The Myth of Procedure: Derivatives Investment Reform in St. Petersburg

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In 1994, municipalities across the United States suffered hundreds of millions of dollars in losses from their investments in derivatives. Commentators swiftly blamed the crisis on a variety of villains, including unscrupulous brokers, rogue investment officers, and uninformed or unsophisticated treasurers and municipal decisionmakers. Based on this diagnosis, industry experts, government regulators, and academic commentators proposed a host of different options designed to avert future crises in derivatives investments.

Although the explanations and proposals varied, many actors concluded from the 1994 experience that the derivatives investment crisis resulted from a failure of procedure, specifically from inadequate internal management controls and insufficient transparency and disclosure. These reformers proposed a variety of checks-and-balances-based procedural solutions to prevent future derivatives losses.

This Article argues that these conclusions are at best deceptively incomplete and at worst dangerously simplistic. It contends that the derivatives investment experience of St. Petersburg, Florida, from 1991 to 1995, shows that not all significant derivatives losses can be explained by inappropriate investment manager behavior or failure of internal controls, and argues that having good management, sophisticated investment officials, and well-structured internal controls may not necessarily prevent significant derivatives losses. Instead, St. Petersburg’s experience suggests that individual perceptions of risk and the relationship between risk and return in the investment market provide a more compelling explanation for the significant derivatives losses experienced by some municipalities during the 1990s. This explanation in turn suggests that new regulations requiring enhanced disclosure and additional procedural controls should be viewed as a limited solution for preventing derivatives investment losses, rather than the panacea some commentators have presumed it to be.

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Introduction

In 1994, municipalities across the United States suffered hundreds of millions of dollars in losses from their investments in derivatives, complex financial instruments whose value is based on the performance of an underlying asset or index.1 In the most famous of these incidents, Orange County, California, lost approximately $2 billion,2 destroying the finances of municipalities it had invested with across the state and spawning years of painful litigation.3 Elsewhere in the United States, the value of the City Colleges of Chicago's $96 million investment fund significantly decreased due to losses from its derivatives investments.4 In Florida, the City of St. Petersburg's approximately $290 million investment portfolio experienced a $40 million paper loss, primarily as a result of a massive plunge in the value of its derivatives investments.5 Across the United States a multitude

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1 See David Poppe, The Money Myth: (How Four Florida Municipalities Claim They Were Dupes in the Derivatives Game), FLA. TREND, July 1995, at 36 (describing general municipal derivatives losses and specific impact in Florida); Leslie Wayne, Local Governments Lose Millions in Complex and Risky Securities, N.Y. TIMES, Sept. 25, 1994, at D1 [hereinafter Wayne, Local Governments] (describing derivatives losses in "dozens" of towns, colleges, and at least one Indian tribe). The term "derivative" covers the wide variety of financial instruments whose value is derived from an underlying index or asset, such as a stock, bond, mortgage, or commodity. See Roberta Romano, A Thumbnail Sketch of Derivative Securities and Their Regulation, 55 MD. L. REV. 1, 2-7 (1996) (describing derivatives generally). The bulk of municipalities' derivatives investments in the 1990s was in securities based on pooled home mortgage payments. See Leslie Wayne, Orange County's Bankruptcy: The Temptations, N.Y. TIMES, Dec. 8, 1994, at D1 [hereinafter Wayne, Temptations]. These securities are known as collateralized mortgage obligations (CMOs) or mortgage backed securities (MBSs) and derive their value from the principal and interest payments of the underlying mortgages. See Romano, supra, at 68-73 (describing CMO securities).
4 See Wayne, Local Governments, supra note 1.
5 See Gerard Shields, Investing or Gambling? Taxpayer Dollars at Risk, ORLANDO
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value of its derivatives investments.5 Across the United States a multitude
of other municipalities, government entities, and nonprofit organizations
suffered similar losses in the spring of 1994.6 As one commentator put it,
"You can throw darts at a map of the United States, and wherever one hits,
there will be losses."7

Commentators swiftly blamed the crisis on a variety of villains,
including unscrupulous brokers,8 rogue investment officers,9 and
uninformed or unsophisticated treasurers and municipal decisionmakers.10
Based on this diagnosis, industry experts, government regulators, and
academic commentators proposed a host of different options designed to
avert future crises in derivatives investments.11

Although the explanations and proposals varied, many actors
concluded from the 1994 experience that the derivatives investment crisis
resulted from a failure of procedure, specifically from inadequate internal

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5 See Gerard Shields, Investing or Gambling? Taxpayer Dollars at Risk, ORLANDO
SENTINEL, Apr. 2, 1995, at A1 (reporting millions of dollars in losses by Florida county and state
governments).

6 See Brandon Becker & Jennifer Yoon, Derivative Financial Losses, 21 J. CORP. L. 215,
220-25 (1995) (describing interest rate rise in the spring of 1994, resulting collapse of CMO market,
and specific examples of widespread CMO losses).

7 Wayne, Temptations, supra note 1 (quoting Joe Mysak, editor of Grant's Municipal Bond
Observer newsletter).

8 See Poppe, supra note 1 (reporting on lawsuits by Florida municipalities alleging broker
fraud); Wayne, Local Governments, supra note 1 ("[M]any local officials say they were pushed into
unsuitable choices by aggressive brokers.").

9 See O'Dell, supra note 3 (reporting that investment officials violated policies against
derivative investments); Wayne, Temptations, supra note 1 ("There's probably more than one cowboy
out there like Orange County.") (quoting Peter Jordan, Managing Director at Fitch Investment
Services). Several of these individuals were being prosecuted or sued, and have recently been either
sentenced or fined, for their behavior. On November 19, 1996, Orange County Treasurer Robert Citron
was sentenced to a year in jail and fined $100,000 for his role in the Orange County derivatives
investment disaster. See Fund Management: The Sound of Pips Squeaking, ECONOMIST, Nov. 23,
securities firm Westcap Enterprises to pay $56 million to the City Colleges of Chicago for steering
them into risky derivatives investments in the early 1990s. See Andrew Ward, City Colleges of

10 See O'Dell, supra note 3 ("[Municipalities and government agencies] are saying they
were too dumb to know what they were getting into.") (quoting anonymous industry insider); id.
("House Banking Committee Chairman Henry B. Gonzales (D-Tex.) opined that "clearly, there is a
huge number of supposedly sophisticated managers of public funds, mutual funds, corporate and
pension funds, who really don't understand the arcane risks of derivatives.").); Wayne, Local
Governments, supra note 1 (reporting that treasurers from Sandusky County, Ohio and Portage
County, Ohio claim that they were not schooled in finance).

