ^{xi}	+820 ^{xi}	+380 ^{xi}				5000
International Tel & Tel	Common	500							500
Italian Superpower	Warrants	1000							2500
LA Land & Exploration	Common	43532	+7000 ^v						50652
Mission Oil	Common	-			+2500 ^{xsi}	+120 ^{xxii}			2500
Missouri Kansas	Preferred A	1000							1000
Texas Railroad									
Missouri Pacific Railroad	\$5 Preferred	-	+1000 ^v						1000

Notes: The table reports six changes between the trust's beginning and ending portfolios.

Table A1. American European Securities: 1929 portfolio evolution (continued)

Securities	Class	Dec. 31 ⁱ 1928	May 31 ⁱⁱ 1929	June 21 1929	July 1 1929	July 11 1929	Aug. 21 1929	Sept. 25 1929	Dec. 31 ⁱⁱⁱ 1929
Mountain States Power	Common	225	-225 ^v					-40	-
National Dairy Products	Common	1000	+1040 ^{xxv}						2000
National Power & Light	Common	20000		+2000 ^{iv}					22000
	\$6 Preferred	1000							1000
National Public Service	Common A			+800 ^{iv}					800
New England Public Service	\$6 Preferred			+200					200
New York Central Railroad Co.	Common	2200	-2200 ^v						-
Niagara Hudson Power	Common Warrants A				+10666 ^v				10666
	Warrants B				+8666 ^{xxiii}				8666
					+2000 ^{xxiii}	+6000 ^v			8000
North American Co.	Common	1076	+1053 ^{iv}					-129 ^v	2000
Northern States Power	Common	-	+400 ^{iv}						400
Otis Elevator Co.	Common	500	+75 ^{iv}						575
Pecos Valley Power & Light	Common	1000							1000
Public Service Corp. of New Jersey	Common	7500	+375 ^{iv}						7875
Public Serv. Corp of Northern Illinois	Common	1000						+167 ^{xxvi}	1167
Radio Corp. of America	Common Preferred B	-	+5000 ^{iv}					-5000 ^v	-
		-	+10000 ^{iv}						10000
Reynolds RJ Tobacco Co.	Common	1250	+5000 ^{xxvii}						6250
Seaboard Public Service	\$6 Preferred	-	+500 ^{iv}						500
Southeastern Power & Preferred	Common	5000	+50 ^v						-
		1500			-5050 ^{iv}				1500

Notes: The table reports six changes between the trust’s beginning and ending portfolios.

Table A1. American European Securities: 1929 portfolio evolution (continued)

Securities	Class	Dec. 31 ⁱ 1928	May 31 ⁱⁱ 1929	June 21 1929	July 1 1929	July 11 1929	Aug. 21 1929	Sept. 25 1929	Dec. 31 ⁱⁱⁱ 1929
Southern California Edison	Common	-			+5000 ^v				5000
Southern Railway Co.	Common	1000	+1000 ^{iv}						2000
Standard Gas & Electric	Common	-	+5000 ^{iv}		+6000 ^v				11000
Swiss American Electric Texas Corporation	\$6 Preferred	1000							1000
Union Pacific Railroad Co.	Common	6000	-5000 ^v						1000
	Sub Rights	6000	-6000 ^v						-
	Common	1000	-1000 ^v						-
United Electric Coal Co.	Common	-	+2824 ^{iv}					-2346 ^v	478
	Preferred	1000	-1000						-
United Gas Improvement	Common	5000		+500 ^{xviii}	+22000 ^{xxix}				27500
United Light and Power Co.	\$5 Preferred	-			+625 ^v				625
	Common	5000	+5000 ^{iv}			+5000 ^{iv}			15000
	Preferred A	500	-500 ^v						-
United Shoe Machinery	Common	-	+1000 ^{iv}						1000
United States Rubber	Preferred	1000	-1000 ^v						-
Western Union Telegraph	Common	2000	-500 ^v					-1000 ^v	500
White Eagle Oil & Refining	Common	-	+1000 ^{iv}					-1000 ^v	-

Notes: The table reports six changes between the trust's beginning and ending portfolios.

