Did Reform of Prudent Trust Investment Laws Change Trust Portfolio Allocation?

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Abstract

This paper investigates the effect of changes in state prudent trust investment laws on asset allocation in noncommercial trusts. The old *prudent man rule* favored "safe" investments such as government bonds and disfavored "speculation" in stock. The new *prudent investor rule*, now widely adopted, relies on modern portfolio theory, freeing the trustee to invest based on risk and return objectives reasonably suited to the trust and in light of the composition of the trust portfolio as a whole. Using state- and institution-level panel data from 1986-1997, we find that after a state's adoption of the new prudent investor rule, trust institutions held about 1.5 to 4.5 percentage points more stock at the expense of "safe" investments. Accordingly, we conclude that trustees are sensitive to changes in trust fiduciary law. Even though trust investment laws are nominally default rules, such rules matter in the presence of agency costs and unreliable judicial enforcement of opt outs.

I. INTRODUCTION

"How do you make a small fortune? Give a bank a large one to manage in trust."[1] So goes an old saw about the banking industry that reflects long experience with risk-averse, conservative trust investing by institutional trustees operating under the *prudent man rule* of trust investment law. The prudent man rule favored "safe" investments such as government bonds, disfavored "speculation" in stock, and courts assessed the prudence

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[1] Jesse Dukeminier & James E. Krier, The Rise of the Perpetual Trust, 50 UCLA L. Rev. 1303, 1335 (2003).

of each investment in isolation rather than in the context of the portfolio as a whole. In the last twenty years, however, all states except Mississippi abandoned the old prudent man rule. In its place the states have adopted the new *prudent investor rule*. Drawing on the teachings of modern portfolio theory, the new prudent investor rule directs the trustee to invest based on risk and return objectives reasonably suited to the trust and instructs courts to review the prudence of individual investments in the context of the trust portfolio as a whole. The new prudent investor law thus abolishes all categorical restrictions on permissible types of investments. Most importantly, it repudiates the former law's hostility to investment in stock.

The effects of this legal reform have been largely unstudied, but are potentially quite important. State trust investment law governs the investment of substantial sums of money. As of year end 2004, federally-reporting institutional trustees alone held roughly $1 trillion in noncommercial trust funds. Moreover, thanks to the movement to abolish Rule Against Perpetuities and the increasing use of perpetual trusts,[2] the volume of investment capital held by trustees is likely to grow at an increasingly rapid rate.

The problem of how to regulate the trustee's investment decisions is a specific application of the more general agency problem that is inherent in the use of the trust form. In legal terms, a trust is a fiduciary relationship in which the trustee holds legal title to specified property, entrusted to him by the settlor, and manages that property for the benefit of one or more beneficiaries. Hence the trust separates risk-bearing (the beneficiaries) and management (the trustee).

[2] See Robert H. Sitkoff & Max M. Schanzenbach, Jurisdictional Competition for Trust Funds: An Empirical Analysis of Perpetuities and Taxes, 115 Yale L.J. 356 (2005).

To safeguard the beneficiary from mismanagement or misappropriation by the trustee, the law supplies a set of default contractual terms known as fiduciary duties that prescribe the trustee's level of care (the duty of prudence) and proscribe misappropriation (the duty of loyalty).[3] Such terms are enforced through ex post litigation. Moreover, because traditional law makes it difficult for the beneficiary to remove the trustee and the beneficiary's interest is typically inalienable (i.e., there is no market for trust control), the threat of fiduciary litigation has emerged as the primary device for minimizing agency costs in the modern trust relationship.[4] With respect to managing the trust's investment portfolio, unless the settlor provides otherwise, the trustee's fiduciary duty of prudence is defined by the state law of trust investment.

Default rules should only matter in the presence of transaction costs. Thus, if the settlor can cheaply specify investment goals in the trust instrument, and the trustee's compliance with those instructions is easily observed, we would expect the recent change in prudent trust investment standards to have had little effect on trust investment in practice. Indeed, surveys conducted while the old rule was in effect suggest that such opt outs were common.[5] Thus, scholars such as Jeffrey Gordon, John Langbein, and Richard

[3] See John H. Langbein, The Contractarian Basis of the Law of Trusts, 105 Yale L.J. 625, 640-42, 655-60 (1995); Frank H. Easterbrook & Daniel R. Fischel, Contract and Fiduciary Duty, 36 J. L. & Econ. 425, 426 (1993); Robert Cooter & Bradley J. Freedman, The Fiduciary Relationship: Its Economic Character and Legal Consequences, 66 NYU L. Rev. 1045, 1047 (1991).

[4] See Robert H. Sitkoff, Trust Law, Corporate Law, and Capital Market Efficiency, 28 J. Corp. L. 565, 570-71, 577-78 (2003).

[5] See Jeffrey N. Gordon, The Puzzling Persistence of the Constrained Prudent Man Rule, 62 N.Y.U. L. Rev. 52, 76 n.99 (1987).

Posner have theorized that the old rule endured for so long in part because sophisticated parties could opt out of its application.[6]

There are, however, good reasons to suppose that the underlying duty of prudence nonetheless influences trust investment in practice. First, comprehensive opt outs are infeasible,[7] which is to say that trust agreements are necessarily incomplete contracts for which the default fiduciary standards necessarily remain relevant. Second, under the old law courts were skeptical of opt outs and construed them narrowly. For example, even if the trust instrument authorized a specific investment, courts still reviewed whether exercising that authority was prudent under the circumstances.[8] Third, the trustee's litigation risk was asymmetric. Under the old law the beneficiary had no viable cause of action for a too-conservative portfolio (government bonds were in effect per se prudent).[9] By contrast, if an investment in stock did not pay off, in hindsight courts regularly deemed such an investment to have been imprudent "speculation" regardless of whether it was a sensible investment ex ante in the context of the portfolio as a whole. Finally, typical industry

[6] See Gordon, supra note __, at 75-76; John H. Langbein & Richard A. Posner, Market Funds and Trust-Investment Law, 1976 Am. B. Found. Res. J. 1, 5-6; Richard A. Posner, Economic Analysis of Law §15.6, at 455 (6th ed. 2003). In more recent work, however, Langbein predicted an increase in trust investment in equity following adoption of the new prudent investor rule. See John H. Langbein, The Uniform Prudent Investor Act and the Future of Trust Investing, 81 Iowa L. Rev. 641, 654 & n.83 (1996) (citing a statement by a leading New York bank to a similar effect).

[7] The condition of financial markets, the needs of the beneficiaries, and in many trusts the identity of the beneficiaries will vary over time. Hence it is impossible for the donor to specify in advance what the trustee should do in all possible contingent future states of the world.

[8] See infra notes 26-27 and text accompanying. The related phenomena of network effects, status quo bias, and agency costs and herd behavior in contract drafting further exacerbate the difficulty of opting out. See, e.g., Marcel Kahan & Michael Klausner, Path Dependence in Corporate Contracting: Increasing Returns, Herd Behavior and Cognitive Biases, 74 Wash U.L.Q. 347, 353-65 (1996); Russell Korobkin, The Status Quo Bias and Contract Default Rules, 83 Cornell L. Rev. 608 (1998).

[9] As Langbein puts it, "under traditional law beneficiaries have had little recourse when trustee performance has been indifferent, but not so egregious as to be in breach of trust." John H. Langbein, The Uniform Trust Code: Codification of the Law of Trusts in the United States, 15 Tr. L. Int. 66, 76 (2001).

compensation arrangements, which are based on the total corpus of the trust and are one percent or less per annum, do little to offset the poor incentives of the trustee to invest otherwise than cautiously.[10] Investing in stock or other securities with a higher risk/return tradeoff exposed the trustee to considerable downside litigation risk with little potential upside gain.[11]

In spite of the importance of trust investment law for capital markets, the efficient allocation of investment capital, and intergenerational wealth transfer, there is no published study of the effect on trust investment practices of the change from the old prudent man rule to the new prudent investor rule.[12] Using state- and bank-level panel data span-

[10] Often the purpose of the trust is to supply a reliable source of income to the surviving spouse and children, who have a low tolerance for risk, not to maximize the value of the trust corpus. By contrast, an institutional trustee with a portfolio of trust funds under its management is likely to be risk-neutral, or at least less risk-averse than the beneficiaries. For this reason, the benefits of trying to solve the incentive problem by setting the trustee's compensation in relation to the trust's annual return are typically outweighed by the costs of exacerbating the risk-sharing problem. The fundamental difficulty is that the optimal solution to the principal-agent problem with a risk-averse principal and a risk-neutral (or at least less risk-averse) agent, selling the project to the agent, is foreclosed by the transferor's use of the trust form instead of an outright transfer. On this account the settlor is the trustee's primary principal. See Robert H. Sitkoff, An Agency Costs Theory of Trust Law, 89 Cornell L. Rev. 621, 648-49 (2004).

[11] Moreover, judicial enforcement of the duty of prudence in trust law has traditionally been more searching and rigorous than the enforcement of the duty of care in corporate law, the latter of which combats hindsight bias through the business judgment rule and can also been justified on the theory that, unlike trust beneficiaries, well-diversified shareholders are risk-neutral. For a comparison, see Rachlinksi, supra note __, at 78-79; Sitkoff, supra note __, at 654-57.

[12] In a 1999 study, Begleiter surveyed 239 banking institutions in Iowa to inquire of their interpretation of the new prudent investor rule then in effect in Iowa. Of the 61 institutions replying, a substantial majority indicated that they employed risk/return analysis in making trust investments and that the new prudent investor rule did not prohibit specific investments that the institution would otherwise want to pursue as trustee. See Martin D. Beglieter, Does the Prudent Investor Need the Uniform Prudent Investor Act—An Empirical Study of Trust Investment Practices, 51 Me. L. Rev. 27, 72-77, 79-85 (1999). Begleiter did not, however, undertake a before-and-after comparison.

In a recent paper, Hankins et al. examine the effect of prudent trust investment laws on the preference for dividend-paying stocks among institutional investors such as insurance companies and bank trust departments. Based on SEC filings, they find that between 1990 and 2000 such institutions increased their holdings in non-dividend paying stocks after a state's adoption of a modern prudent investor law. There are, however, at least three potential problems with their analysis. First, their sample data does not distinguish between actively-managed personal trusts, passively-managed personal trusts, ERISA benefit funds, and other such institutional funds. But state prudent trust investment law is directly controlling only with respect to personal trusts. Second, their identification strategy looks to the law of the institution's top-level

ning 1986-1997 and a variety of identification strategies, we examine whether the asset allocation of noncommercial trust funds held by institutional trustees changed after a state repealed the old prudent man rule and adopted the new prudent investor law. In the period under study, 35 states repealed the prudent man rule in favor of the new law.[13] We find that after a state's adoption of the new prudent investor rule, trust institutions held about 1.5 to 4.5 percentage points more stock at the expense of "safe" investments in noncommercial trust funds. Accordingly, we conclude that even though trust investment laws are nominally default rules, such rules matter in the presence of agency costs and unreliable judicial enforcement of opt outs. Moreover, by showing that trustees are sensitive to changes in trust fiduciary law, our findings imply that the fiduciary obligation is a viable means of trust governance.

The remainder of this paper is organized as follows. Section II motivates the empirical analysis by reviewing the relevant law and prior literature. Section III explains our research design, including the nature of our dataset and our identification strategies. We report our results in Section IV. Section V concludes.

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holding company's state of incorporation, which is not necessarily the same state law that governs the administration of a trust fund held by a subsidiary of the holding company. Third, state principal and income rules, which bear directly on preferences for dividend-paying stocks, became increasingly differentiated after 1997 (see infra note 54 and text accompanying), but those Hankins et al. do not control for changes in state principal and income rules. Kristine Watson Hankins, Mark J. Flannery, & M. Nimalendron, "Fiduciary Standards and Institution's Preference for Dividend-Paying Stock," August 2005, available at http://ssrn.com/abstract=686966. By contrast, our data isolates actively-managed personal trust funds from other institutional holdings and it more closely aligns those funds with the applicable state law. Moreover, we use ERISA funds, which are governed by federal law (not state trust law), as a control group in some specifications.

[13] Nine of those 35 repeals, however, came in 1997, the last year of the study. See infra Table 5 and Figure 1.