11 These proposals ranged from outright bans on local government derivatives investing, see
Ohio Gov. Signs Sweeping Investment Bill Banning Derivatives, CAP. MKT. REP., June 28, 1996,
available in WESTLAW, ALLNEWSPLUS, 6/28/96 CMREP, to written investment policy
requirements, see FLA. STAT. ch. 218.415 (1995); Richard Richtmyer, Legislation: Louisiana to Offer
Key to Unlocking Investment Rules, BOND BUYER, Jan. 8, 1996, at 26, to disclosure regulations, see
Karen Pierog, Michigan House Considers Bills to Mandate State, Local Derivatives Disclosure, BOND
BUYER, Mar. 8, 1996, at 3, to combinations of these strategies, see Daniel Bice, Investment Board Bill
Advances, MILWAUKEE J. SENTINEL, Jan. 18, 1996, at 1; Joanne Morrison, Investments: Exchanges
management controls and insufficient transparency and disclosure. A top official at the Commodity Futures Trading Commission (CFTC) argued that straightforward risk management procedures might have headed off derivatives disasters like that in Orange County. The former comptroller and chief financial officer of Chicago blamed the derivatives disasters on a variety of internal management procedure and control problems. An industry consultant similarly concluded that internal controls were the key to the derivatives problem.

These reformers proposed a variety of checks-and-balances-based procedural solutions to prevent future derivatives losses. In the earliest such proposal, which actually predated the 1994 crisis, the Group of Thirty (G30), an organization composed of representatives from thirty industrialized nations, presented a 1993 report on derivatives that included twenty specific proposals for largely procedurally based reform. Florida implemented a similar proposal in 1995, passing legislation requiring municipalities to establish written investment policies that explained their objectives and restricted their investments. In more recent derivatives regulation debates, regulators and commentators have repeated the mantra

12 This led some states, for example, to require disclosure and written investment policies. See FLA. STAT. ch. 218.415 (1995); Joanne Morrison, Legislation: House Bill Could Clash With Texas Derivatives Law, BOND BUYER, Sept. 11, 1995, at 10; Ritchmyer, supra note 11.
16 In general, the General Accounting Office (GAO) argued in favor of “a strong and viable internal control structure to protect the interests of the public.” James L. Craig, Jr., Regulating Derivatives to Protect the Public, CPA J., Oct. 1995, at 40. Yale Law School Professor Roberta Romano similarly recommended focusing on “improving the investment-decision making capacity and internal controls” of government entities. Romano, supra note 1, at 81-82.
17 See GLOBAL DERIVATIVES STUDY GROUP, GROUP OF THIRTY, DERIVATIVES: PRACTICES AND PRINCIPLES (July 1993) [hereinafter G30 STUDY]. These recommendations covered policy-making, personnel selection and management, portfolio valuation and disclosure, and internal investment controls. See id. 
18 See FLA. STAT. ch. 218.415 (1995). Similar measures were enacted in response to widespread losses experienced around the country by municipalities, school districts and school systems, and various governmental and nonprofit entities. See Natalie R. Cohen, Recent Municipal Investment Losses and Government’s Response, 721 PLI/COMM 387, 392-93 (Comm. L. & Prac. Course Handbook Series 1995) (reporting on state measures to restrict derivatives investments by nonprofits or municipalities). More recently, legislation regarding derivatives investment restrictions and regulation has been introduced in Congress in an attempt to deal with the problem. See H.R. 20, 104th Cong. (1995); Peter M. Geckeler, Note, Municipal Derivatives Use and the Suitability Doctrine, 49 WASH. U. J. URB. & CONTEMP. L. 285 (1996). While the congressional actions do bear some relationship to this case study and the general topic of municipal derivative investment policy, they will not be discussed here. For an excellent introduction and discussion of this regulatory approach to the problem of municipal investments in derivatives, see id.
that insufficient internal controls caused derivatives losses, and that checks-and-balances-based procedures are the appropriate solution.19

This Article argues that these conclusions are at best deceptively incomplete and at worst dangerously simplistic. It contends that the derivatives investment experience of St. Petersburg, Florida, from 1991 to 1995, challenges both the explanatory and prescriptive elements of the procedure argument. First, this Article shows that not all significant derivatives losses can be explained by inappropriate investment manager behavior or failure of internal controls. Second, it argues that having good management, sophisticated investment officials, and well-structured internal controls may not necessarily prevent significant derivatives losses. Instead, St. Petersburg's experience suggests that individual perceptions of risk and the relationship between risk and return in the investment market provide a more compelling explanation for the significant derivatives losses experienced by some municipalities during the 1990s. This explanation in turn suggests that new regulations requiring enhanced disclosure and additional procedural controls should be viewed as a limited solution for preventing derivatives investment losses, rather than the panacea some commentators have presumed it to be.

Part I details the performance of St. Petersburg's investment portfolio from 1991 to 1995, focusing specifically on the rise and subsequent collapse of its derivatives holdings. Part II discusses how experts, regulators, and commentators have argued that procedure offers both an explanation for past derivatives disasters and a means for avoiding future ones. Part III explains that St. Petersburg's sophisticated investment policies, practices, and personnel, as well as its substantial compliance with both the G30 recommendations and Florida investment policy statute requirements, undermine the procedure hypothesis as an explanation for

19 The strongest statement of this position was made by Richard Lindsey, the director of the Division of Market Regulation at the SEC, when discussing the regulation of over-the-counter (OTC) derivatives markets. See Concerning OTC Derivatives in the U.S. Financial Markets: Hearings Before the Senate Comm. on Agriculture, Nutrition, and Forestry, 105th Cong. (1998) [hereinafter Lindsey Testimony] (testimony of Richard R. Lindsey, Director, Division of Market Regulation, U.S. Securities and Exchange Commission); see also Rachel Koning, Regulation: Panel Member: Infamous Derivatives Losses Not Fault of Existing System, BOND BUYER, Dec. 17, 1998, at S. Lindsey, testifying before a Senate committee, argued that derivatives losses by Orange County (and other institutions) were caused by a failure of internal management controls and that no additional regulation beyond correcting those controls was necessary. See Lindsey Testimony, supra; Koning, supra. Legal commentators have also taken this general position, pointing to internal controls as the main problem. See Robert P. Haney, Jr. & Jack P. Levin, What's Wrong with Derivatives? Lack of Controls, CORP. LEGAL TIMES, Sept. 1996, at 11. Internal controls also featured prominently in several legislative proposals. See 140 CONG. REC. S9171, at S9172 (daily ed. July 18, 1994) (statement of Sen. Riegel regarding Derivatives Supervision Act of 1994, discussing proposed requirement of management plan for derivatives investments to correct for insufficient internal controls); 140 CONG. REC. E1469, at E1470 (daily ed. July 15, 1994) (remarks of Rep. Markey introducing Derivatives Dealers Act, discussing proposed GAO recommendations of additional internal controls and systems for risk management).
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the city's derivatives losses. Part IV rejects procedure-based solutions in light of St. Petersburg's compliance with the G30 recommendations and the Florida investment statute. Part V briefly discusses alternative explanations for St. Petersburg's losses, focusing on risk perception and the risk-return relationship, and applies these lessons to contemporary proposals for regulating derivatives investment.