ⁱThis list of securities was extracted from Keane's 1929 Manual of Investment Trusts, including the quantities of shares held by AES at the end of the fiscal year December 31, 1929. The market value of the AES portfolio was reported by both newspapers of the time and in Keane's Manual. Our estimates of the market value of the aggregate value of the AES portfolio were derived from newspaper end-of-day closing prices. Our aggregated total agrees with those reported in Keane's Manual on this date.

ⁱⁱThis list of changes in the portfolio, relative to that held on Dec. 31, was extracted from Poor's 1930 Manual which listed the last reported holdings and quantities held by the AES trust on May 31, 1929 in advance of this fund's initial public offering. Our estimate of the market value of the aggregated value of the AES portfolio was derived from newspaper end-of-day closing prices for the individual portfolio holdings. Our aggregated total value agrees with that found in Poor's. The net increase from December 31, 1928 were funded by a public offering for \$2 million of preferred shares held on Jan. 10, 1929 as reported in the Cincinnati Enquirer at the time.

ⁱⁱⁱThis list of securities was extracted from Keane's 1930 Manual of Investment Trusts. It represents the total portfolio holdings of AES on December 31, 1929. The market value of this portfolio was reported by both newspapers at the time and by Keane's. Our estimates of this portfolio's value, which we derived from newspapers price-quotes, match the value listed in the Keane's 1930 Manual.

^{iv}Stock purchase on open market.

^vStock sale on open market.

^{vi}American Superpower executed a 5 for 1 stock split on June 21, 1929 according to The Evening Journal, 1929.

^{vii}American Telephone and Telegraph issued subscription rights to common shareholders of record at the end of 1928 (Standard Union, 1929).

^{viii}Option or subscription right expired.

^{ix}Anaconda Copper declared a 5 for 2 subscription rights that would expire on June 18, 1929 (The Evening Journal, 1929).

^xStock split of 4 to 1 on Cities Services Company occurred on May 14, 1929 increasing the holdings by AES from 2550 to "over 10,000 shares" (Boston Globe 1929). These 2550 shares were not on the books of AES on May 31, so must have been sold prior to the split; also, this implies that the 5000 shares of Cities Services Company common on the books of AES from July 1 through December 31, 1929 had to have been purchased on the open market.

^{xi}Columbia Gas and Electric issued a 2.5 for 1 stock split in April 1929 which included 10 stock warrants for each new share. These warrants were converted into common shares on a 10 for 1 basis (St. Louis Globe Democrat, 1929).

^{xii}Acquired by exercising subscription rights (see note xi).

^{xiii}Subscript rights exercised to acquire common shares (see note xi).

^{xiv}Commonwealth Edison Issued subscription rights of 1 for each 8 shares of common stock (Standard Union, 1929).

^{xv}Commonwealth Southern acquired Commonwealth Power Corporation with a stock exchange of eight common shares and four warrants for one share of common (in Commonwealth Power). Southeastern Power and Light was acquired as a part of the same transaction, with a stock exchange of 4.5 shares of Commonwealth Power Corp. for every one common share of Southeastern and 2.25 warrants for each share of Southeastern. Finally, the 15000 shares of

Southeastern (partially paid) added 3000 additional common shares and 1500 warrants. (The Boston Globe, 1929 and The Brooklyn Daily Eagle 1929).

^{xvi}Consolidated Gas issued on Sept. 13th an option to purchase additional common in 1 for 10 subscription rights for shareholders of record (Boston Globe, 1929).

^{xvii}Consolidated Gas of Baltimore issued subscription rights as 1 for each 10 shares of common held (St. Louis Globe-Democrat, 1929).

^{xviii}Electric Bond and Share, as a step in the creation of the new Electric Bond and Share, split the common stock 3 for 1 (Boston Globe, 1929). Later, the firm declared a 6 for 1 stock warrant, which increased the holdings of AES by 2000 shares (Harford Courant, 1929).