II. THE LAW OF PRUDENT TRUST INVESTMENT

A. The Constrained Prudent Man Rule

In the aftermath of the "South Sea Bubble" of 1720, the English Court of Chancery developed a "court-list" of permissible trust investments—typically government bonds and first mortgages on realty—that were presumptively prudent for trust investment.[14] Investments not on the list were improper. Eventually the court-lists were codified by statute, with some American states keeping their statutory lists well into the twentieth century.[15] Under this "legal list" approach, investment in corporate securities was forbidden or greatly restricted.[16]

In 1830, the Supreme Judicial Court of Massachusetts initiated the move away from the legal lists and toward the "prudent man rule" in the famous case of *Harvard College v. Amory*.[17] *Amory* instructs trustees "to observe how men of prudence, discretion and intelligence manage their own affairs, not in regard to speculation, but in regard to the permanent disposition of their funds, considering the probable income, as well as the probable safety of the capital to be invested." With some nudging from the American Bankers Association, which sponsored a model statute codifying *Armory*, most states re-

[14] See Langbein & Posner, supra note __, at 3-4.

[15] See Lawrence M. Friedman, The Dynastic Trust, 73 Yale L.J. 547, 567-568 (1964).

[16] See, e.g., King v. Talbot, 40 N.Y. 76 (1869) (restricting trust investment to government bonds and first mortgages, and forbidding investment in corporate securities).

[17] 9 Pick. (26 Mass.) 446, 461 (1830).

pealed their legal lists and embraced the *Armory* prudent man rule by the mid-twentieth century.[18]

In spite of the apparent flexibility of *Amory*'s open-ended prudent man formulation, however, the rule was interpreted quite inflexibly. Under the influence of the 1959 Restatement (Second) of Trusts and the authoritative treatise by Austin Scott, courts read prior decisions applying the prudence standard to specific facts as announcing rules of general application.[19] The prudent man rule thus became encrusted with a host of "specific subrules prescribing the types and characteristics of permissible investments for trustees. Based on some degree of risk that was abstractly perceived as excessive, broad categories of investments and techniques often came to be classified as 'speculative' and thus as imprudent per se."[20]

For example, the 1959 Restatement took the position that "[o]rdinarily it is proper for a trustee to invest in . . . bonds of the United States or of the State or of municipalities, in first mortgages on land, or in corporate bonds."[21] By contrast, investing in "speculative" stock (defined to include stock in any company other than one "with regular earnings and paying regular dividends which may reasonably be expected to continue"), buying securities on margin, or buying discounted bonds was presumptively improper.[22] Moreover, judicial review of the trustee's investments operated ex post, inviting hind-

[18] See Langbein & Posner, supra note __, at 5; Mayo A. Shattuck, The Development of the Prudent Man Rule for Fiduciary Investment in the United States in the Twentieth Century, 12 Ohio St. L.J. 491, 499-504 (1951).

[19] See Gordon, supra note __, at 57-62. Scott was also the reporter for the Restatement (Second).

[20] Restatement (Third) of Trusts: Prudent Investor Rule, Introduction at 3-4 (1992).

[21] Restatement (Second) of Trusts §227 cmt. f (1959).

[22] Id. at cmts. f, m.

sight bias in the form of "post hoc searches for evidence that investments were too risky."[23] Thus, if a higher risk investment did not pay off, the trustee faced substantial potential liability for imprudently "speculating" in stock.[24] Worse still, under the old law courts assessed the prudence of each investment in isolation rather than in the context of the portfolio as a whole. Hence, under the old law a "trust fund manager who increases the value of the trust principal while providing an ample return for the income recipients may find himself personally liable for the poor performance of a single security in the portfolio."[25]

Although nominally default rules, courts were notoriously chary about language in the trust instrument that purported to change the applicable standards of prudent trust investment. Thus, the 1959 Restatement (Second) of Trusts states that "[a]n authorization by the terms of the trust to invest in a particular type of security does not mean that any investment in securities of that type is proper."[26] Likewise, neither an exculpation

[23] Jeffrey J. Rachlinski, Heuristics and Biases in the Courts: Ignorance or Adaptation, 79 Or. L. Rev. 61, 79-80 (2000). In re Chamberlain's Estate, 156 A. 42, 43 (N.J. Prerog. 1931), is an egregious example: "It was common knowledge, not only amongst bankers and trust companies, but the general public as well, that the stock market condition [in August 1929] was an unhealthy one, that values were very much inflated, and that a crash was almost sure to occur. In view of this fact, I think it was the duty of the executors to dispose of these stocks immediately upon their qualification as executors."

[24] See, e.g., First Alabama Bank of Montgomery v. Martin, 425 So. 2d 415, 427 (Ala. 1982) (holding that investment in a set of underperforming stocks was imprudent "speculation" because the trustee had intended to sell them after appreciation). See also Rachlinski, supra note __, at 79-81 (collecting cases).

[25] Roger D. Blair, ERISA and the Prudent Man Rule: Avoiding Perverse Results 68, in Lexeconics: The Interaction of Law and Economics 62-84 (Gerald Sirkin, ed., 1981).

[26] Restatement (Second) of Trusts §227 cmt. v (1959). For example, in a well-known 1977 California decision, even though the trust instrument authorized every kind of investment "irrespective of whether said investments are in accordance with the laws then enforced in the State of California pertaining to the investment of trust funds," the court held the trustees liable for breach of the prudent man rule. "While the declaration of trust may possibly enlarge the prudent-investor standard as far as the Type of investment is concerned," explained the court, "it cannot be construed as permitting deviations from that standard in investigating the soundness of a specific investment." Estate of Collins, 139 Cal.Rptr. 644, 646, 650 (App. 1977).

clause nor a grant of extended discretion could fully insulate the trustee from judicial review.[27]

In sum, under the old prudent man rule, courts deemed broad swaths of investments to be "safe" (and so per se prudent) or "speculative" (and so per se imprudent), and evaluated the prudence of each investment in isolation rather than in the context of the portfolio as a whole. As such, "safe" investments provided the trustee with a safe harbor from liability while having little effect on the trustee's compensation (which, as discussed above, is generally based on the corpus of the trust).

Not surprisingly, prior studies have found bank trust departments to be among the most conservative of institutional investors. Based on SEC filings of institutional stock holdings prior to 1990, Del Guercio concluded that bank trust departments were the most conservative institutional investors.[28] Although Del Guercio did not exploit differences in state laws (few states adopted the new prudent investor rule during the period of her study), she attributed bank trust departments' relative conservatism to the prudent man rule. Using SEC filings from 1983-1997, Bennet et al. also examined differences in asset allocations across institutional investors, likewise finding that bank trust departments invested quite conservatively.[29] Taking a different approach, but reaching a similar result, in 1985 Longstreth surveyed the 50 largest bank trust departments, college and university

[27] For an extended discussion of the doctrine (with citations), see Jesse Dukeminier, Stanley M. Johanson, James Lindgren, & Robert H. Sitkoff, Wills, Trusts, and Estates 540-43 (7th ed. 2005).

[28] Diane Del Guercio, The Distorting Effect of the Prudent-Man Laws on Institutional Equity Investments, 40 J. Fin. Econ. 31 (1996).

[29] James A. Bennett, Richard W. Sias, and Laura T. Starks, Greener Pastures and the Impact of Dynamic Institutional Preferences, 16 Rev. Fin. Stud. 1203 (2003). Both Del Guercio and Bennett et al. base their analyses on SEC filings that detail the institution's aggregate investment profile, which likely includes both personal trusts and employee benefit funds. As such, their data is less refined than ours. See infra Section III.A.

endowments, private foundations, and corporate pension fund sponsors.[30] Of the institutions replying, bank trust departments reported being most constrained by the legal standards governing their investment practices.

B. Toward the Modern Prudent Investor Rule

In the latter part of the twentieth century, scholars and sophisticated practitioners familiar with modern portfolio theory (MPT) began calling for reform of the prudent man rule.[31] As the critics rightly noted, risk is correlated with return and unsystematic risk can be diversified away. Assessing the prudence of a particular investment therefore requires consideration of the portfolio as a whole, the beneficiary's tolerance for risk, and the purpose of the trust. Critics also noted that investment in long-term, fixed-rate obligations with little default risk—the norm under the old prudent man rule—exposes the trust fund to considerable inflation risk.

In response to the cogency of these criticisms, in the mid to late 1980s a handful of states repealed the old prudent man rule in favor of a prudent investor rule consistent with the teachings of MPT. But widespread repeal of the old prudent man rule did not come until the early 1990s. The deathblows to the old rule were two: (1) the publication in 1992 of the Restatement (Third) of Trusts sections on prudent investment (the Re-

[30] Bevis Longstreth, Modern Trust Investment Management and the Prudent Man Rule 232-66 (1986). When compared with Longstreth's findings, Begleiter's results, discussed supra note 12, seem to imply trustees feel substantially freer under prudent investor law than before, but the two surveys are from such different samples that before-and-after comparisons are inappropriate.

[31] See, e.g., Gordon, supra note __; Langbein & Posner, supra note __; John H. Langbein & Richard A. Posner, Market Funds and Trust-Investment Law: II, 1977 Am. B. Found. Res. J. 1; Longstreth, supra note __. See also Harvey E. Bines, Modern Portfolio Theory and Investment Management Law: Refinement of Legal Doctrine, 76 Colum. L. Rev. 721 (1976); Note, The Regulation of Risky Investments, 83 Harv. L. Rev. 603 (1970).

statement), and (2) the promulgation in 1994 of the Uniform Prudent Investor Act (UPIA). As compared to other uniform laws and Restatements, the prudent investor rule of the Restatement (Third) and Uniform Act has experienced an unusually swift and broad acceptance. Today every state except Mississippi has repealed the old prudent man rule in favor of the modern prudent investor rule.[32]

As reformulated (and made gender-neutral), the new prudent investor rule provides that the "trustee's investment and management decisions respecting individual assets are evaluated not in isolation, but in the context of the trust portfolio as a whole and as a part of an overall investment strategy having risk and return objectives reasonably suited to the trust."[33] The Restatement and UPIA also folded into the definition of prudence an explicit duty to diversify.[34]

In general, the new law applies prospectively to existing trusts.[35] Thus, if the prior law was constraining in spite of its nominally being a default rule, the new law could have an immediate effect on trust portfolio allocation. After adoption the new rule

[32] We include within this category any statute based on the 1992 Restatement or the 1994 UPIA, or that in comparable non-uniform or non-Restatement language instructs courts to evaluate the prudence of a particular investment in light of the composition of the portfolio as a whole. Table 5 details our dating of the modern prudent investor laws. The UPIA language is a bit more precise than some of the earlier acts in that it expressly abolishes all categorical restrictions on investments, §2(e), and forbids hindsight review, §8.

[33] Uniform Prudent Investor Act §2 (1994) (hereinafter UPIA). Restatement (Third) of Trusts: Prudent Investor Rule §227(a) (1992) is to similar effect. The reporters of the Restatement (Third) and UPIA have each published articles summarizing the new law. See Edward C. Halbach, Jr., Trust Investment Law in the Third Restatement, 77 Iowa L. Rev. 1151 (1992); Langbein, supra note __.

[34] See UPIA§3; Restatement (Third) of Trusts: Prudent Investor Rule §227(b).

[35] See, e.g., UPIA §11. The main exception is Pennsylvania, which excludes existing trusts from its new prudent investor rule. See 20 Pa. Con. Stat. 7204(b). Because the Pennsylvania statute was adopted after the period under study, we need not resolve whether to code it differently than the other adopting states. In all adopting states behavior prior to adoption is governed by the prior law.

applies to all the trustee's subsequent investment decisions, including the failure to reallocate a portfolio that was crafted to comply with the prior law. [36]

On the other hand, compliance with the modern prudent investor will not always require a portfolio reallocation. The risk tolerance of the beneficiaries may require a conservative investment strategy, for example in the paradigmatic trust for the benefit of a widow and orphans.[37] Accordingly, the extent to which adoption of the modern prudent investor rule prompts greater investment in equity will be a function of the risk tolerance of the beneficiaries of the trusts in our sample, the transaction and tax costs of portfolio reallocation, and the extent to which settlors had previously been able successfully to opt out of the prior law.