I. The Derivatives Disaster in St. Petersburg

Understanding the limited applicability of procedural explanations and solutions to St. Petersburg's experience requires a somewhat detailed understanding of the city's investments in derivatives during the 1990s. This Part provides a general overview of the performance of St. Petersburg's portfolio and identifies several specific factors that made St. Petersburg vulnerable to the 1994 interest rate spike that ultimately generated its $40 million loss.

A. General Portfolio Overview

1. General Portfolio Value

Like many municipalities across the United States during the early 1990s, St. Petersburg began investing increasingly heavily in derivatives products as the yield on traditional and safer investments fell.20 The city's derivatives investments consisted almost exclusively of collateralized mortgage obligations (CMO) securities,21 financial instruments whose value was based on the performance of underlying pools of home mortgages.22 St. Petersburg purchased its first CMO security in 1991.23 From March 1991 through September 1995, the total amortized book value of CMO securities in the portfolio ranged from $5.0 million to $105.9 million on March 1994.24 Over the same period, CMO holdings grew from

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20 See Risky Business, ST. PETERSBURG TIMES, Dec. 11, 1994, at 2D (reporting that Florida state investments of $3 billion in 1990 produced $430 million gain of which $200 million was lost in subsequent interest rate movements).
21 See infra note 24 and accompanying text. The portfolio did include some corporate asset-backed securities and mortgage-backed mutual funds at different times during the 1991-1995 period. However, these were never as substantial a proportion of the investment portfolio's overall value as the CMO holdings. See id. The types of CMO securities and the investment policy followed by the city will be discussed infra in Part III.A.-B.
22 See Romano, supra note 1, at 68-74 (describing types of CMO instruments); Adam C. Smith, City Seeks Retreat from High-Risk Funds, ST. PETERSBURG TIMES, Sept. 17, 1995, at 1 (describing St. Petersburg's CMO investments).
24 See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12)
2.59% of the amortized book value of the investment portfolio on March 1991, to 40.17% in March 1994, tapering off to 28.1% on December 1995.25

Over that period of time, St. Petersburg's investment portfolio grew significantly until March 1994, when it suffered tremendous paper losses from which it later partially recovered. From March 31, 1991, to December 31, 1995, the St. Petersburg investment portfolio grew from a par value of $199.8 million to $297.9 million.26 The portfolio's amortized book value, perhaps a more accurate measurement of the value invested in the portfolio, similarly grew from $194.7 million on March 31, 1991,27 to $298.6 million on December 31, 1995.28 The major increases in portfolio value, both in terms of book value and amortized book value, occurred between September 1992 and March 1994.29

In contrast, the market value of the portfolio only grew from $214.3 million on March 31, 1993,30 to $288.6 million on December 31, 1995.31 The par and amortized book values of the portfolio on March 31, 1993,
were $214.3 million and $214.1 million, respectively.\textsuperscript{32} Thus, while on March 31, 1993, the portfolio showed virtually no paper losses, by December 31, 1995, the investment portfolio's $288.6 million market value was $10 million less than its $298.6 million amortized book value, i.e., it showed paper losses of approximately $10 million.\textsuperscript{33}

What changed was simple and unexpected. In spring 1994, in response to growing fears about potential inflation, the Federal Reserve Board increased interest rates dramatically, from 3\% to 6\%, significantly impacting the value of the CMO securities that were held by St. Petersburg and many other municipalities across the country.\textsuperscript{34} As a result, the paper value of St. Petersburg's CMO investments plummeted, producing paper losses of approximately $40 million by September 1994.\textsuperscript{35} Subsequent market movements reduced the value of St. Petersburg's CMO investments to $76.3 million on March 31, 1995.\textsuperscript{36}

From March 1993 through December 1995, paper losses from the CMO holdings consistently constituted over 75\% of the total paper losses in the portfolio.\textsuperscript{37} Paper losses on the CMO holdings represented between $2.9 million and $29.4 million of the $0.4 million to $38.8 million of total portfolio paper losses.\textsuperscript{38}

2. General Portfolio Rate of Return

In the early 1990s, St. Petersburg benefited greatly from continued low interest rates that increased the value and performance of its CMO investments.\textsuperscript{39} The book-value rate of return for St. Petersburg's

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\textsuperscript{34} See Shields, supra note 5 (reporting millions of dollars in losses by Florida county and state governments and proposals for reform); see also Becker & Yoon, supra note 6, at 220-25 (describing interest rate rise in spring 1994, resulting collapse of CMO market, and specific examples of widespread CMO losses).

\textsuperscript{35} See Neusner, supra note 25.

\textsuperscript{36} See Noam M.M. Neusner, Investments Didn't Break City Policy; Auditors: Officials' Decisions Proper, TAMPA TRIB., May 26, 1995, St Petersburg, at 1 (reporting independent auditor's finding that officials acted within clear policy guidelines). See app. fig.3.

\textsuperscript{37} Figure 7 demonstrates the strong relationship between the total portfolio paper losses and the CMO holdings paper losses. See app. fig.7.

\textsuperscript{38} See id. The remainder of the portfolio consisted largely of U.S. Treasury securities, U.S. Agency Notes, municipal bonds, and investments in the State Board Investment Pool.

\textsuperscript{39} See Neusner, supra note 25 ("The city enjoyed considerable success with derivatives in the past, which helped earn income equal to one-third the dollars brought in from property taxes. 'We made a ton of money,' said Steve Smith, the city's internal auditor."); Adam C. Smith, Council Dumps Its Riskier Stock Plans, ST. PETERSBURG TIMES, Jan. 19, 1996, at 1 (reporting that $1.5 million in loan guarantees for the Florida International Museum, summer employment programs for kids, computers for police departments, and reduced impact from debt payments were among the benefits realized from St. Petersburg's CMO investments).
investment portfolio increased dramatically from December 1991 to March 1994, fluctuating between 5.65% and 12.56% over that period, but remaining above the pre-December 1991 levels. The actual reduction in rate of return and earnings can be seen by market adjusting the rate of return and comparing it to the benchmark rate of return of the Florida State Board of Administration (SBA), the equivalent risk-free investment rate for Florida municipalities. To generate a “market-adjusted rate of return,” changes in the market value of the portfolio are added to the income earned by the portfolio for each period. St. Petersburg’s market-adjusted earnings rates were dramatically above the SBA rate of return, ranging from a market-adjusted earnings rate of 2.61% to 15.55% over the period of September 1992 through December 1993, compared to the SBA range of 3.56% to 4.41% over the same period.

St. Petersburg’s CMO investments and active trading in the CMO securities markets constituted a significant portion of the above-market earnings and rate of return of the portfolio prior to the March 1994 downturn. Between March 31, 1991, and March 31, 1993, the CMO holdings generated book-value annualized rates of return between 8.25% and 22.20%, driving in part the strong 7.26% to 12.56% book-value rate of return for the overall investment portfolio. These rates of return can be compared to the 3.65% to 7.04% rates of return available from the SBA for the same period.