^{xix}Ford Motor Company of Canada declared a 20 to 1 stock split in March of 1929. Common shareholders received 5% of the new shares as Class B voting shares and the balance as Class A, non-voting, shares. In addition, two subscription rights were included for each of the original shares. On top of this change, AES took advantage of a 2 for 1 option available following the initial split, resulting in the original 200 shares becoming 7600 class A common shares and 400 common class B voting shares. The 400 subscription rights were subsequently executed (The Los Angeles Times, 1929).

^{xx}Associated Gas and Electric acquired General Gas and Electric in March of 1929 and soon thereafter became embroiled in a lawsuit, inspiring AES to divest itself of all holdings thereof (The Evening Journal, 1929).

^{xxi}International Telephone and Telegraph executed a 3 for 1 stock split in May of 1929. In addition, shareholders were offered a one for ten option. Finally, the firm a portion of the Radio Corporation of America (RCA) that resulted in additional shares going to firms that held RCA stock (Cincinnati Enquirer, 1929 and Brooklyn Times Union 1929).

^{xxii}Italian Superpower issued gold debentures with warrants for 15 shares of common stock for each \$1000 debenture. AES purchased an additional 100 debentures in early July and received an additional 1500 warrants (Chicago Tribune, 1929).

^{xxiii}Quarterly stock dividend.

^{xxiv}Mission Oil was a privately held entity and therefore difficult to value. The values we assigned represent prices from the samples we could find. References we could find to Mission Oil were very few.

^{xxv}National Dairy Products accrued twenty shares of dividends from December 1928. The company declared a 100% stock dividend late in May of 1929., increasing the total number of shares by 1040 (Pittsburg Press, 1929).

^{xxvi}Public Service Company of Northern Illinois provided current shareholders with an additional share of Common for each six share currently held (The Oshkosh Northwestern, 1929).

^{xxvii}Reynolds Tobacco split the common shares 2.5 for 1 in January of 1929 and 2 for 1 in March of 1929, turning the 1250 shares into 62250 shares (Windsor Star, 1929 and The News Journal, 1929).

^{xxviii}Acquired by execution of subscription rights.

^{xxix}United Gas Improvement Company executed a stock split on a 5 for 1 basis in June of 1929, increasing the number of shares held by AES from 5500 to 27500 (The Philadelphia Inquirer, 1929).

Appendix B: Reassessing Trust Pricing at Initial Public Offerings in 1929

In this appendix, we assess the DeLong and Shleifer (1991) claim that eleven of the twelve 1929 initial public offerings (IPOs) of investment trusts they examine traded at significant premia at IPO.

Were excessive (irrational) premia paid for investment trusts at IPO during 1929?

Although DeLong and Shleifer claim that excessive (irrational) premia were paid for investment-trust IPOs during 1929, their pre-online research capabilities posed severe constraints. Our ability to perform online research in 2023 enabled us to reassess the IPOs in the informational context (that is, the underlying market fundamentals) of the financial publications of the time. As this appendix explains, our reassessments produce no evidence that investment trusts sold at premia upon initial public offering.

In figure B1, the *X*'s mark the premia that DeLong and Shleifer claim were paid for twelve investment trusts at their IPO dates during 1929. The *O*'s are our reassessments. Here we discuss each IPO:

1. Tri-Continental (IPO January 21, 1929): This oversubscribed IPO included preferred shares with common warrants and separately available common shares. The par value of the warrants was \$27, whereas the unit price of \$104 included the preferred price of \$100 and a \$4 premium for the common warrant. The combination of the \$4 warrant premium and the \$27 warrant execution price placed the common share's market value at \$31. In pre-IPO sales the no-par common share sold for \$31, and at IPO it traded between \$30 and \$32.75, closing at \$31. The money raised at the \$31 price increased shareholder equity by that amount. Taking into account the price of the warrant built into the preferred share price, there was no premium on the common shares (*National Post* 1929; *Brooklyn Daily Eagle*, January 21, 1929). Based on these considerations, figure B1 shows a zero variance, marked with an *O*, from the market for the IPO occurring on January 21, 1929, in contrast to the 13 percent premium claimed by DeLong and Shleifer, marked on the figure with an *X*, on January 21, 1929.
2. National Securities Investment Company (IPO February 8, 1929): DeLong and Shleifer find no premium for this IPO. We concur but offer a detailed and sourced explanation: This three-year old firm (founded in 1926) had holdings, shareholder equity, and profits prior to its IPO in February 1929. As described in the offering prospectus, the shareholder equity following the offering would be \$100 per share of preferred stock (the par value) and \$12.50 per common warrant. The future warrant exercise price of between \$15 and \$20 established the future value of the common stock to be between \$27.50 and \$32.50. Computing the present value of the \$26 closing price on the day of the offering, we concur with

DeLong and Shleifer that there was no variance from book value at IPO. Consequently, figure B1 shows both an *X* and an *O*, designating zero variation from the market for the IPO that occurred on February 8, 1929.

3. Chicago Corporation (IPO February 14, 1929): The shares of this trust sold as a unit of one preferred share, paying \$3 annually, and one common share. The unit price was \$66 (not the \$55 liquidation value of the preferred share only, which DeLong and Shleifer misconstrue as the unit price). The separately traded common shares sold for \$25 on the IPO day, which, added to the \$65 liquidation value of the preferred stock, represents an \$80 value. The market price of the unit on IPO day was only \$73, representing an 8.75 percent discount, marked in figure B1 with an *O* on February 14, 1929 (*Democrat & Chronicle* February 14, 1929; *Chicago Tribune*, February 14, 1929). The *X* shown on the figure on this date represents the DeLong and Shleifer misconstrued finding that a 36 percent premium was paid at IPO on February 14, 1929, for the Chicago Corporation trust.
4. Chain and General Equities Corporation (no known IPO date): DeLong and Shleifer's list omits this firm as a new issue, although their graph of IPOs incorporates it. Because no firm by this name ever traded publicly, we exclude it from figure B1, correcting the discrepancy between the graph of DeLong and Shleifer and their appendix listing.
5. Mayflower Associates (IPO May 21, 1929): Before IPO, this trust was privately held. On April 15, 1929, the reported book value of shareholder equity for this trust was \$59.98 per share. By the IPO, which occurred five weeks later, factoring in the rise in the Dow over this period, the market value of the securities held by this trust would have increased equity to over \$62 per share. This higher equity is reflected in the \$61.75 price set by the broker of this IPO. Additionally, the brokerage charged no fee (*Detroit Free Press*, May 21, 1929, p. 23). Consequently, in figure B1, we show zero variance from book value for this IPO with an *O* on May 21, 1929. The *X* on this date at 13 percent indicates the premium that DeLong and Shleifer incorrectly found.
6. Shenandoah (IPO July 13, 1929): Goldman Sachs established this firm and funded it twenty days prior to the IPO from the presale of common stock in the trust at \$17.50 per share to public companies in exchange for common shares of their stock. Thus, Shenandoah gained a portfolio of publicly traded stock even before the IPO. During the twenty days before the IPO, the share value rose \$16.50, from \$17.50 to \$34. Goldman Sachs announced this increase in value on the morning of the IPO, and the IPO price reflected this information, with the price that day ranging from \$32 to \$34. This implies that no premium (using \$34 as the share price of Shenandoah) was paid at IPO (*Standard Union*, July 26,

1929, p. 31; *Commercial Financial Chronicle*, July 27, 1929, p. 649). Consequently, in figure B1, we use an *O* to mark this IPO as having a premium of zero on July 13, 1929. The *X* on this date at 103 percent represents the premium that DeLong and Shleifer incorrectly find, blaming (or crediting) the irrationality of investors. (DeLong and Shleifer exhibit great enthusiasm over the IPO premium, but it pales in comparison to what Galbraith [(1954) 1997, p. 64] says after making an even less accurate assessment: “It is difficult not to marvel at the imagination which was implicit in this gargantuan insanity. If there must be madness, something may be said for having it on a heroic scale.”)