C. ERISA

A further stimulus for reform, which was cited expressly by the drafters of the UPIA and the Restatement, was the Employee Retirement Security Act of 1974 (ERISA). ERISA imposes on trustees of pension and employee benefit trusts a duty of prudent investing based on the *Armory* prudent man rule,[38] but with four important changes.[39] First, it omits the *Armory* language concerning "speculation" and the "probable safety of the capital." Second, the ERISA formulation focuses attention on "the circumstances

[36] However, the new law does not require reallocation if the benefits of doing so are outweighed by the attendant transaction and tax costs. See Restatement (Third) of Trusts §229; UPIA §4.

[37] As the official comment to UPIA §2 explains, "tolerance for risk varies greatly with . . . the purposes of the trust and the relevant circumstances of the beneficiaries. A trust whose main purpose is to support an elderly widow of modest means will have a lower risk tolerance than a trust to accumulate for a young scion of great wealth."

[38] ERISA §404(a)(1)(B), 29 U.S.C. §1104(a)(1)(B).

[39] See Longstreth, supra note __, at 33-36.

then prevailing" (to avoid hindsight bias) and the "aims" of the "enterprise." Third, unlike the standard of prudent trust investment private trust law, which is a default rule, ERISA's standard of prudent investing is mandatory.[40] Fourth, and most important, in 1979 the Department of Labor issued a regulation that departed from the old prudent man rule by interpreting ERISA's statement of prudence to require consideration of the role that each investment plays in the context of the portfolio as a whole.[41] Consistent with the Labor Department's MPT-friendly interpretation, the federal courts have employed a total portfolio approach in ERISA litigation involving the prudence of individual pension trust investments.[42]

D. The Restatement

As we have seen, the 1992 promulgation of an MPT-friendly prudent investor rule in the Restatement (Third) of Trusts was an important factor in prompting widespread adoption of the new prudent investor rule by state legislatures. In addition, courts have

[40] ERISA §404(a)(1)(D), 29 U.S.C. §1104(a)(1)(D).

[41] See 29 C.F.R. §2550.404a-1(b)(1)(i). The official commentary to the regulation explains: "The 'prudence' rule in the Act sets fort a standard built upon, but that should and does depart from, traditional trust law in certain respects. The Department is of the opinion that (1) generally, the relative riskiness of a specific investment or investment course of action does not render such investment or investment course of action either *per se* prudent or *per se* imprudent, and (2) the prudence of an investment decision should not be judged without regard to the role that the proposed investment or investment course of action plays within the overall plan portfolio." 44 Fed. Reg. 37,221, at 37,222 (Jun. 26, 1979).

[42] See, e.g., Laborers National Pension Fund v. Northern Trust Quantitative Advisors, 173 F.3d 313, 322 (5th Cir. 1999) (reversing the district court for reviewing the investment in question "in isolation under the common law trust standard, instead of according to the modern portfolio theory required by ERISA policy as expressed by the Secretary's regulations"). On the other hand, some scholars have argued that trustees operating under the ERISA standard of prudence nonetheless have invested cautiously in part because the large size of ERISA funds creates a significant liability exposure. See Del Guercio, supra note __, at 36. See also Longstreth, supra note __, at 35. In a related vein, Brav and Heaton have argued that employee benefit funds tend to favor dividend-paying stocks, widely regarded as safer investments, and this may explain the relative underperformance of non-dividend paying stocks. Alon Brav & J.B. Heaton, "Did ERISA's Prudent Man Rule Change the Pricing of Dividend Omitting Firms?" Working Paper (1998).

traditionally accorded substantial weight to the Restatements of Trusts.[43] Therefore, the promulgation of the Restatement (Third) in 1992 complicates our attempt to assess the impact of modern prudent investor statutes in three ways.

First, by validating MPT and clarifying legal issues through its extensive commentary, the Restatement may have provided an important aid in interpreting MPT-friendly prudent investor statutes adopted prior to 1992.[44] Second, like the reasonable person standard in tort law, the understanding of prudence in trust law is informed by "industry practice—what other trustees similarly situated [are] doing."[45] Hence the Restatement might have had an influence in states that were late to adopt the modern prudent investor rule by encouraging courts to gloss their state's prudent man rule with MPT-style analysis. Third, the Restatement might have influenced asset allocation in employee pension trusts, particularly if institutional trustees were cautious about relying exclusively on the Labor Department regulation until a body of validating case law arose. Although governed by ERISA's federal standard of prudence, the new Restatement could influence the interpretation of that standard by federal courts.

[43] See Langbein, supra note __, at 67 & n.3 (2001) (noting the pervasive influence of the Restatement (Second) of Trusts, "which has long been the most authoritative source for American trust law").

[44] On network effects and herd behavior in contract drafting, see sources cited in supra note 8.

[45] Langbein, supra note __, at 644.

III. RESEARCH DESIGN

A. Data

The trust data come from annual reports to federal banking authorities by federally-regulated financial institutions such as banks, savings and loan associations, and trust companies. Federal law requires these institutions to report their trust holdings, including total trust assets, number of trust accounts, and the allocation of trust assets among stocks, bonds, and other investment vehicles. The data are at the bank level; individual account data are not reported. From 1968 until 2001, the Federal Financial Institutions Research Council published annual reports of trust holdings by regulated entities, summarizing the results by state.[46] Since 2001, the FDIC has published those reports and has made bank-level data available online.[47] The FDIC provided us with a CD-ROM of bank-level data from 1986 to 2000. Appendix Table 1 sets forth sample means and percents for some key variables of interest.

The trust holdings of regulated entities are reported in categories entitled "Employee Benefit Trusts," "Personal Trusts," and "Estates." The "Personal Trusts" category includes both private and charitable trusts[48] (both inter vivos and testamentary), but excludes commercial trusts and employee benefit plans. We examine primarily the asset

[46] Federal Financial Institutions Examination Council, Trust Assets of Financial Institutions, 1985-2000.

[47] An interactive site allows one to obtain new data, state by state at http://www2.fdic.gov/sdi/main.asp. Older reports, from 1996 through 2000, may be obtained at http://www2.fdic.gov/structur/trust/index.asp. The banks report their holdings as of December 31 of the reporting year. Therefore, we code all adoptions of *Prudent Investor* as taking place in the year the legislation took effect.

[48] "In making investments of trust funds the trustee of a charitable trust is under a duty similar to that of the trustee of a private trust." Restatement (Second) of Trusts §389 (1959).

allocation of actively managed Personal Trusts. As noted above, unless varied by the settlor, state default rules of prudent trust investment govern the administration of personal trusts. Accordingly, asset allocation in these funds should be the most sensitive to reform of state prudent investor laws.

By contrast, the investment of Employee Benefit Trusts is not directly subject to state law, but rather to federal judicial and Labor Department interpretations of prudence under ERISA. Hence the asset allocation of Employee Benefit Trusts should be less sensitive to changes in state prudent investor laws. Although state prudent investor laws may influence the interpretation of prudence under ERISA, they are not controlling authority in ERISA litigation. In order to isolate the effect of changes in state prudent trust investment laws from contemporaneous trends in professional asset management, in some specifications we compare asset allocation in Personal Trusts with that in Employee Benefit Trusts.[49]

The asset allocation of trust holdings is broken down among the following categories: (1) stock (common and preferred combined); [50] (2) interest-bearing accounts; (3) U.S. treasuries; (4) local government bonds; (5) money-market funds; (6) other short-term obligations (mainly commercial paper); (7) other bonds; (8) mortgages; (9) real es-

[49] "Employee Benefits Trusts" is divided into two categories: one in which the institution "exercises investment discretion in the capacity as trustee" and one in which the bank is an "investment manager as defined in Section 3(38) of [ERISA, 29 U.S.C. §1002(38)]." We use only data reported in the first category, when the institution acts as trustee. By contrast, when the reporting institution operates as an "investment manager" instead of a trustee, its investment decisions are subject to direction from the trustee and the institution may be responsible for only a subset of the fund's assets. For example, a trustee might allocate a portion of the trust fund to bank *A*, directing *A* to invest its share of the fund entirely in stock, while allocating the rest of the fund to bank *B*, directing *B* to invest entirely in mortgages and bonds. For a discussion, see In re Unisys Saving Plan Litigation, 74 F.3d 420, 439 (3d Cir. 1996).

[50] Shares of mutual funds are reported as stock holdings.

tate; and (10) miscellaneous.[51] "Other bonds" includes corporate and foreign government obligations and "real estate" includes both investment in REITs and ownership of real property.

Although the data are available from 1986 through 2004, we examine only the years 1986-1997 for three reasons. First, beginning in 1997 the Riegle-Neal Act of 1994 made it much easier for banks and bank holding companies to convert independently chartered banks in other states into branch offices of a single interstate bank.[52] But the data are collected by institution, not by state. Thus interstate bank mergers or branch consolidations have the potential to bias our results by changing the state in which assets are reported without a corresponding change in their governing law. Prior to 1997, however, interstate banks tended to operate as bank holding companies with separately chartered (and hence separately reporting) banks in different states.[53]

Second, after 1997 many states reformed their principal and income rules by adopting the 1997 Uniform Principal and Income Act or, since 2001, unitrust legislation. These reforms could affect trust asset allocation directly because they made less rigid the formal distinction between capital gains and income.[54] Prior to 1997, principal and income rules had been uniform across the states.

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[51] A final category, "non-interest bearing accounts" was typically quite small (less than .1% on average and usually zero) and probably serves an accounting and beneficiary payment function.

[52] Pub. L. No. 103-328, 1994 U.S.C.C.A.N. (108 Stat.) 2338 (1994) (codified at 12 U.S.C. § 1811 (2000)). See also Patrick Mulloy & Cynthia Lasker, The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994: Responding to Global Competition, 21 J. Legis. 255 (1995).

[53] Banks could maintain interstate branches under narrow circumstances prior to 1997, but a study conducted by the Federal Reserve found that few banks did so. See Susan McLaughlin, The Impact of Interstate Banking and Branching Reform: Evidence from the States, Current Issues in Economics and Finance, 1 (May 1995).

[54] Prior to the post-1997 principal and income reforms, the form of the investment return determined its classification as income or principal. The problem with this approach is that trusts are commonly set up to

Third, as a result of the jurisdictional competition for trust funds, state laws concerning the Rule Against Perpetuities and self-settled asset protection trusts became significantly differentiated beginning in 1997.[55] Although these changes do not bear directly on trust investment law, they nonetheless have the potential to affect trust investment practice. Perpetual trusts and self-settled asset protection trusts have a different timeframe and purpose that might warrant heavier investment in equities. Regressions on the full sample tended to decrease the coefficient estimates a bit, but the results remained statistically significant.

Figure 1 illustrates the geographic and temporal variation in the new law's pattern of adoptions through 1997, the period under study. As can be seen, there is a good amount of variation across regions and over time.

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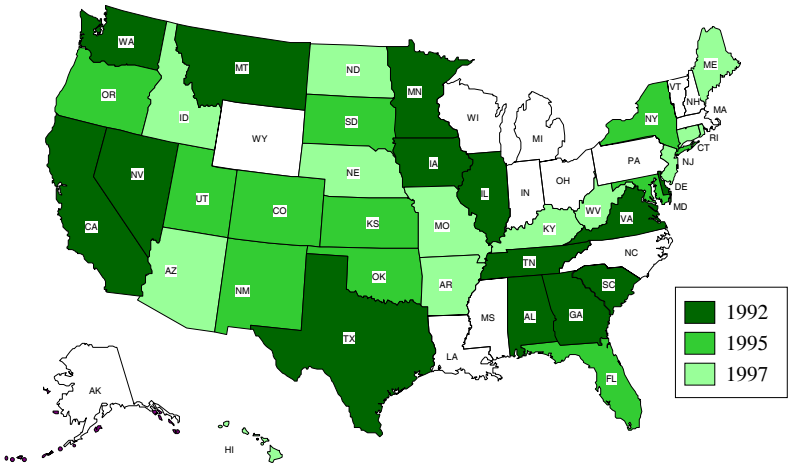
pay income to one beneficiary for life (often a surviving spouse) then the principal to another beneficiary (such as a surviving child) on the first beneficiary's death. See Restatement (Third) of Trusts: Prudent Investor Rule §227 cmt. i. For example, suppose *T* bequeaths a fund to *X* in trust to pay the income to *A* for life and then the principal to *B* on *A*'s death. If *X* invests in bonds or stocks that pay a cash dividend, under traditional law *A* is benefited because interest on bonds and cash dividends on common stock are classified as income. By contrast, if *X* invests in stocks that do not pay a cash dividend, under traditional law *B* is benefited because stock appreciation is classified as principal. Inasmuch as the trustee has a duty to act impartially and with due regard to the needs of the income and principal beneficiaries, the principal and income rules thus bear directly on the trustee's asset allocation. For discussion, see Alyssa A. Dirusso & Kathleen M. Sablone, Statutory Techniques for Balancing the Financial Interests of Trust Beneficiaries, 39 U.S.F. L. Rev. 261, 274-88 (2005); Sitkoff, supra note __, at 652-54.