In March 1994, the portfolio’s rate of return plummeted with the rise in interest rates. Book-value rates of return dropped, thereafter bouncing between 4.85% and 6.84%. The investment portfolio’s market-adjusted earnings rates dropped dramatically below that of the SBA in the December 1993-March 1994 quarter, generating returns to the portfolio of -1.6% to -28.10%, compared to the stable (and positive) SBA rate of 3.52% to 4.02% over the same period. The market-adjusted earnings rate for the St. Petersburg portfolio did not recover until December 1994. Thereafter, the portfolio’s market-adjusted rate of return not only regained its positive real value, but again began to outpace the SBA rate, ranging from a market-adjusted rate of return of 4.15% to 26.35%, as compared to the SBA rate of 4.02% to 5.69% over the same period.

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41 See id.
43 See id.
44 See id. (showing book-value rates of return between June 30, 1994, and December 31, 1995). For a detailed depiction, see app. fig.4.
45 See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12) Months Ended December 31, 1995. For a detailed depiction, see app. fig.5.
46 See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12)
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Even with the drop in CMO rates of return and trading losses beginning in March 1994, the portfolio earned $8.74 million in total net trading profits between December 31, 1990, and December 31, 1995.\textsuperscript{47} The average book rate of return on the CMO holdings was 10.59% over the same period, generating in part the portfolio’s overall average book rate of return of 7.34%. The average SBA rate of return for the same period was only 4.66%.\textsuperscript{48}

Thus, the increasingly high concentration of CMO holdings in the portfolio was responsible both for the increase in earnings and portfolio value between December 1991 and March 1994, and for the subsequent substantial paper losses and below-SBA level earnings following the interest rate movements of spring 1994. Increased CMO exposure and investment brought the blessing of growth and above average returns prior to March 1994, and resulted in significant paper losses and depressed earnings from March 1994 through the end of the period under analysis, December 1995.

B. CMO Mechanics, Strategy and Market Dynamics

Examining St. Petersburg’s CMO holdings and strategy reveals that three interrelated factors caused both the increase in value of the portfolio and its collapse following the 1994 interest rate rise: (1) a change in the composition of the CMO holdings themselves to include more complicated financial instruments with higher potential returns and higher potential market value volatility; (2) a shift in the CMO holdings investment strategy from a passive investment mode to an active trading focus; and (3) a shift in the interest rate market from low to increasing interest rates.

1. CMO Holdings Composition

To understand St. Petersburg’s CMO investments, this Section will provide a brief and simplified description of this highly complex derivative security.\textsuperscript{49} CMOs derive their value from the cash streams of principal and

\textsuperscript{47} See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12) Months Ended December 31, 1995. For a direct comparison, see app. fig.5. Naturally, the CMO holdings that constitute a $10 million paper loss at December 1995 remain in the portfolio and must at some point be liquidated. Whether realizing the value of these holdings will produce real losses or gains remains to be seen.

\textsuperscript{48} See id. Figure 8 reveals the significant contribution that CMOs made to St. Petersburg’s superior investment returns from December 31, 1990, to December 31, 1995. See app. fig.8.

\textsuperscript{49} For a much more complete description, see Romano, supra note 1, at 69-73. For additional discussion, see also Brandon Becker & Francois-Ihor Mazur, Risk Management of Financial Derivative Products: Who’s Responsible for What?, 21 J. Corp. L. 177, 192-93 (1995) (discussing CMO losses in specific funds). For clarity’s sake, it should be noted that there is some dispute as to whether CMOs should be classified as derivatives. See Kimberly D. Krawiec, More Than Just "New
interest payments from underlying pools of home mortgages guaranteed by the federal government.\textsuperscript{30} By combining the payment streams in different fashions, different CMO securities have different risk, maturity, and volatility characteristics. Overall, because home mortgages have a special prepayment-without-penalty feature, the maturity of mortgage securities is uncertain, depending in a complicated manner on interest rate movements.\textsuperscript{31}

CMOs redistribute the risk from prepayment by dividing cash flows from principal and interest payments into different classes of securities, with different priorities and types of payment.\textsuperscript{32} First, the standard CMO is divided into a set of “tranches” or classes of securities with different maturities depending on their position in the hierarchy of payments.\textsuperscript{33} Investors concerned about prepayment risk can purchase CMO tranches that have better specified maturities because the payoff risk has been shifted to the last residual tranche, or “Z-bond.”\textsuperscript{34} In a decreasing interest rate environment, all of the tranches will tend to be paid off faster, as a result of increased prepayments made to refinance fixed rate mortgages. The effect on the value of the bonds is, however, not altogether certain and depends on the tranche of the CMO bond.\textsuperscript{35}

Second, some CMOs issue planned amortization (PAC) or targeted amortization (TAC) bonds.\textsuperscript{36} These bonds are structured to provide greater

\textit{Financial Bingo”: A Risk-Based Approach to Understanding Derivatives, 23 J. CORP. L. 1, 6 & n.20, 7 & nn.23-24 (1997).} This Article follows the popular press understanding of CMOs as derivatives; moreover, similar issues of procedure are implicated for both OTC derivatives and CMOs.

\textsuperscript{30} See Romano, \textit{supra} note 1, at 69.

\textsuperscript{31} See id. When interest rates decline, homeowners with fixed interest rate mortgages want to refinance, and thus prepay their mortgages and take out new ones. On the other hand, when interest rates increase, the rate of prepayments decreases. \textit{See id.}

\textsuperscript{32} See id. at 70-73 (describing various financial instruments derived from payments from mortgage pools).

\textsuperscript{33} See id. at 70. Typically, there are four tranches of CMO securities, the first three (A, B, and C) receive periodic interest payments from the underlying mortgages and sequentially applied principal payments and prepayments. The fourth tranche, also known as the Z-bond, receives no interest or principal payments until all of the first three tranches have been completely paid in full. \textit{See id.}

\textsuperscript{34} See id. Specifically, the risk has been shifted to the Z-bond holders. The Z-bond is thus the most volatile of the securities, since it must absorb the most prepayment risk. It also begins its existence essentially as a zero-coupon bond because it receives no payments of interest or principal until all other tranches are paid off first. \textit{See id.}

\textsuperscript{35} Future interest payment income is lost, but the maturity of the securities and speed of prepayment of principal is increased. Because of the time value of money, the quicker return of principal must be balanced against the loss of future expected interest income that would have been generated had the mortgages been held to maturity. The lower the priority of the tranche, the more likely that falling interest rates will increase the value of the bonds, since the expected interest payments may be lower and more discounted because they are expected to be farther in the future, and the faster principal payments may be more valuable as a quick return of full capital. The higher the priority of the tranche, the more likely the value of the bond is based on the expected stream of interest payments, and not the time value of faster potential principal payments. \textit{See id.}