7. Interstate Equities (IPO August 1, 1929): This oversubscribed offering sold “on issue at nearly twice its par value.” The proceeds from the issue price flowed into the company’s equity. Following the IPO, the shareholder equity and the book value of the shares would equal the issue price, as required by generally accepted accounting practices, and not the par value. The market issue price of \$25 replaced the par value of \$15. Accordingly, there was no premium on this stock at IPO (*Standard Union* 1929). In figure B1, we show a zero premium for this IPO on August 1, 1929, marked by an *O*. The *X* at 25 percent represents the premium that DeLong and Shleifer report for this IPO.
8. American Equities Corp. (IPO August 16, 1929): This firm began with a portfolio acquired from an earlier trust company that had a history of returning 175 percent. The older firm transferred all its assets to the new firm, which included shares in publicly traded companies and ownership of a profitable utility holding company. The stock authorized for the IPO was all sold at \$29.50 well before the IPO date. Because a significant portion of the firm’s holdings consisted of a privately held utility holding company, there is no way to determine the firm’s market value based upon the portfolio. Furthermore, the IPO occurred, again, after the issue-date sale at \$29.50, and the market price of the publicly traded shares had increased over the intervening period. The \$33 price at the IPO, then, was actually the price on the secondary market, as the stock traded among investors (*Brooklyn Times Union*, August 9, 1929, p. 62; *Star Tribune*, August 16, 1929, p. 21). Because our newspaper archival research uncovered ambiguities in this case, we tentatively place in figure B1 an *O* for August 16, 1929, at a zero premium. In contrast, DeLong and Shleifer assert without sourcing or discussion that there was an 8 percent premium, shown with an *X*.
9. American Equities (DeLong and Shleifer incorrectly report an IPO occurring for a trust of this name on August 20, 1929): This appears to be an error of duplication by DeLong and Shleifer, repeating the American Equities Corp. case because they mistakenly think American Equities was a trust distinct from American Equities Corp. Because there

is no separate offering of a trust on August 20, 1929, named American Equities, we do not show this case in figure B1.