[55] See Sitkoff & Schanzenbach, supra note __. With the single exception of Delaware's abolition of the Rule Against Perpetuities in 1995, all of these changes were enacted in 1997 or later. See id. at 430-33 (Table 5).

Figure 1: Prudent Investor Rule (1997)



B. Identification Strategies

We focus on two dependent variables: (1) the percentage of actively managed personal trust funds invested in stock and (2) the difference between the percentage of personal trust funds held as stock and the percentage of employee benefit funds held as stock (hereinafter designated as $\%Stock^{PT}$-$\%Stock^{EB}$).

The data do not detail individual stock, bond, and real estate holdings, but rather aggregate holdings within each category. Percent stock holdings in personal trusts is, however, an important outcome variable in its own right.[56] First, the old prudent man rule disfavored broad classes of equity holdings. Thus, if the prior law constrained trust portfolio asset allocation, we would expect to see reallocation toward equity after adop-

[56] Ideally, we would use Beta or some other measure of risk (such as variance of portfolio returns across different states), but such measures require individual account data, which is not available.

tion of the new law. Second, increased stock holdings at the expense of government bonds and other investments with little to no default risk imply higher risk portfolios. As detailed above, trustees may have chosen lower-risk portfolios under the old rule because the meager benefit they received from extra returns did not justify the increased litigation risk. As the litigation risk decreases, the trustee may be willing to increase a trust's investment in stock. Moreover, the new law for the first time exposes the trustee to real litigation risk from too much caution. Indeed, we show that the increase in stock holdings after adoption of the new law came largely at the expense of favored "safe" investments such as government bonds.

We use both state- and bank-level data, each of which has pros and cons. The bank-level data allow us to use institutional (or "high holder") fixed effects to control for common management practices and institutional culture across separately charted institutions of a single high holder, usually a bank holding company. Some banks are not held by a holding company, in which case the bank is its own high holder. Other banks are held by a holding company that is itself controlled by another holding company. In coding for institutional fixed effects, we follow the Federal Reserve's "high holder" designations.

One problem with the bank-level data is that many banks have few assets in personal trust accounts. In the period under study, 19% of bank-year observations for actively managed personal trust funds report no stock being held in such funds. Much of this seemingly strange result is attributable to banks with few trust assets. In the sample years 1986-1997, over one-fourth of the bank-year observations report $1 million or less in actively managed personal trust assets, and 45% of these institutions report holding no

stock in trust. These small sums may represent only a few accounts, which can greatly distort the bank's reported asset allocation. Among banks with trust assets over $1 million, only 7% of bank-year observations report no stock holdings.

The large number of zero stock holdings is problematic for several reasons. First, it creates a censoring problem that can bias OLS estimates (and fixes such as the Tobit random-effects regression raise other problems). Second, because we are dealing with percentages, each bank's reported asset allocation is weighted equally. Hence substantial changes may be masked by small banks with one or two dominate trust funds that did not respond to the reform. In a similar vein, small banks may have large swings that add a great deal of noise to the data.

We address the foregoing problems with the bank-level data in four ways. First, in some specifications, we weight the data by bank assets. Second, we also examine state-level data. Third, we limit the data in some bank-level regressions to those banks whose high holders also managed employee trusts. In these subsamples, only 7 to 8% of the bank-year observations report holding no stock, greatly reducing concerns about the data being censored at zero. Further, limiting the data on these bases does not introduce much selection. In 1986, for example, excluding those trust institutions whose high holder did not have employee trust funds drops only $7 billion of the total $350 billion in reported trust assets. Finally, in an appendix we include estimates of fixed and random effects linear probability models to assess whether banks were more likely to hold some of their trust assets in stock after the reform (see Appendix Table 2). The results, which suggest that one to two percentage points more banks held stock after the adoption of the new prudent investor rule, are consistent with our other findings.

Both the state-level and bank-level data allow for the use of fixed effects. In the case of the state-level data, we simply include state dummies in the regression. Thus, our state-level specification is a straightforward differences-in-differences regression:

$$(1)\%\text{Stock Personal}_{jt} = \alpha\text{Constant} + \lambda\text{Year}_t + \psi\text{State}_j + \delta\text{PI}_{jt} + E_{jt}$$

where *j* indexes state and *t* indexes year. *PI* or *Prudent Investor* equals one after the state adopts the modern prudent investor rule.

In the case of the bank-level data, we include fixed effects at the level of the "high holder" as designated by the Federal Reserve. Sometimes there is no entity apart from the chartered institution (in which case the high-holder of the bank is itself). However, most banks in the sample are wholly owned by a holding company. Presumably, banks owned by the same high holder should share a common investment philosophy, operations manuals, and institutional culture. On this view, Citibank of South Dakota should have much in common with Citibank of New York—except insofar as the trusts held in South Dakota are subject to different state laws than those held in New York. Using high holder fixed effects allows us to exploit the variation in state law while keeping management effects constant and while still including state-level fixed effects. Thus, in the bank-level regressions, the regression is a triple-difference:

$$(2)\%\text{Stock Personal}_{ihjt} = \alpha\text{Constant} + \lambda\text{Year}_t + \psi\text{State}_j + \delta\text{PI}_{jt} + \text{Highholder}_{hjt} + E_{ihjt}$$

where *i* indexes bank and *h* indexes high holder. *HighHolder* are bank holding company fixed effects. In this regression the *PI* coefficient is identified by variation within bank holding companies that own reporting institutions in multiple states. We thus simultaneously control for state and institution fixed effects.

Because our dependent variable is a percentage, it varies between 0 and 100. There are two reasons why OLS regressions may not be ideal in this situation. First, the fitted values of the regressions may lie outside that range, and it is not clear how to interpret such a result. In the state-level regressions, all fitted values for all regressions lie between 0 and 100 (in fact, they are generally between 25% and 75%). In the bank-level regressions, however, a few of the fitted values were negative.[57] Second, the linear form of the OLS regression imposes a functional form that must be incorrect. The effect of a continuous right hand side variable tends to dissipate as it gets very large or very small because the effect must get smaller the closer the fitted value gets to the endpoints, 0 or 100. Following the suggestion of Wooldridge and Papke,[58] we exponentiate the right hand side.[59] The downside of this non-linear approach is that interpretation of the log-odds ratio is contingent on the values of the remaining variables. Hence, because interpretation of the OLS results is more straightforward, we report results for the OLS re-

[57] Out of a sample of nearly 23,000, between 100 and 150 fitted values were negative. None exceeded 100.

[58] Leslie E. Papke & Jeffrey M. Wooldridge, Econometric Methods for Fractional Response Variables With an Application to 401(K) Plan Participation Rates, 11 J. Applied Econometrics 619 (1996). The transformation requires estimation by non-linear least squares, and was performed using Stata's GLM command taking the "family" as binomial and the "link" as logistic. The estimation equation takes the form:

$$E(Y|X)=\exp(X'B)/(1+\exp(X'B))$$

which constrains the fitted values of Y to be between 0 and 1.

[59] Another popular transformation is the logistic. This transformation is performed on the dependent variable, however, and there is no clear procedure for how to do this in the presence of zero values.

gressions as well as the exponential transformations. In addition, OLS regressions allow for random effects and AR(1) specifications, which we report in Appendix Table 3.

We condition on two additional independent variables in most specifications: (1) log of the high holder's assets and (2) percent of the high holder's employee benefit funds invested in stock. The first variable is positively correlated with stock investment in most specifications. Banks with relatively greater aggregate trust assets may experience economies of scale in trading securities and in obtaining expert investment advice. We use log assets of the high holder because a small bank owned by a larger institution should be more like the large institution than a small, independent bank (although it made little difference to the results if we used log assets at the bank level). In the corresponding specifications for the state-level regressions, we use log total state assets.

The second independent variable, percent of employee benefit funds invested in stock, helps to control for changes in institutional preferences for equity. Institution fixed effects are inadequate to account for differences between institutions if preferences for debt and equity changed within an institution over time or management was replaced.[60] Employee benefit trusts may be a suitable control. First, the investment of such trusts is governed by federal prudent trust investment standards under ERISA, not state prudent investor laws. Hence, the portfolio allocation of such trusts should be less sensitive than that of personal trusts to changes in state prudent trust investment laws. Indeed, ERISA preempts inconsistent state law. Second, changes in bank management or investment norms within the institution should affect personal trust and employee benefit trust funds

[60] To the extent that changing investment norms led to a general movement to stocks, such a trend would tend to work against our finding that the new prudent investor rule prompted an increase in trust investment in stock.

similarly. Accordingly, controlling for the institution's or the state's percentage holdings in stock in employee benefit funds may remove an important part of the error term. As with institutional assets, we control for $\%Stock^{EB}$ on the high holder's level on the theory that the preferences we are attempting to capture are those of the controlling institution.

Employee benefit funds may also represent a valid control group. The investment of such funds is governed by ERISA's standard of prudence, and since at least 1979 prudence under ERISA has been interpreted consistently with MPT. On the other hand, even though ERISA contains an expansive preemption clause and state trust investment law is not directly controlling in ERISA cases, changes in state prudent trust investment laws and the new Restatement might have had an indirect impact on employee benefit fund investments. First, changes in state law and the new Restatement could alter industry norms, and as a leading ERISA text explains, "ERISA's prudent investor should be doing what other prudent investors are doing."[61] Second, federal courts sometimes look to ordinary trust law authorities such as the Restatement for guidance in applying ERISA's standard of prudence.[62]

With this in mind, we also take as a dependent variable $\%Stock^{PT}$-$\%Stock^{EB}$. This specification has a number of practical advantages. First, in the bank-level specifications, it removes the zero value problem discussed earlier. Second, although the values of the dependent variable are constrained to be between -100 and 100, all fitted values in all specifications are well within this range. In addition, simply controlling for $\%Stock^{EB}$

[61] John H. Langbein & Bruce A. Wolk, Pension and Employee Benefit Law 804 (3d ed. 2000).

[62] See, e.g., California Ironworkers Field Pension Trust v. Loomis Sayles Co., 259 F.3d 1036, 1046-48 (9th Cir. 2001) (looking to the Restatement (Third) of Trusts for guidance on calculating damages for imprudence).

as a right-hand side variable does not account for a divergence between the two variables over time. As discussed in greater detail below, we find strong time trends in employee benefit portfolio allocations. By contrast, taking the difference $\%Stock^{PT}$-$\%Stock^{EB}$ conditional on state and year dummies removes both (1) the strong time trends that were common to both variables (including the possible effect of the Restatement) and (2) state-specific differences, and it does so without the addition of many new interaction terms. Indeed, taking the difference between the two should remove all fixed and time-varying error common to both variables. In this specification the coefficient on *PI* is now interpreted as the change in the difference between the percentage stock in personal trust and employee benefit funds after adoption of the new law. The result is thus similar to a first-difference regression, assuming that allocation in employee benefit funds is an appropriate control. The specification takes the following triple-difference form in the state-level regressions:

$$(3)\%Stock^{PT}_{jt}-\%Stock^{EB}_{jt}= \alpha Constant + \lambda Year_t + \psi State_j + \delta PI_{jt} + E_{jt}$$

In the bank-level regressions, the regression is a quadruple difference, reflecting the addition of high-holder fixed effects. Because employee benefit funds are governed by ERISA, not state law, we use $\%Stock^{EB}$ at the highholder level on the theory that doing so removes the component of the error term owing to institutional preferences for stock.[63] This specification takes the following form:

[63] Even if the bank does not hold employee benefit funds, the highholder may through other banks.

$$(4)\%Stock_{ihjt}^{PT} - \%Stock_{hjt}^{EB} = \alpha Constant + \lambda Year_t + \psi State_j + \delta PI_{jt} + HighHolder_{hjt} + E_{ihjt}$$

IV. RESULTS

A. Percent Stock in Personal Trusts

Figures 2 and 3 trace the percent stock (*%Stock*) and percent safe (*%Safe*) investments in personal trusts by reform status and year using the state-level data. Consistent with the old prudent man rule, we define "safe" investments to include federal, state, and municipal bonds, interest-bearing bank accounts, money market funds, and mortgages.[64] Taken together, Figures 2 and 3 suggest that trusts in the states that adopted the new prudent investor rule held more stock (on the order of 1-4% depending on the year) at the expense of safe investments.