\textsuperscript{36} See id. at 71.
certainty of maturity by specifying retirement schedules.\textsuperscript{57} Such schedules are made possible by the existence of companion bonds that absorb the risk of unstable retirement in much the same way that Z-bonds do.\textsuperscript{58}

Third, CMOs can be structured to include floating-rate tranches, or "floaters," which essentially receive interest that varies with an index.\textsuperscript{59} These are typically issued in conjunction with inverse-floaters (INV), which offset the interest payments of the floaters.\textsuperscript{60} In a declining interest rate environment, floaters lose value and INVs gain value, since the interest payments of floaters are directly related to changes in the interest rate environment, while those of INVs are inversely related.\textsuperscript{61}

Fourth, CMOs can be issued with interest-only (IO) and principal-only (PO) tranches. IOs receive only interest payments and POs receive only principal payments from an underlying pool of mortgages.\textsuperscript{62} Because prepayments both end the interest payment cash flows and count as principal payments, these bonds are much more volatile than standard CMOs. A falling interest rate environment will increase prepayments, reducing the value of IOs as mortgages are prepaid, and increasing the value of POs as the underlying principal amounts are paid off faster.\textsuperscript{63} Nonetheless, while IOs and POs move in opposite directions, they do not do so symmetrically.\textsuperscript{64} Moreover, the market has found it extremely difficult to predict precisely how interest rate changes influence prepayment rates and how IO and PO bonds are affected.

In 1991, St. Petersburg began investing in standard CMOs, focusing on standard maturity tranches of mixed principal and interest payments.\textsuperscript{65} Over time, St. Petersburg's CMO holdings became more complex, volatile, and interest-rate sensitive as the city became more interested in investing in this type of security. By September 1993, St. Petersburg had entered the CMO market in earnest, holding PAC, PO, IO, INV, and Z-bond CMO securities.\textsuperscript{66} The composition of St. Petersburg's portfolio on

\textsuperscript{57} See id.
\textsuperscript{58} See id. These have more stable maturities and cash flow patterns in the face of either increasing or decreasing interest rate environments.
\textsuperscript{59} See id.
\textsuperscript{60} See id.
\textsuperscript{61} See id.
\textsuperscript{62} See id. at 71-72.
\textsuperscript{63} See id. at 72.
\textsuperscript{64} See id.
\textsuperscript{65} See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12) Months Ended March 31, 1991. Until September 1993, the St. Petersburg Treasurer's Quarterly Reports did not differentiate between the types of CMO securities that were purchased and held; they appeared for the most part to be standard CMO tranches, though one or two appear to be IOs according to subsequent classification. See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12) Months Ended September 30, 1993 (Attachment "A").
\textsuperscript{66} See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12) Months Ended September 30, 1993 (Attachment "A").
September 30, 1993, indicates that the city had invested in a mix of CMO securities, such as a substantial number of POs and INVs, designed to appreciate in a low or decreasing interest rate environment.\textsuperscript{67} The Z-bonds held by the city also indicate this investment approach.\textsuperscript{68} While the city's investment strategy generated significant returns in the low interest rate environment of the early 1990s, the concentration of CMO holdings in Z-bonds, POs, and INVs resulted in substantial losses when interest rates rose in following 1994.\textsuperscript{69}

Thus, the concentration in St. Petersburg's investment portfolio of derivative securities that benefit from a low or decreasing interest rate environment set the stage for the city's investment losses in the rising interest rate environment.

2. CMO Investment Strategy

St. Petersburg's approach to its CMO investments began much the same way as its approach to other parts of its investment portfolio: passive investment designed to generate higher returns. That approach changed dramatically in December 1991, when the CMO portfolio entered an active trading and investment mode.\textsuperscript{70} City Treasurer Jeff Spies engaged in a series of trades and investments designed to capitalize on the falling interest rate environment and to capture significant trading profits as a source of income for St. Petersburg.\textsuperscript{71} From 1991 to 1995, this strategy generated $8.74 million in trading profits.\textsuperscript{72}

St. Petersburg's active investment strategy in CMO securities generated significant opportunistic trading profits and enabled the city to build the value of its portfolio. However, it also resulted in a quick-turnover investment portfolio, heavily concentrated in interest rate sensitive CMO securities by the time of the spring 1994 interest rate increases.

3. Interest Rate Changes and CMO Value

After a sustained period of low and decreasing interest rates during the early 1990s, the Federal Reserve Board increased interest rates from

\textsuperscript{67} See id.
\textsuperscript{68} The evolving types of CMO securities held by the city and their relative value can be seen in Figures 9 and 10. See app. figs.9 & 10.
\textsuperscript{69} Figure 11 illustrates how the portfolio's concentration in these securities generated paper losses in the changing interest rate environment. See app. fig.11.
\textsuperscript{71} See id.
\textsuperscript{72} Figure 8 presents the trading profits resulting from the shift to an active investment policy that occurred from 1991 to 1995. See app. fig.8.
3% to 6% in spring 1994.\textsuperscript{73} This had two dramatic effects on derivatives investments. First, the underlying performance of the securities changed relative to their expected performance. Investors quickly discovered that the behavior of these securities was much more complicated with respect to changes in interest rates than anyone had previously predicted.\textsuperscript{74} Second, in response to these changes in the performance of the underlying bonds and unexpected uncertainty in their valuation, the overall market for CMOs dried up, fueling even more instability in the valuation of the CMO securities.\textsuperscript{75}

St. Petersburg had been pursuing an investment strategy geared to a low interest rate environment, and did not foresee nor adapt early enough to changes in this environment. Given the growing complexity of the CMO holdings and their concentration in interest-rate sensitive securities, as well as the focus on active investment in the derivatives market, the city’s portfolio became quite sensitive to market fluctuations. Naturally, given that the underlying principal payments of the CMO securities were guaranteed by various government entities, securities such as POs and various tranches of CMOs with principal components would eventually generate at least scheduled principal payments; interest-only tranches and INVs were more problematic. However, changes in the interest rate environment would substantially affect the market value and thus paper gains or losses of even the principal-based CMO holdings in the investment portfolio. Consequently, St. Petersburg’s portfolio suffered a sudden and significant decline in market value following the interest rate increases.

II. The Procedure Hypothesis

As noted earlier, St. Petersburg’s derivatives losses occurred at the same time as those of Orange County and many other municipalities. A number of commentators quickly claimed that the municipal derivatives losses had resulted from a combination of the actions of uninformed, unsophisticated, or defrauded investment officials and a failure of adequate internal controls. For St. Petersburg, this hypothesis suggests that the city’s $40 million loss can be explained by unsophisticated investment officers and a failure of internal controls. It also implies that checks-and-balances-based procedural reform would have prevented the city’s derivatives losses.