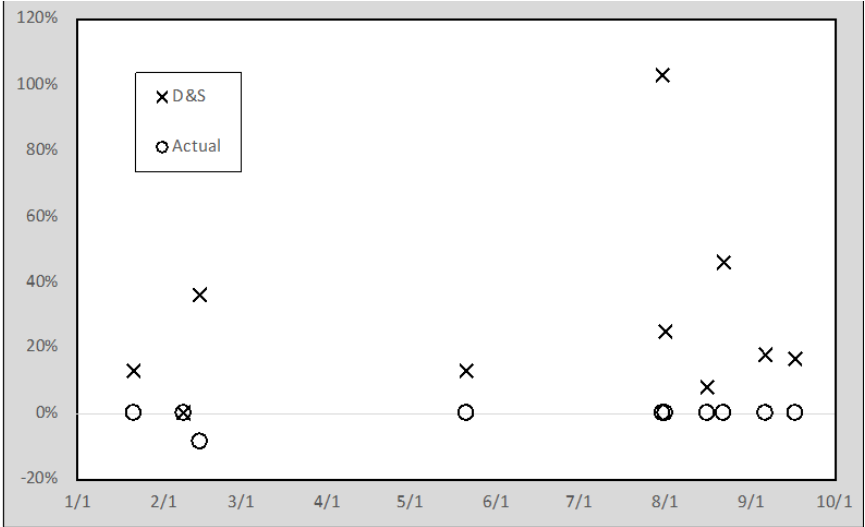
10. Blue Ridge Corporation (IPO August 22, 1929): As with Shenandoah, Goldman Sachs presold this fully subscribed stock at the par value of \$20 in advance of the IPO. Publicly traded companies purchased shares of Blue Ridge in exchange for their own shares. Thus, like Shenandoah, Blue Ridge had an existing portfolio at the time of the IPO. The increased value of Blue Ridge shares on the secondary market (on the date of the IPO) reflected the value of the investment portfolio held by the company and, therefore, priced without premium.
11. Prince and Whitely Trading Corporation (IPO September 6, 1929): Prince and Whitely, the banking company behind the Prince and Whitely Trading Corp., agreed to cover all IPO costs of a bundled unit of one preferred share with two common shares. The par value set for the unit was \$75, consisting of \$50 for the preferred shares and \$12.50 for each of the common shares. At IPO, the preferred shares sold at par value (again, \$50,) whereas the common shares ranged between \$12.125 and \$13.125, closing 1 percent below the par value of \$12.50 (*San Francisco Examiner*, September 6, 1929, p. 28). As determined by the closing price, there was a zero premium on the common shares at the close of IPO day, which is shown in figure B1 as an O on September 6, 1929. This refutes the claim of DeLong and Shleifer that there was an 18 percent premium for the IPO of the Prince and Whitely Trading Corp. on September 6, 1929, which is marked with an X in figure B1.
12. Lehman Corporation (IPO September 17, 1929): Lehman Brothers was to receive 12.5 percent of future profits as a management fee for the Lehman Corporation trust (*Los Angeles Times*, September 17, 1929, p. 14). This was not to be given as a brokerage fee on the IPO, as suggested incorrectly by DeLong and Shleifer. Shares were floated on a when-issued basis to test the market and were then sold at market value, closing and holding at \$113 per share. This means the firm's equity increased by the full price of \$113, making the market and book prices the same and implying no premium. DeLong and Shleifer interpret the 12.5 percent of future profits as a percentage of IPO proceeds and therefore as equity. Participation in future profits does not have a direct impact on equity at the time of IPO. Rather than the 12.5 percent premium found by DeLong and Shleifer, shown in figure B1 as an X on September 17, 1929, there was instead a premium of zero, which we portray with an O.

Conclusions

Our reassessment of investment-trust IPO pricing (based upon online research of the financial sources of the times) does not show that the investors of 1929 were paying large premia. This assessment is in stark contrast to that of DeLong and Shleifer. As noted in appendix A, DeLong and Shleifer did not possess the online technology and research capabilities that enable us to conduct broad-scale inquiries into the informational context of the IPOs (that is, into the fundamentals in play). As shown in figure B1, none of the O's (our findings regarding IPO premia) for any date are above a zero premium, whereas all but one of the X's (DeLong and Shleifer's findings of IPO premia) are above zero, the lowest being 8 percent and the highest 103 percent.

This evidence on IPOs is consistent with our findings in appendix A (that premia were not persistently paid for the American European Securities trust). Taken together, the results in appendixes A and B refute the DeLong and Shleifer claim that investors paid excessive (irrational) premia for investment-trust shares during 1929.

Figure B1. DeLong and Shleifer's assessments of IPO premia and discounts versus our assessments of the actual IPO variations from underlying equity at IPOs



Notes: The X and O values correspond to the values in table B1.

Table B1. Numeric comparison, DeLong and Shleifer versus actual

IPO date	Trust name	DeLong and Shleifer	Actual
Jan 21	Tri-Continental	13.00%	0.00%
Feb 8	National Securities Investment Co	0.00%	0.00%
Feb 14	Chicago Corporation	36.00%	-8.75%
May 21	Mayflower Associates	13.00%	0.00%
Jul 31	Shenandoah Corp	103.00%	0.00%
Aug 1	Interstate Equities	25.00%	0.00%
Aug 16	American Equities Corp	8.00%	0.00%
Aug 22	Blueridge Corp	46.00%	0.00%
Sept 6	Prince and Whitely	18.00%	0.00%
Sept 17	Lehman Corporation	16.50%	0.00%

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