[64] See supra note __ and text accompanying. The remaining investment categories "other bonds," "real estate," and "short-term obligations," varied substantially over the period and resist classification as "risky" or "safe." In any event, investments in these categories typically amounted to less than 10% of the average portfolio.

Figure 2: Percentage Trust Funds Held as Stock by Year and Reform Status

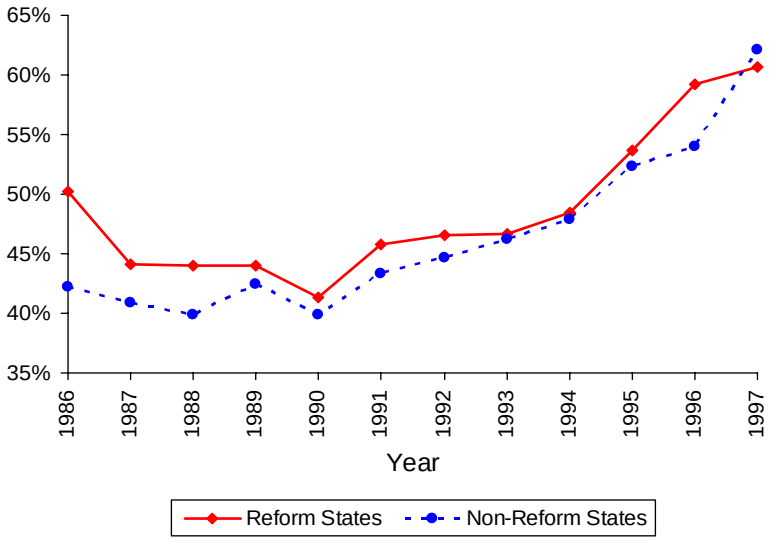


Figure 3: Percentage Trust Funds Held as Safe by Year and Reform Status

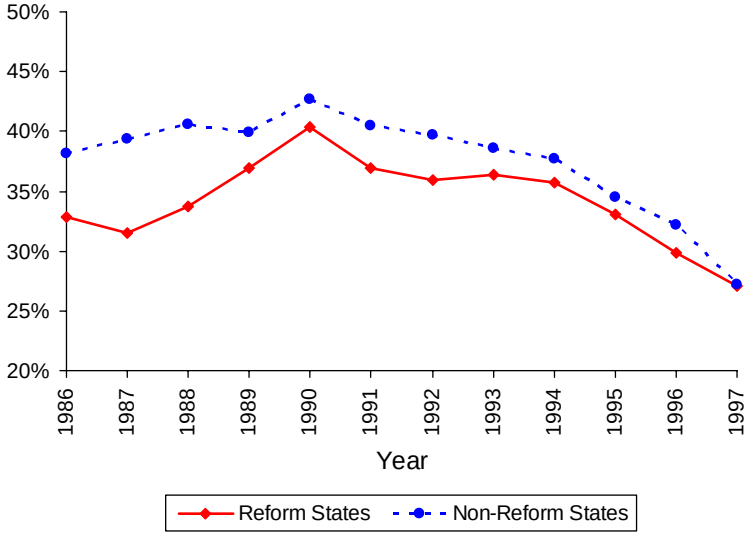
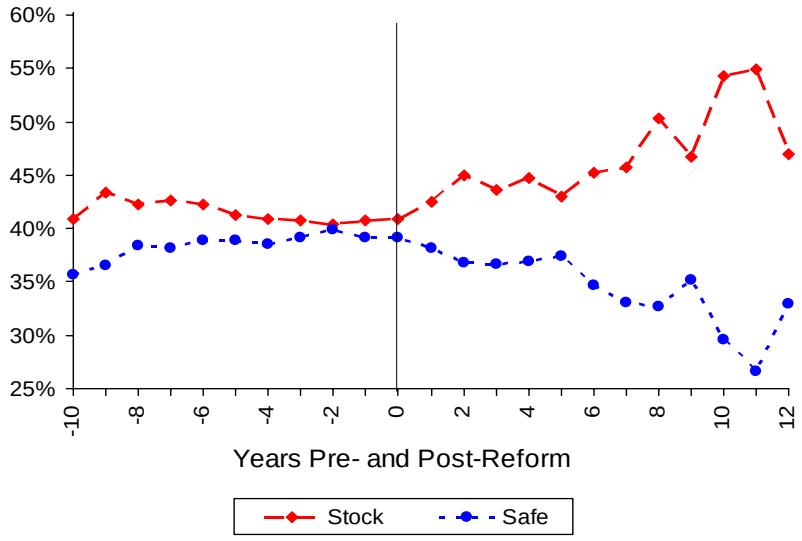


Figure 4 traces percent stock and percent safe investments in reform states before and after the adoption of the reform. Both variables were detrended.[65] As can be seen, the lines for stock and safe investments are almost perfect mirror-images, with what appears to be a movement from safe investments to stock after adoption of the new prudent investor rule. By contrast, prior to the reform, the percentage of trust funds invested in each category were similar and remained relatively stable. (Prior to the reform, stock composed 41% of the average reform state's detrended aggregate portfolio and safe investments averaged 39%.) After the reform, however, the two diverge almost immediately. (Post-reform, stocks accounted for 47% of the average reform state's detrended aggregate portfolio and safe investments averaged 34%.)

Figure 4: Percentage Trust Funds Held as Stock and Safe by Years Since Reform (detrended)



[65] The variables were detrended by running a regression with only year dummies on the full sample (1986 through 1997), with 1986 being the excluded year, and then subtracting the year coefficients from the observed average in that year.

Tables 1 and 2 correspond to Equations 1 and 2, presenting the results for *%Stock* using state-level and bank-level data respectively. Each table presents the basic model and a number of alternate specifications as checks for robustness and corrections for possible bias caused by serial correlation in the error terms.

Table 1 demonstrates a consistent, statistically significant effect from adopting the new prudent investor rule. In Model 1, the percentage of stock held in the average trust fund increases by 1.72 percentage points after the reform. In Model 2, which further conditions on log total state assets and the percentage of assets held as stock in employee benefit funds, the coefficient on *Prudent Investor* increases slightly to 2.11 and is more precisely estimated. To put these coefficients in perspective, in the period under study the average state held 47% of its personal trust assets in stock.

Model 3 takes *%Safe* (with safe defined consistently with the old prudent man rule) as its dependent variable. The coefficient on *Prudent Investor* (-2.02) has a similar magnitude as in Models 1 and 2, but is oppositely signed, which strongly implies that the increase in stock comes entirely at the expense of investments with little to no default risk, the sort of investments that the old prudent man rule had favored. (Though unreported here in the interests of space, this near one-for-one tradeoff persisted across specifications.)

Models 4 and 5 refine our specification of the reform variable. In Model 4 we interact *Prudent Investor* with a post-Restatement dummy variable, *Restatement*. The coefficient on *Restatement*Prudent Investment* is positive and of roughly the same magnitude as the *Prudent Investor* coefficient. We cannot draw any firm conclusions, however, be-

cause neither coefficient is independently significant (though the coefficients are jointly significant at less than the .01 level).[66]

Model 5 divides the reform by those states that adopted the Uniform Prudent Investor Act (*UPIA*) and those that adopted an independent statement of the new prudent investor rule (*non-UPIA*). The effect of the UPIA is found to be much larger than the effect of other new prudent investor laws, and the coefficients jointly test significant with a p-value of .006. We cannot conclude, however, that the Uniform Act had a more profound effect on trust investment than the non-uniform modern prudent investor laws. First, we cannot reject the hypothesis that *UPIA* and *non-UPIA* are equal. Second, the UPIA, which draws on the Restatement's reformulation of prudence, was promulgated two years after the Restatement. By contrast, most of the non-UPIA statutes were adopted prior to the promulgation of the Restatement. As noted above, the Restatement may have had an independent positive effect, which would tend to depress the coefficient on *non-UPIA* and inflate the *UPIA* results.

Model 6 weights the data by state-level total assets. In doing so, we reduce the importance of the information coming from low-asset states and put the effect of the reform in national perspective. The coefficient on *Prudent Investor* now is reduced by one

[66] Taking the coefficients at face value, the results imply that the effect of the new prudent investor laws doubled after the Restatement was published. Such an interpretation is consistent with the idea that the Restatement may have been important in validating the earlier adoptions of modern prudent investor laws, perhaps by giving modern portfolio theory added respect in the courts or by overcoming the lack of interpretive case law through its extensive commentary. In addition, these results suggest that differences in stock holdings between reform and non-reform states increased after the Restatement was adopted, which means that we can still measure an independent effect of reform. In other words, the publication of the Restatement did not move all trustees to the new equilibrium. However, the Restatement may still have had an effect on non-reform states. The Restatement may have induced greater investment in stock in the non-reform states, while at the same time validating the new statutes in the reform states. The results are consistent with the validation effect being relatively larger.

half and is not significant at the .05 level (the p-value is .062).[67] This result suggests that the reform had a greater effect in states with relatively fewer trust assets and a lesser effect in states with relatively more trust assets. If we assume that a state's total trust assets are correlated with the sophistication of the transferor, then this finding is consistent with the default nature of the reform. The more sophisticated the parties, and the more that is at stake, the less important is the underlying default law.

A potentially serious concern in differences-in-differences studies using state-level panel data is the presence of serial correlation,[68] particularly with financial variables (especially if investment patterns are persistent). Standard tests for serial correlation suggest that serial correlation may be a problem,[69] potentially biasing both our coefficient estimates and our standard errors. We took several approaches to deal with the problem. Model 7 repeats the specification of Model 2, but relaxes the assumption of independence in error terms within states by clustering by state. The standard error increases from .62 to .86, but the coefficient remains significant with a p-value of .02. Model 8 adds state-specific time trends. If the form of serial correlation is approximately linear within states, this specification should difference out the bias. The coefficient on *Prudent Investor* decreases to 1.71 but remains significant at the 5% level. (Also, when state-specific trends were included, standard tests failed to reject the null hypothesis of no serial correlation.[70])

[67] In unreported regressions using Models 4 and 5 but weighting the data by state-level total assets, the coefficients of interest were jointly significant, though lower in magnitude than in the reported unweighted regressions.

[68] See Marianne Bertrand et al., How Much Should We Trust Differences-in-Differences Estimates?, 119 Q.J. Econ. 249 (2004).

[69] The Baltagi-Wu statistic was 1.45, whereas the null hypothesis of no serial correlation would be supported by a statistic of 2.

[70] The Baltagi-Wu Statistic was 1.97.

In Appendix Table 3, we report specifications based on random effects and the AR(1) form of serial correlation for all four regression equations. The results are generally robust to either of these specifications.

Finally, Model 9 presents the results using the exponential transformation of the right hand side variables. The odds ratio on *Prudent Investor* is 1.094 and is significant at less than the 1% level, indicating that the percent held as stock increased after the reform. Taking 50% as a starting point (a rough estimate of our sample average), the odds ratio implies that stock holdings increased roughly 4.5 percentage points after reform, a slightly larger result than in our OLS estimates.

Table 2 presents the results using the specification of Equation 2. All standard errors reflect clustering by state. Model 1 uses the full sample. The coefficient on *Prudent Investor* is small and insignificant, and the estimated coefficient on *Prudent Investor* is very close to zero. In Model 2, which restricts the sample to banks that also report employee benefit funds and controls for $\%Stock^{EB}$, the coefficient on *Prudent Investor* increases to .9, but is still not statistically significant. Likewise, weighting increases the coefficient a bit more in Model 3, though again it is not statistically significant.[71] The results are statistically significant when state-specific trends are included in the OLS regression in Model 4 and in the transformation in Model 5. The odds-ratio in Model 5 is 1.076, which is quite close to that of the state-level result of 1.094, and implies a roughly 3.5 percentage points increase in stock holdings as a result of the reform assuming a fitted value of roughly 50% stock holdings.