\textsuperscript{73} See Becker & Yoon, supra note 6, at 220.
\textsuperscript{74} See id. at 220-25.
\textsuperscript{75} See id.
A. Failure of Individuals and Internal Controls

Reacting to the large number of municipal officers who appeared either to have been defrauded by unscrupulous brokers or to have made unauthorized investment decisions, a number of commentators blamed the municipalities' derivatives disasters on inadequate internal controls and unsophisticated or uninformed investment officials. The emphasis on internal management controls emerged early in the debates on derivatives investment reform. In 1992, the G30 stated that its survey of dealers and end-users of derivatives revealed inadequate internal systems for processing information and making decisions about risk. The 1994 Orange County meltdown confirmed the belief that derivatives losses resulted in large part from poorly managed decisionmaking procedures and internal reporting. Congressman Markey and Senator Riegle also focused on the need for internal management controls when they introduced new legislation to regulate the derivatives markets. A succession of government regulators, from CFTC officials to Securities and Exchange Commission (SEC) division directors to city chief financial officers, agreed. Practicing attorneys affirmed the diagnosis, focusing on the lack of adequate oversight and authorization. In the strongest statement of this position, SEC Market Regulation Division Director Richard Lindsey suggested that the derivatives disasters arose not from a crisis of systemic risk or "glaring deficiencies in the current regulatory structure," but from "fraudulent practices or a lack of understanding of the degree of risk by both sellers and buyers, and inattention to the importance of internal controls." A broad range of commentators also concluded that derivatives losses were generated by unsophisticated investment officials, in many cases goaded on by unscrupulous brokers. Florida municipalities themselves pled broker fraud and lack of sophistication. Even the Government Finance Officers Association admitted that there were serious questions about different municipalities' sophistication in the derivatives market.
Myth of Procedure: Derivatives Investment Reform

Although St. Petersburg's $40 million loss was only on paper, and the portfolio partially recovered, the recent bankruptcy of Orange County\textsuperscript{87} and significant losses in state and local government investment portfolios across Florida\textsuperscript{88} prompted immediate concern about investment professionals and internal controls at both the local and state levels. St. Petersburg's experience seemed to support the general diagnosis of procedural inadequacy, as rapid increases in the concentration and sophistication of derivatives assets in municipal portfolios had been associated with rogue behavior in Orange County and the City Colleges of Chicago.\textsuperscript{89} A former financial advisor raised increasingly pointed questions regarding St. Petersburg's derivatives investments, causing the city to hire independent auditors KPMG Peat Marwick to probe his complaints and allegations of wrongdoing.\textsuperscript{90} The auditors and the City Council investigated and analyzed the city's investment policies and decisionmaking system over the course of nine months.\textsuperscript{91}

B. The Procedure-Based Solutions: G30 and Florida Statutes

Based on the assumption that internal control failures and actions by unsophisticated or unsupervised investment officials were the root of the problem, a number of commentators proposed checks-and-balances-based procedural solutions. SEC Market Regulation Division Director Lindsey, for example, remarked that "[a]ll market participants need to regularly assess the quality of their internal control systems, and to make

\begin{footnotesize}
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\item[87] See Smith, supra note 22 (referring to Orange County and Barings Securities derivatives crises in comparison with St. Petersburg situation).
\item[88] See Shields, supra note 5 (reporting on Florida government investment losses in derivative portfolios).
\item[89] See Brocklehurst, supra note 2 (discussing Orange County); Wayne, Local Governments, supra note 1 (discussing Chicago).
\item[90] See Neusner, supra note 35 ("The auditors from Peat Marwick were hired by the city to probe [former city financial advisor Frank] Strahsmeier's complaints, made after he lost the contract to consult for the city."); Smith, supra note 83 (reporting that former financial advisor Frank Strahsmeier had been "dogging [St. Petersburg City Treasurer Jeff] Spies for months over the city's derivative investments, questioning whether Spies followed proper procedures . . .").
\item[91] See Neusner, supra note 35 (reporting outside auditor KPMG Peat Marwick's recommendations regarding changes in investment procedure and policy, and St. Petersburg Mayor David Fischer's proposal to reduce authorized derivative exposure to 25% of portfolio); Smith, supra note 22 (reporting the debate on the recommendation to "yank back the limit on derivative investments to 10 percent of the portfolio" and support for zero percent exposure); Adam C. Smith, Council Nears Changes on Investment Policy, ST. PETERSBURG TIMES, Dec. 6, 1995, at 1 [hereinafter Smith, Council Nears Changes] (reporting approval of recommendations to reduce CMO exposure to 10% of portfolio); Adam C. Smith, Trolleys to Shuttle Downtown Visitors, ST. PETERSBURG TIMES, Jan. 5, 1996, at 1 [hereinafter Smith, Trolleys] (reporting preliminary approval by council of revised investment policy to limit derivative exposure to 10%); Smith, supra note 39 (reporting approval of new investment policy reducing derivatives exposure to 10% and providing for independent oversight committee, reduced maturity of investments, more disclosure from dealers, and quarterly reports to council members).
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adjustments appropriate to any new derivatives activities in which they may seek to engage.92 Among the earliest and best developed procedural reform suggestions were the G30 report and the Florida written investment policy.

1. G30 Recommendations

In July 1993, the G30 published a report on the global derivatives industry, describing the nature and state of the industry at large and setting forth twenty recommendations for dealers and end-users in the derivatives market.93 While the recommendations were presented as "not necessarily the only means to good management,"94 they were offered as a "benchmark" against which derivatives dealers and end-users could measure their own practices.95

The G30 report first determined that a vast number of derivatives dealers and end-users did not have adequate procedural mechanisms in place.96 The report suggested implementing procedural mechanisms to reduce significantly the potential for derivatives investment losses.97 This view was echoed by other commentators who believed that the G30 report provided a strong foundation of adequate internal management controls.98 The G30 itself stated that such control and risk mechanisms are the most serious aspects of derivatives reform,99 and commentators have agreed that the application of its general principles is a key component of derivatives loss prevention.100

92 Lindsey Testimony, supra note 19.
93 See G30 STUDY, supra note 17. The study describes itself as the "first comprehensive effort to take stock of what the [global derivatives] industry has learned, and to broaden awareness of the more successful management approaches." Id. at 7.
94 Id.
95 Id. The 20 specific recommendations for dealers and end-users were grouped into six different areas: general policies; valuation and market risk management; credit risk measurement and management; enforceability; systems, operations, and controls; and accounting and disclosure. The 20 recommendations can be summarized by reference to nine basic principles. See id. at 6-7.
96 See id. at 61-62.
97 See id. at 3.
98 See, e.g., Lindsey Testimony, supra note 19 ("Many of the financial losses discussed below might well have been avoided—or at least limited—if the parties had implemented internal control systems along the lines recommended by the Group of Thirty."); Derivatives Market: Hearings Before the House Subcomm. on Telecomm. & Fin., 103d Cong. (1994) (testimony of Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System) ("The Group of Thirty report . . . lays out these [risk management] elements, and banking companies in the United States and abroad are aggressively pursuing the goal of comprehensive, state-of-the-art risk management systems.")
99 See G30 STUDY, supra note 17, at 7, 43.
100 See supra notes 77-83 and accompanying text.
2. The Florida Statute

Procedure advocates also called for reform at the state level. In Florida, following the wave of derivatives losses suffered by Florida municipalities as well as the Florida state treasurer's own investment portfolio,\(^ {101}\) the Florida legislature began debating a series of proposals to restrict investments, including creating a State Investment Policy Committee to oversee local government investments, restricting the authorized types of investments, and requiring written investment policies.\(^ {102}\) In 1995, the legislature settled on a measure requiring local governments to adopt written investment policies and to present an annual report on their investments.\(^ {103}\) These plans were to be adopted by October 1, 1995, by the governing body of any unit of local government, and were to cover "any public funds in excess of the amounts needed to meet current expenses."\(^ {104}\)

This measure applied to St. Petersburg as well as other municipalities, and was designed to enable municipalities to avoid future derivatives losses. Like-minded advocates in Louisiana, Texas, and California suggested that similar investment policy measures would enable municipalities in these states to avoid derivatives investments losses.\(^ {105}\)

In January 1996, following passage of the Florida statute, the St. Petersburg City Council changed the city's investment policy.\(^ {106}\) It reduced the maximum investment allowed in CMO instruments to 10% of the total portfolio; moved to appoint an independent oversight committee to review the city's portfolio; shortened the maximum maturity of investments from thirty years to seven years; required enhanced disclosure from dealers; and required quarterly reports on the portfolio to City Council members.\(^ {107}\)

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\(^ {101}\) Florida newspapers reported paper losses of $25 million in Escambia County, $8 million in Collier County, and $40 million in St. Petersburg, as well as $269 million in losses in the Florida Treasurer's investment portfolio as a result of "risky" derivative investments under former Treasurer and Insurance Commissioner Tom Gallagher. See Shields, supra note 5.

\(^ {102}\) See Cohen, supra note 18, at 392-93 (describing Florida state legislative proposals for municipal investment reform following the Escambia County CMO debacle); Shields, supra note 5 (reporting on new policy proposals in Florida legislature).

\(^ {103}\) See Fla. Stat. ch. 218.415 (1995) (requiring local government bodies to adopt written investment policies that would, among other things, have to authorize any derivative investments explicitly); see also Gerard Shields, Lawmakers: Protect Taxpayer Investments, ORLANDO SENTINEL, May 11, 1995, at C5 (reporting on passage through legislature of Rossin-Klein bill containing requirements for written investment policy and annual reporting measure).

\(^ {104}\) See Fla. Stat. ch. 218.415 (1995); see also id. ch. 218.415(1) ("The investment policy shall apply to funds under the control of the unit of local government in excess of those required to meet short-term expenses.").

\(^ {105}\) See Morrison, supra note 10 (discussing Texas); Morrison, supra note 11 (discussing California); Richtmyer, supra note 11 (discussing Louisiana).

\(^ {106}\) See St. Petersburg, Fla., Res. 96-59 (Jan. 18, 1996).

\(^ {107}\) See id.; Smith, supra note 39 (reporting on passage of new investment policy).
III. Rejecting the Procedure Explanation

An examination of St. Petersburg’s background and circumstances reveals that neither inadequate management controls nor unsophisticated investment caused St. Petersburg’s derivatives investment losses. St. Petersburg’s foray into derivatives investments, unlike that of many other municipalities, did not occur in a vacuum of policy, structure, or sophistication. Instead, St. Petersburg’s investment portfolio in general, and its derivatives holdings in particular, were managed in the context of a structured and formal system of explicit, written investment policy authorization, investment disclosure, and regular recordkeeping and reporting. Independent investigation revealed that the city had complied with all of these procedures and processes. Furthermore, and quite unusually, St. Petersburg’s investment authorities were skilled and financially sophisticated individuals with investment experience and expertise.

St. Petersburg did increase its CMO portfolio dramatically, in concentration and volatility, and did shift to a risky policy of active trading; both of these factors made it more vulnerable to the 1994 interest rate increase. However, it did so in the context of well-developed systems, pursuant to established, democratic procedures, and under the supervision and direction of informed and sophisticated investment managers. Whatever caused the city’s derivatives losses, the factors enumerated by the procedure explanation simply were not present in St. Petersburg.

A. Detailed and Informed Investment Policies

Unlike many other municipalities at the time, St. Petersburg had detailed written investment policies. These policies were enacted by the City Council as resolutions and ordinances, and were revised through formal amendments. These policies shaped and controlled the city’s investments in all securities, including derivatives, and were closely observed by the City Finance Director and Treasurer Jeff Spies.

1. The 1987 Policy

St. Petersburg’s 1987 investment policy (the “1987 Policy”), which remained in effect until 1993, was a detailed, well-structured document

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108 See Gerald J. Miller & Brian B. Stanko, Disclosure of Financial Instrument Risk by Government Entities, GOVT. ACCT. J., Fall 1995, at 29, 32 (reporting general lack of uniform guidelines on state and local officials’ management of public assets and survey results indicating that 76% of the members of the state and local officials’ association had little or no knowledge about derivatives); Shields, supra note 5 (reporting that 50% of county governments in Florida did not have written investment policies).
passed with the full endorsement of the City Council. On September 3, 1987, the City Council adopted Resolution No. 87-678, allowing the city to invest in the different financial instruments authorized by the written investment policy as a legitimate exception to the restrictions of the Florida statute. The Resolution outlines objectives, guidelines, specific investment criteria and limitations, systems and reporting requirements, and detailed substantive limitations on and authorization requirements for the management of the city's investment portfolio. In fact, in 1991, the Municipal Treasurers' Association of the United States and Canada (MTA), as part of the MTA's Investment Policy Program, awarded the City of St. Petersburg a Certification of Excellence for having a written investment policy of the highest caliber.

The 1987 Policy explicitly authorized the city's investment in particular instruments, including specific types of derivatives. Thus, as early as 1987, the City Council explicitly authorized investment of up to 10% of the city's portfolio in Freddie Mac, Fannie Mae, and Ginnie Mae CMOs. 

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109 St. Petersburg, Fla., Res. 87-678 (Sept. 3, 1987).
110 St. Petersburg, Fla., Ordinance 990-F (Sept. 3, 1987).
111 FLA. STAT. ch. 166.261 (1995) (restricting local government investments to six classes of financial instruments, including securities issued or guaranteed by Fannie Mae, Ginnie Mae, and Freddie Mac).