[71] Unreported regressions restricting the sample to larger banks or only banks with employee benefit funds yielded results close to those of Model 1. The coefficient increases appreciably only when we condition on $\%Stock^{EB}$.

In sum, the state-level OLS regressions suggest that the percentage of personal trust funds invested in stock increased between 1.5 and 2.1 percentage points after adoption of the new prudent investor rule. The transformed results imply a 3.5 to 4.5 percentage points increase in stock holdings after the reform. In the period under study, the average state held 47% of its personal trust assets in stock. Accordingly, these results suggest a modest increase in trust investment in stock post-reform. The bank-level results are weaker in some OLS specifications, but the effect of reform is evident when state-specific time trends are used and when the data are transformed.

We also wish to draw attention to the year effects. All year coefficients are measured relative to 1986, the excluded year. In both the state-level and bank-level regressions, the year effects are relatively unimportant until 1992, except for a slight dip following 1987, the year of "Black Monday."[72] Beginning in 1992 in the bank-level regressions and 1994 in most of the state-level regressions, stock holdings begin a strong, positive trend upward. Across datasets and specifications, stock holdings in 1997 are between 10 and 17 percentage points higher than in 1986, which suggests a strong secular move toward stock. Of course, the increase in stock holdings relative to other holdings in part reflects the large increase in stock prices during the sample period. Even so, trustees were choosing not to realize capital gains in stock and move assets toward government bonds and other such low risk investments. In unreported regressions using the full sample, stockholdings in 2003 (after a substantial market decline) were still 14 percentage points higher than in 1986.

[72] Indeed, it is surprising that the value stock holdings did not decline more than observed, as the S&P 500 lost nearly a third of its value in 1987.

The foregoing time trends are consistent with a number of different explanations. For example, the time trends may reflect an increase in investor/trustee sophistication, a greater general tolerance for risk among beneficiaries, or that trust funds were part of a more general move toward stock that was evident among personal investors and pension funds as well. The general trend toward equity may also reflect the national influence of the new Restatement, published in 1992, or the promulgation the UPIA in 1994.

B. Percent Stock in Personal Trust Funds Minus Percent Stock in Employee Benefit Funds ($\%Stock^{PT}$-$\%Stock^{EB}$)

Given the strong time trends evident in the *Percent Stock* specification, examining $\%Stock^{PT}$-$\%Stock^{EB}$ becomes more important. Changes in industry and institutional investment norms should affect personal trusts and employee benefit trusts similarly. If so, this specification removes the variation in stock ownership that came from changing industry and institutional norms to the extent that they arose independent of the changes in state prudent trust investment laws.

Using the state-level data, Figures 4 and 5 trace $\%Stock^{PT}$-$\%Stock^{EB}$ by year (Figure 5) and by years before and after adoption of the new prudent investor rule (Figure 6). Unlike Figure 2, which showed a consistent difference in the stock holdings of personal trusts between reform and non-reform states, Figure 4 does not show a consistent difference between $\%Stock^{PT}$-$\%Stock^{EB}$ in reform versus non-reform states. Figure 6 traces $\%Stock^{PT}$-$\%Stock^{EB}$ (detrended) in reform states before and after the adoption of the reform. The result here is more suggestive, suggesting that the percent stock held in personal trusts grew relative to employee benefit trusts after the reform.

Figure 5: *%Stock^{PT} – %Stock^{EB}*
by Year and Reform Status

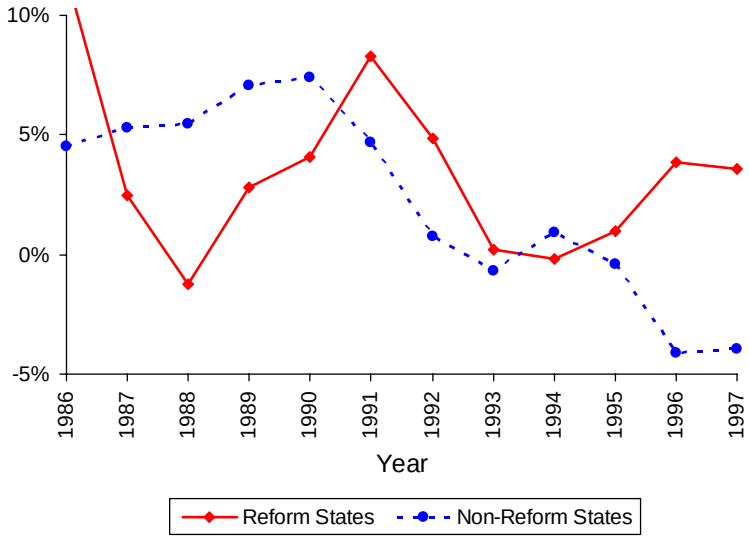


Figure 6: *%Stock^{PT} – %Stock^{EB}*
by Years Since Reform (detrended)

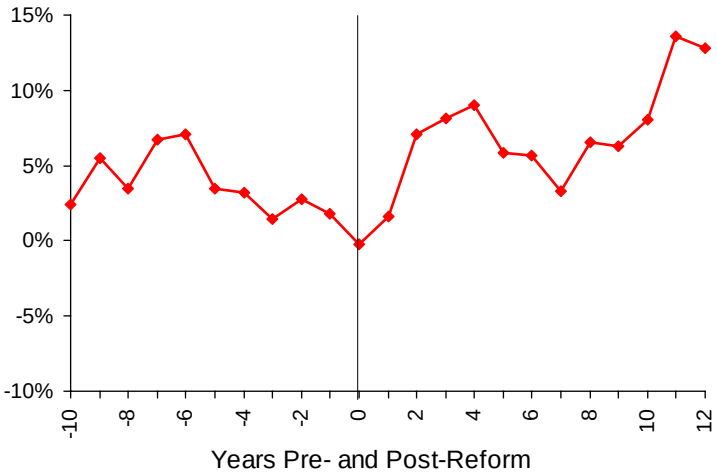


Table 3 presents the state-level results for the specification presented in Equation 3. The estimated effect of *Prudent Investor* in Model 1 is 4.34 percentage points, roughly twice as large as the estimate from the same specification in Table 1. Weighting the data (Model 4) or controlling for state trends (Model 6) reduces the estimated coefficient by about one-third, but it remains statistically significant. Clustering by state has only a small effect on the calculation of the error term (Model 5). In sum, the state-level regressions suggest that the difference between the percentage of stock holdings in personal trust funds and employee benefit funds was 3 to 4 points larger after adoption of the new prudent investor rule.[73]

The bank-level regressions reported in Table 4 tell roughly the same story and, unlike before, largely confirm the state-level estimates. When the data are weighted by bank assets in Model 4, the coefficient on *Prudent Investor* is 4.45 (with a p-value of .059). This result is nearly identical to the coefficient of 4.34 estimated in Model 1 of Table 3, and it is not greatly different from the coefficient of 2.88 estimated using data weighted by state assets in Model 4 of Table 3. In the remaining Models of Table 4, the coefficients on *Prudent Investor* are between one-half and two-thirds of their corresponding estimates in Table 4, but are statistically significant across specifications.[74]

[73] To put these results in context, in 1986 personal trusts in the average state held 4 percentage points more in stock than was held in employee benefit funds (42% versus 38%). We interpret the coefficient of 4.3 on *Prudent Investor* and the coefficient of roughly -5.5 on the later year dummies to imply that the differential remained nearly constant in states that adopted the new prudent investor rule. By contrast, in non-reform states the percentage of holdings in stock in personal and employee benefit trusts converged.

[74] The bank-level data employed here do not carry the same censoring problems as in the *%Stock* specifications of Table 1. However, the sample is selected on only those banks whose high holder also manage employee benefit trusts, and must be interpreted as such (though we hasten to add that this selection eliminates only a small fraction of total personal trust assets).

V. CONCLUSION

The results of our empirical analysis demonstrate that changes in the default rules of prudent trust investing affected portfolio allocation in noncommercial trusts held by institutional trustees. Depending on the approach taken, the point estimates imply that stock holdings increased between 1.5 and 4.5 percentage points after the adoption of the new prudent investor rule. This result endures across a variety of identification strategies and numerous robustness checks.

Not only has statistical significance been demonstrated convincingly, but the results are also economically significant. Assuming that 2 percentage points more of personal trust funds were invested in stock as of 1997, a year when reported personal trust assets totaled nearly $750 billion, roughly $15 billion more was invested in stock than otherwise would have been. Further, because our data includes only a subset of the full population of trust funds, this $15 billion estimate represents a lower bound. Indeed, there is good reason to suppose that trust funds held by federally-reporting institutional trustees are probably less sensitive to changes in the default rules of prudent trust investing than other trusts. Institutional trustees tend to have access to competent legal counsel and standard form trust agreements with well-drafted opt-out provisions. Moreover, even if the beneficiaries of trusts held by such trustees have a higher risk tolerance than average, implying that our sample has fewer inframarginal trusts than the population as a whole, in some trusts the tax and other transaction costs of reallocating the portfolio would justify a slower reallocation of the existing portfolio.

The year effects show that secular trends since 1992 pushed more trust assets into stock investment than did adoption of the prudent investor rule. In the state-level regres-

sions, stock holdings in 1997 are about 12 percentage points higher than in 1986. We interpret these results to mean that reform of the prudent investor laws was one component of a larger phenomenon. Further, the timing of the upward trend in stock holdings suggests that the 1992 Restatement may also have had an effect on trust investment, and the Restatement was part of the movement toward the MPT-friendly prudent investor rule. Prudence is a relative standard that is in part established by "what other trustees similarly situated [are] doing."[75] On the other hand, ERISA-governed employee benefit funds exhibited even greater relative increases in stockholdings over the same period, catching up with and even surpassing personal trusts. In theory, ERISA-governed funds should have been less affected by the new Restatement because prior federal regulations had already adopted an MPT-friendly interpretation of prudence under ERISA. Accordingly, we hesitate to conclude that the Restatement, by itself, had an observable effect in trust asset allocation.

Our findings have at least five important policy implications. First, increasing trust investment in stocks supports the Restatement's and UPIA's allied reform of folding an explicit duty to diversify into the definition of prudence.[76] Not all the states that have adopted the total-portfolio approach of the new prudent investor rule have also adopted a corresponding augmented duty to diversify. Second, the growing importance of stocks, caused in part by legal changes, lends support to the current effort to reform the principal

[75] Langbein, supra note __, at 644.

[76] See supra note __ and text accompanying.

and income rules by making less rigid the arcane formal distinction between capital gains and income.[77]

Third, the results demonstrate that default rules matter in the presence of agency costs and unreliable judicial enforcement of opt outs. This implication is slightly more impressive when one considers that the federally-reporting institutional trustees in our sample are likely among the most sophisticated of trustees, with ready access to competent legal counsel and trust agreement forms with well-drafted opt-out boilerplate. Nonetheless, even for this group, the default rule remained relevant.

Fourth, contrary to economic and empirical analysis of fiduciary litigation in corporate law,[78] but consistent with prior economic analysis of fiduciary litigation in trust law,[79] our results imply that fiduciary law is a potentially viable means of governance in trust law. Prior to this study, however, there was no empirical analysis of whether trustees are in fact sensitive to changes in their potential liability exposure under trust fiduciary law.

Finally, we believe that adoption of the new prudent investor rule, coupled with an augmented duty to diversify, was a positive change for settlors, trustees, beneficiaries. The agency problems in trust law, together with trustee compensation schemes, rigid doctrine, and hindsight bias, combined to make bank trust departments notoriously conservative. Although heavy investment in government bonds avoids default risk, it exposes the trust to considerable inflation risk. By contrast, the new rule's emphasis on portfolio-

[77] For discussion of the principal and income problem, see supra note __ and text accompanying.

[78] See, e.g. Roberta Romano, The Shareholder Suit: Litigation Without Foundation?, 7 J.L. Econ. 55 (1991); Frank H. Easterbrook & Daniel R. Fischel, The Economic Structure of Corporate Law 93-102 (1991).

[79] See Sitkoff, supra note __, at 677-83; Sitkoff, supra note __, at 577-78, 580-81.

wide risk and return frees trustees to invest more aggressively for those who have a high risk tolerance, directs trustees to invest more conservatively for those with a low risk tolerance, and in all cases the trustee must consider both default and inflation risk in crafting the trust portfolio.

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TABLE 1: STATE-LEVEL RESULTS FOR PERSONAL TRUST ACCOUNTS

Variable	Model 1 %Stock	Model 2 %Stock	Model 3 %Safe	Model 4 %Stock	Model 5 %Stock	Model 6 %Stock Weighted	Model 7 %Stock (Cluster by State)	Model 8 %Stock State Trends	Model 9 Exponential Transforma-tion (odds ratios)
Prudent Investor	1.72*	2.11**	-2.02**	1.06		1.00^{+}	2.11*	1.71*	1.094**
	(.70)	(.66)	(.67)	(.87)		(.53)	(.86)	(.82)	(..037)
Restatement*Prudent Investor				1.42^{+}					
				(.85)					
UPIA					3.10**				
					(1.23)				
non-UPIA					1.65*				
					(.65)				
Log Total State Assets (inflation adjusted)		.034**	-.032**	.035**	.035**	.044**	.034**	.039**	1.15**
		(.011)	(.012)	(.011)	(.011)	(.007)	(.013)	(.013)	(.058)
% Stocks in Employee Benefit Funds		.17**	.16**	.17**	.16**	.087**	.16**	.10*	2.06**
		(.031)	(.031)	(.031)	(.031)	(.021)	(.049)	(.041)	(.41)
1987	-1.42^{+}	-1.04	.77	-1.02	-1.04	-1.37	-1.04	-1.36	.95*
	(.89)	(.85)	(.95)	(.85)	(.85)	(1.18)	(.47)	(.81)	(.018)
1988	-2.37**	-2.03*	2.02*	-1.98	-2.02	-2.47	-2.03	-2.62	.92**
	(.86)	(.85)	(.92)	(.84)	(.85)	(1.31)	(.61)	(1.44)	(.022)
1989	.0003	-0.11	1.93*	.03	-.06	-.93	-.11	-.83	.99
	(.83)	(.80)	(.82)	(.80)	(.80)	(1.09)	(.69)	(2.09)	(.027)
1990	-2.51**	-2.08*	4.31**	-1.91	-2.02	-3.52	-2.07	-3.13	.91**
	(.86)	(.81)	(.81)	(.81)	(.81)	(1.18)	(.85)	(2.78)	(.031)
1991	1.07	.44	2.57**	.61	.50	.42	.44	-.55	1.02
	(.84)	(.80)	(.83)	(.81)	(.80)	(1.01)	(.80)	(3.46)	(.032)
1992	2.05*	.53	2.16*	.35	.62	.99	.53	-.35	1.02
	(.83)	(.81)	(.90)	(.82)	(.82)	(1.08)	(.88)	(4.15)	(.036)
1993	3.37**	1.17	1.93*	.97	1.29	1.67	1.17	.32	1.05
	(.89)	(.87)	(.93)	(.88)	(.87)	(1.13)	(1.00)	(4.85)	(.042)
1994	5.05**	2.92**	.97	2.71**	3.06**	3.13**	2.92	1.94	1.12
	(.92)	(.91)	(.94)	(.94)	(.91)	(1.21)	(1.08)	(5.56)	(.048)
1995	9.06**	6.18**	-1.05	5.91**	6.23**	7.17**	6.18**	5.30	1.28**
	(.97)	(.98)	(1.15)	(.99)	(.97)	(1.34)	(1.16)	(6.24)	(.059)

Variable	Model 1 %Stock	Model 2 %Stock	Model 3 %Safe	Model 4 %Stock	Model 5 %Stock	Model 6 %Stock Weighted	Model 7 %Stock (Cluster by State)	Model 8 %Stock State Trends	Model 9 Exponential Transformation (odds ratios)
1996	13.41**	9.08**	-3.35**	8.77**	9.03**	9.15**	9.08**	8.27	1.45**
	(1.26)	(1.29)	(1.55)	(1.29)	(1.29)	(1.50)	(1.51)	(7.15)	(.087)
1997	17.24**	12.7**	-6.56**	12.32**	12.49**	13.22**	12.70**	12.00	1.71**
	(1.38)	(1.35)	(1.48)	(1.38)	(1.33)	(1.57)	(1.76)	(7.79)	(.12)
Joint Test PI, Re-state*PI				.0024					
Joint Test UPIA, non-UPIA					.006				
R-Square	.8965	.9166	.8050	.9170	.9169	.9110	.9166	.9526	N/A

N=600 state-year observations. **sig. at <.01 level; *sig. at <.05 level, +sig. at <.10 level. Huber-White robust standard errors in parentheses. All regressions include state dummies and a constant. Model 6 uses inflation-adjusted total state assets as sample weights.

TABLE 2: BANK-LEVEL RESULTS FOR PERCENT STOCK

Variable	Model 1 Full Sample	Model 2	Model 3 Weighted	Model 4 State Trends	Model 5 Exponential Transformation (odds ratios)
Prudent Investor	.012	.90	1.13	1.37**	1.076**
	(.69)	(.57)	(.74)	(.48)	(.023)
Log Total High Holder Assets	.029**	.022**	.0036	.022**	1.13**
	(.004)	(.004)	(.012)	(.004)	(.023)
% Stocks Employee Benefit Funds (HH)		.18**	.11**	.17**	2.49**
		(.011)	(.026)	(.01)	(.11)
1987	-.91**	-.22	-1.64**	-1.12	.98
	(.25)	(.26)	(.44)	(.37)	(.013)
1988	-1.77**	-1.35	-2.45**	-3.16**	.92**
	(.32)	(.29)	(.49)	(.57)	(.014)
1989	-1.12**	-.46	-.12	-3.16**	.97**
	(.33)	(.33)	(.75)	(.82)	(.018)
1990	-2.43**	-1.47	-3.07**	-5.03**	.91
	(.44)	(.45)	(.75)	(1.04)	(.022)
1991	.09	.35	.82	-4.08**	1.01
	(.53)	(.49)	(.62)	(1.20)	(.025)
1992	2.36**	1.69**	1.20	-3.66**	1.07**
	(.63)	(.55)	(1.00)	(1.37)	(.027)
1993	5.37**	4.13**	1.34	-2.12	1.20
	(.73)	(.58)	(1.22)	(1.57)	(.032)
1994	5.14**	3.65**	2.83*	-3.47*	1.17**
	(.74)	(.63)	(1.36)	(1.75)	(.032)
1995	7.44**	5.50**	7.10**	-2.50	1.27**
	(.82)	(.69)	(1.56)	(1.96)	(.037)
1996	10.0**	7.19**	9.36**	-1.69	1.35**
	(.93)	(.99)	(2.22)	(2.13)	(.053)
1997	13.7**	9.88**	14.4**	.17	1.53**
	(1.01)	(1.10)	(2.30)	(2.31)	(.065)
R-Square	.2546	.3338	.7667	.3342	N/A
N	24,424	22,885	22,885	22,885	22,885

**sig. at <.01 level; *sig. at <.05 level, +sig. at <.10 level. All regressions include state dummies, bank holding company fixed effects, and a constant. The standard errors are Huber-White robust and reflect clustering on the state level. Model 3 uses inflation-adjusted total bank assets as sample weights.

TABLE 3: STATE-LEVEL RESULTS FOR %STOCK^{PT}-%STOCK^{EB}

Variable	Model 1	Model 2	Model 3	Model 4 Weighted	Model 5 Cluster by State	Model 6 State Trends
Prudent Investor	4.34**	1.06		2.88**	4.34**	3.17*
	(1.35)	(1.92)		(1.07)	(1.60)	(1.36)
Restatement*PI		4.41**				
		(1.81)				
UPIA			4.37^{+}			
			(2.45)			
Non-UPIA			4.34**			
			(1.33)			
Log Total State Assets (inflation adjusted)	-.018	.017	-.018	.024^{+}	-.018	-.042**
	(.011)	(.034)	(.024)	(.015)	(.011)	(.012)
1987	.51	.60	.51	1.08	.51	.0058
	(1.00)	(1.08)	(1.40)	(1.53)	(1.19)	(1.31)
1988	.40	.47	.40	1.46	.40	-.35
	(1.48)	(1.48)	(1.46)	(1.51)	(1.48)	(1.64)
1989	1.57	1.76	1.57	1.41	1.57	.64
	(1.49)	(1.49)	(1.35)	(1.49)	(1.49)	(2.05)
1990	1.61	1.97	1.60	1.58	1.61	.11
	(1.49)	(1.50)	(1.41)	(1.51)	(1.28)	(2.59)
1991	.35	.62	.35	1.10	.35	-1.33
	(1.50)	(1.50)	(1.34)	(1.48)	(1.51)	(2.98)
1992	-3.53*	-4.30*	-3.79*	-1.88	-3.53*	-5.55
	(1.38)	(1.51)	(1.38)	(1.51)	(1.39)	(3.45)
1993	-5.80**	-6.63**	-6.09**	-2.42	-5.80**	-8.17*
	(1.52)	(1.52)	(1.49)	(1.52)	(1.58)	(3.91)
1994	-4.77**	-5.55**	-4.77**	-2.25	-4.77**	-7.67
	(1.52)	(1.53)	(1.62)	(1.52)	(1.63)	(4.51)
1995	-5.45**	-6.61**	-5.45**	-2.36	-5.45**	-8.33
	(1.59)	(1.59)	(1.63)	(1.57)	(1.91)	(5.00)
1996	-5.90**	-7.29**	-5.90**	-5.17**	-5.90**	-9.01
	(1.63)	(1.63)	(1.81)	(1.61)	(1.98)	(5.52)
1997	-5.71**	-7.10**	-5.71**	-3.81*	-5.71**	-9.40
	(1.64)	(1.72)	(2.12)	(1.74)	(2.51)	(6.09)
Joint Test PI, Restate*PI		.0003				
Joint Test UPIA, non-UPIA			.0036			
R-Square	.9170	.9174	. 9174	.9331	.9170	.9529

N=600 state-year observations. **sig. at <.01 level; *sig. at <.05 level, +sig. at <.10 level. Huber-White robust standard errors in parentheses. All regressions include state dummies and a constant. Model 4 uses inflation-adjusted total state assets as sample weights.

TABLE 4: BANK-LEVEL RESULTS FOR %STOCK^{PT}-%STOCK^{EB}

Variable	Model 1	Model 2	Model 3	Model 4 Weighted	Model 5 State Trends
Prudent Investor	2.14**	1.04		4.45^{+}	2.09**
	(.53)	(1.07)		(2.34)	(.48)
Restatement*PI		1.42			
		(1.17)			
UPIA			1.99**		
			(.60)		
Non-UPIA			3.05*		
			(1.46)		
Log Total High Holder Assets	.017**	.017**	.017**	-.039	.017**
	(.045)	(.005)	(.005)	(.026)	(.005)
1987	1.32**	1.34	1.33	.79	.94
	(.49)	(.50)	(.50)	(.76)	(.56)
1988	.69	.72	.69	1.51	-.06
	(.68)	(.68)	(.68)	(1.18)	(.81)
1989	1.09	1.17	1.10	3.75**	-.01
	(.61)	(.61)	(.61)	(1.37)	(.99)
1990	1.07	1.16	1.09	3.87**	-.41
	(.68)	(.68)	(.68)	(1.13)	(1.26)
1991	-1.12	-.96	-1.10	2.19	-2.94**
	(.68)	(.82)	(.82)	(1.58)	(1.56)
1992	-3.75**	-3.90**	-3.70**	-1.04	-5.93**
	(.81)	(.82)	(.84)	(1.00)	(1.83)
1993	-5.19	-5.36**	-5.13**	-3.57**	-7.75**
	(.89)	(.90)	(.92)	(2.58)	(2.17)
1994	-6.19**	-6.35**	-6.11**	-3.21	-9.12**
	(.89)	(.89)	(.93)	(2.23)	(2.39)
1995	-6.26	-6.45**	-6.22**	-.47	-9.57**
	(.99)	(.99)	(1.00)	(2.50)	(2.66)
1996	-9.12**	-9.34**	-9.14**	-1.34	-12.80**
	(1.06)	(1.05)	(1.05)	(3.21)	(2.99)
1997	-10.83**	-11.08**	-10.94**	.11	-14.84**
	(1.29)	(1.31)	(1.27)	(3.93)	(3.25)
Joint Test PI, Re-state*PI		.0002			
Joint Test UPIA, Non-UPIA			.001		
R-Square	.0504	.0504	.0505	.6754	.0587

N=22,885 state-year observations. **sig. at <.01 level; *sig. at <.05 level, +sig. at <.10 level. All regressions include state dummies, bank holding company fixed effects, and a constant. The standard errors of all models are Huber-White robust and reflect clustering on the state level. Model 4 uses inflation-adjusted total bank assets as sample weights.

TABLE 5:
STATE PRUDENT INVESTOR LAW REFORMS

State	Non-UPIA MPT Statute[80]	UPIA[81]
Alabama	1989	
Alaska		1998
Arizona		1996
Arkansas		1997
California	1987	1996
Colorado		1995
Connecticut		1997
Delaware	1986	
Florida	1993	
Georgia	1988	
Hawaii		1997
Idaho		1997
Illinois	1992	
Indiana		1999
Iowa	1991	2000
Kansas	1993	2000
Kentucky	1996[82]	
Louisiana		2001
Maine		1997
Maryland	1994	
Massachusetts		1999
Michigan		2000
Minnesota	1986	1997
Mississippi		
Missouri		1996
Montana	1989	2003
Nebraska		1997
Nevada	1989	2003
New Hampshire		1999

[80] We include in this category any statute based on the 1992 Restatement or that in comparable non-Restatement language instructs courts to evaluate the prudence of a particular investment in light of the composition of the portfolio as a whole.

[81] We include in this category any statute based on the 1994 Uniform Prudent Investor Act.

[82] The Kentucky MPT-style prudent investor legislation applies only to institutional trustees. Ky. Stat. §287.277(1). Effective January 1, 2005, other trustees may seek court approval to be governed by this statute. Ky. Stat. §386.454. Other trustees who do not avail themselves of §386.454 are governed by a legal list. Ky. Stat. §386.020.

State	Non-UPIA MPT Statute[80]	UPIA[81]
New Jersey		1997
New Mexico		1995
New York	1995	
North Carolina		2000
North Dakota		1997
Ohio		1999
Oklahoma		1995
Oregon		1995
Pennsylvania		1999[83]
Rhode Island		1996
South Carolina	1990	2001
South Dakota	1995	
Tennessee	1989	2002
Texas	1992	2004
Utah		1995
Vermont		1998
Virginia	1992	2000
Washington	1985	
West Virginia		1996
Wisconsin		2004[84]
Wyoming		1999

Current as of Lexis or Westlaw in August 2005.

[83] Although Pennsylvania's statute deviates quite substantially from the UPIA, we need not resolve whether those deviations require a coding Pennsylvania differently, as the Pennsylvania statute was enacted after the period under study.

[84] Prior to April 30, 2004, Wisconsin not only followed the constrained prudent man rule, but it also capped investments in common stocks at 50 percent of the total market value of the fund. See Wisc. Stat. §881.01 (2003).

APPENDIX

Appendix Table 1 sets forth sample means and percents for some key variables of interest.

APPENDIX TABLE 1:
SAMPLE MEANS AND PERCENTS

Variable	Mean/Percent
Bank Personal Trust Assets*	$175 Million
	(987)
Bank Employee Benefit Assets*	$263 Million
	(1,125)
Banks with Highholder	85%
Banks owned by Multi-state Highholder	26%
Personal Trusts	
%Stock	54.0%
%Safe	33.1%
%Other	12.9%
Employee Benefit	
%Stock	46.3%
%Safe	33.9%
%Other	19.8%

Means and proportions are based on data from 1986 to 1997 at aggregate level. Standard deviation in parentheses where applicable. "Highholder" follows Federal Reserve institutional owner designations, usually a bank holding company. "Safe" investments to include federal, state, and municipal bonds, interest-bearing bank accounts, money market funds, and mortgages.
*Conditional on reporting any assets.

Appendix Table 2 reports results for linear probability models. The results uniformly suggest that the propensity for banks to invest some trust assets in stock increased after the adoption of the new prudent investor law. Because almost all of our control variables, including our variable of interest, are dummy variables, linear probability models are easily justified and computationally tractable. The interpretation of the coefficient on *Prudent Investor* is simply the increase in the proportion of banks holding stock after the reform.

Our fixed effects specification relies on variation within holding companies across states. The identifying variation comes from multi-state high holders, which might be fairly restrictive in this case given that the vast majority of large banks own stock. We therefore include random effects specifications as well (which permits identifying variation to come from banks without a multi-state high holder). The results are surprisingly similar.

Models 1 and 2 employ the full sample. In Model 1, which uses random effects, 1.3 percentage points more banks hold stock after the reform and the result is significant at the 5% level. Model 2's fixed effects specification yields the roughly the same result, but is significant at barely the 10% level. Models 3 and 4 limit the sample to banks with $1 million or more in trust holdings, and the magnitude of the estimated effect is similar to Models 1 and 2 but is now more precisely estimated. Models 5 and 6 condition on percent stock held in employee benefit funds (which further limits the sample), and the estimated effect increases to about 2 percentage points and is now significant that the 1% level. The addition of state-specific time trends makes little difference in Model 7.

Appendix Table 3 reports results for random effects and AR(1) specifications. These specifications are intended to test the robustness of the results to the presence of serial correlation. The AR(1) specification allows panel autocorrelation with a one-period lag, and the random effects estimation is consistent in the presence of serial correlation (though the standard errors may be understated). The AR(1) specification reduces the size of the *Prudent Investor* coefficient by roughly half, but it remains statistically significant. The random effects estimation is nearly the same as the corresponding fixed effects estimation in the prior Tables.

APPENDIX TABLE 2: RESULTS FOR LINEAR PROBABILITY MODELS (STOCK OWNERSHIP OBSERVED = 1)

Variable	Model 1 RE, full sample	Model 2 FE, full sample	Model 3 RE, Assets >1M	Model 4 FE, Assets >1M	Model 5 RE, ERISA controls	Model 6 FE, ERISA controls	Model 7 FE, State Time Trends
Prudent Investor	.013*	.012^{+}	.011*	.011*	.021**	.020**	.014*
	(.006)	(.007)	(.005)	(.005)	(.004)	(.005)	(.005)
Log Total High Holder Assets	.092**	.095**	.027**	.036**	.057**	.063**	.064**
	(.006)	(.007)	(.004)	(.011)	(.008)	(.013)	(.014)
% Stocks Employee Benefit Funds (HH)					.067**	.063**	.065**
					(.011)	(.013)	(.013)
1987	.002	.003	.002	.004	.005	.006	.011*
	(.003)	(.003)	(.004)	(.004)	(.004)	(.004)	(.004)
1988	-.010*	-.008^{+}	-.008^{+}	-.006	-.004	-.003	.006
	(.004)	(.004)	(.004)	(.004)	(.004)	(.005)	(.005)
1989	-.013**	-.012**	-.002	-.001	-.002	-.003	.010**
	(.004)	(.004)	(.004)	(.005)	(.003)	(.004)	(.004)
1990	-.005	-.005	.005	.006	.007^{+}	.007	.024**
	(.005)	(.006)	(.005)	(.006)	(.004)	(.005)	(.004)
1991	-.007	-.007	.008	.007	.001	-.000	.022**
	(.006)	(.007)	(.005)	(.006)	(.004)	(.005)	(.004)
1992	-.016*	-.017*	.000	-.001	-.009*	-.012*	.016**
	(.007)	(.008)	(.005)	(.006)	(.004)	(.005)	(.005)
1993	-.012^{+}	-.013^{+}	.004	.001	-.014**	-.017**	.015**
	(.007)	(.008)	(.005)	(.006)	(.005)	(.006)	(.005)
1994	-.006	-.007	.006	.004	-.011*	-.015**	.022**
	(.007)	(.008)	(.006)	(.007)	(.004)	(.005)	(.007)
1995	-.015*	-.016*	-.004	-.007	-.026**	-.030**	.011*
	(.006)	(.007)	(.006)	(.009)	(.006)	(.008)	(.005)
1996	-.022**	-.024*	-.002	-.007	-.034**	-.039**	.007
	(.008)	(.010)	(.006)	(.009)	(.006)	(.008)	(.005)
1997	-.024*	-.026*	-.002	-.009	-.043**	-.050**	.001
	(.010)	(.013)	(.006)	(.009)	(.007)	(.010)	(.001)
Proportion of Banks in Sample Holding Stock	.8140	.8140	.9302	.9302	.9204	.924	.9204
N	32,801	32,801	26,420	26,420	22,884	22,884	22,884

**sig. at <.01 level; *sig. at <.05 level, +sig. at <.10 level. All regressions include state dummies. Fixed effects models employ bank holding company fixed effects. The standard errors of all models are Huber-White robust and reflect clustering on the state level except that of Model 7.

APPENDIX TABLE 3: AR(1) AND RANDOM EFFECTS

	%STOCK				**%Stock^{PT}-%Stock^{EB}**			
Variable	Model 1 State Level, RE	Model 2 Bank Level, RE	Model 3 State Level, AR(1)	Model 4 Bank Level, AR(1)	Model 5 State Level, RE	Model 6 Bank Level, RE	Model 7 State Level, AR(1)	Model 8 Bank Level, AR(1)
Prudent Investor	2.03**	.81	1.41*	.34	3.79**	2.00**	2.89*	1.11*
	(.61)	(.53)	(.66)	(.28)	(1.31)	(.59)	(1.23)	(.43)
Log Total State Assets (inflation adjusted)	.038**	.022**	.041**	.0045**	.017*	.016**	-.018	-.0024**
	(.007)	(.004)	(.007)	(.001)	(.007)	(.003)	(.12)	(.008)
% Stocks in Employee Benefit Funds	.17*	.17**	.14**	.12**	N/A	N/A	N/A	N/A
	(.030)	(.01)	(.022)	(.01)				
1987	-1.03	-.30	N/A	N/A	.58	1.17	N/A	N/A
	(.89)	(.22)			(1.51)	(.50)		
1988	-2.04	-1.40**	-7.72**	9.35**	.31	.53	-.31	-.22
	(.88)	(.25)	(.65)	(1.86)	(1.51)	(.65)	(1.37)	(.33)
1989	-.14	-.58	-3.96	12.1**	1.24	1.00	.90	-.24
	(.82)	(.29)	(.57)	(2.18)	(1.51)	(.57)	(1.80)	(.39)
1990	-2.07	-1.60**	7.02**	11.6**	1.51	.99	.87	-.09
	(.85)	(.39)	(.73)	(2.34)	(1.52)	(.62)	(1.98)	(.43)
1991	.39	.17	10.41**	14.5**	-.047	-1.05	-4.12*	-1.56**
	(.84)	(.42)	(.83)	(2.43)	(1.51)	(.72)	(2.13)	(.46)
1992	.47	1.48**	12.71**	16.7**	-3.97**	-3.59**	-6.32**	-3.50**
	(.82)	(.49)	(.87)	(2.48)	(1.52)	(.74)	(2.17)	(.49)
1993	1.10	3.93**	12.91**	19.2**	-6.29**	-4.97**	-5.29*	-5.36**
	(.86)	(.52)	(.90)	(2.51)	(1.52)	(.82)	(2.17)	(.51)
1994	2.88**	3.45**	12.84**	18.8**	-5.10**	-6.03**	-5.69**	-5.96**
	(.92)	(.57)	(.96)	(2.53)	(1.53)	(.78)	(2.22)	(.53)
1995	6.08**	5.14**	14.98	21.0**	-6.16**	-6.15**	-5.46*	-5.70**
	(.97)	(.63)	(1.00)	(2.54)	(1.58)	(.86)	(2.34)	(.56)
1996	8.97**	6.80**	12.05**	23.1**	-6.65**	-8.89**	-5.95**	-7.86**
	(1.24)	(.86)	(.93)	(2.55)	(1.62)	(.90)	(2.29)	(.58)
1997	12.61**	9.55**	12.21**	26.5**	-6.24**	-10.31**	-5.46*	-9.06**
	(1.29)	(.92)	(.86)	(2.58)	(1.69)	(1.11)	(2.34)	(.62)
N	600	22,885	600	20,100	22,885	22,885	22,885	20,100

**sig. at <.01 level; *sig. at <.05 level, +sig. at <.10 level. Huber-White robust standard errors in parentheses. All models include state fixed effects except Models 1 and 5. AR(1) bank level models 4 and 8 use bank fixed effects instead of highholder fixed effects because the AR(1) identification requires 1 observation per panel period.