The Resolution specifies a number of features of the 1987 Policy, including (1) its scope, encompassing all city funds; (2) its investment objectives, primarily the preservation of capital and secondarily the reasonable maximization of return, maintenance of liquidity, and management of risk through diversification; (3) the standard of prudence, defined along the lines of the classic "prudent person" standard; (4) investment performance and reporting criteria, requiring quarterly to annual reporting to the city manager; (5) investment maturity and liquidity requirements, with investments limited to a maximum of five years and with no more than 40% in securities maturing in less than three years; (6) the composition of an investment advisory group, including internal and external financial personnel and advisors; (7) risk and diversification provisions, establishing diversification as a policy goal; (8) criteria for selection of financial intermediaries and issuers, based on state and federal law and regulations and city residency; (9) provisions for third-party custodial agreements; (10) internal controls, including recordkeeping, documentation, control, and internal and external auditing; (11) investment selection criteria, detailing specific financial instruments authorized for investment; and (12) the policy amendment process, requiring consideration and presentation by the finance director to the city manager, and approval by the City Council. See St. Petersburg, Fla., Res. 87-678 (Sept. 3, 1987).

112 See MUNICIPAL TREASURER'S ASS'N OF THE U.S. AND CANADA, MEDIA ADVISORY (Aug. 1991) (on file with author) (reporting to press that MTA awarded Certifications of Excellence to fourteen cities, including St. Petersburg); Memorandum from Jeff Spies, Manager, Capital Finance & Cash Management, City of St. Petersburg, to Richard Hickman, Public Information and Marketing Director, City of St. Petersburg 1 (Aug. 27, 1991) (on file with author) (reporting award of Certification of Excellence to St. Petersburg). The policy recognized was essentially the 1987 Policy with changes and additions to the investment selection section. See infra Part III.A.2.

113 The 1987 Policy's section on instrument selection outlines in great detail the types and concentration of investments that were authorized by the City Council. See St. Petersburg, Fla., Res. 87-678 § 1(XI) (Sept. 3, 1987). An abridged summary of the authorized investments, their concentrations and maturities can be seen in Figure 1. See app. fig.1.

114 The 1987 Policy authorized investments in Federal Instrumentalities (including Fannie
2. Amendments to the 1987 Policy

In subsequent amendments to the 1987 Policy, the City Council authorized substantive changes in the composition of the investment portfolio and increased the maximum portfolio exposure to CMO securities. First, the City Council on May 5, 1988, amended the 1987 Policy to add commercial paper to the list of authorized investments and to liberalize the investment selection limitations. Specifically, the amendments increased the maximum allowed portfolio exposure of the Local Government Surplus Funds Trust Fund and Banker Acceptances, and decreased the required minimum investment in Direct U.S. Obligations. With regard to CMO holdings, the City Council amended the 1987 Policy to combine the Federal Agencies and Instrumentalities categories' maximum authorized portfolio exposures of 10% each for a total maximum exposure to these securities of 20%.

Second, on May 2, 1991, the City Council authorized investment in Adjustable U.S. Government Securities Mutual Funds. It subsequently increased the allowed portfolio exposure to these securities on February 20, 1992. Again, the City Council formally approved substantive changes in the portfolio composition; they were informed of the investment portfolio's performance, and established detailed formal limitations for the portfolio.

3. Explicit Authorization of Active Investment Policy

The City Council directly participated in the shift to an increasingly aggressive investment position in 1992. On March 12, 1992, the City Council passed Resolution No. 92-218, significantly liberalizing the investment selection requirements and limitations of the amended 1987 Policy. This resolution increased the maximum portfolio exposure for the SBA to 25% and eliminated the minimum portfolio exposure requirement for Direct U.S. Obligations and U.S. Government Securities. More
importantly, the Resolution significantly increased the allowed portfolio exposure to Federal Instrumentalities to 40%, explicitly noting that these included CMOs. Thus, the City Council authorized the shift to an aggressive investment strategy involving significant investments in CMOs through the formal written amendment process established by the investment policy.

The City Council proceeded to authorize additional liberalization of the 1987 Policy with regard to CMO holdings. On June 11, 1992, it passed Resolution No. 92-503, which increased the final maturity limitations on direct investments from five years to thirty years, explicitly establishing "a maximum duration for all Collateralized Mortgage Obligations of fifteen (15) years or less at the date of purchase," and retroactively ratifying all current investments as authorized under this revised policy. The City Council also authorized investment in Asset-Backed Securities on August 6, 1992. In December 1992, the City Council explicitly authorized investment in IOs and PAC IOs from Federal Instrumentalities and CMO bonds, allowing up to 20% of the Federal Instrumentalities portfolio or 8% of the total portfolio to be invested in these CMOs, with no one position representing more than 5% of the total or having an initial average life in excess of ten years.

4. The 1993 Policy

On May 6, 1993, the City Council passed a new written investment policy (the "1993 Policy"), retaining all of the substantive objectives, requirements, procedures, and practices of the 1987 Policy, but compiling the substantially expanded set of authorized investment selection categories. The 1993 Policy created a new category of Collateralized Mortgage Obligations and authorized investment of up to 40% of the portfolio in these CMO securities. It thus reiterated the earlier series of resolution amendments and authorizations passed by the City Council regarding CMO investments, but moved further by establishing CMOs as a separate and specifically authorized investment category with detailed substantive limitations.

123 "Increase the maximum portfolio for Federal Instrumentalities to 40% from the currant [sic] 10%. This investment type includes Collateralized Mortgage Obligations." Id. para. III.
127 See St. Petersburg, Fla., Res. 93-363 (May 6, 1993). As with the 1987 Policy, the City Council also passed an ordinance enabling the city to invest in accordance with the new 1993 Policy. See St. Petersburg, Fla., Ordinance 95-G (May 6, 1993). An abridged summary of the 1993 Policy authorized investment categories appears in Figure 2. See app. fig.2.
128 See St. Petersburg, Fla., Res. 93-363 § 1(X)(C), (D), (F) (May 6, 1993).
5. Aftermath and the 1996 Policy

In response to the long examination of the portfolio performance in 1995, and additional recommendations by KPMG Peat Marwick, the City Council passed a revised and substantially more detailed investment policy on January 18, 1996 (the “1996 Policy”). The major changes in the 1996 Policy were the addition of a glossary of terms, forms, and questionnaires for advisors and issuers, and the substantive reduction of allowable portfolio exposure to CMOs from 40% to 10%.

Thus, changes in the composition and investment strategy of St. Petersburg’s investment portfolio were explicitly approved through formal, written resolutions passed in compliance with the procedural requirements of a detailed written investment policy.

B. Well-Structured Investment Practices

In keeping with the written investment policies established by the City Council, the St. Petersburg finance department established formal structures for managing and tracking investments, as well as for reporting to the decisionmaking authorities on the performance and value of the investment portfolio.

1. Detailed Procedures and Equipment

In accordance with the requirements of the investment policy, St. Petersburg’s investment managers and professionals established a number of specific procedures and used specialized equipment to manage the investment portfolio. First, as early as 1987, Finance Director and Treasurer Jeff Spies established a clear structure for decisionmaking and investment tracking, and even produced a flow chart illustrating the decisionmaking process. Second, St. Petersburg’s finance team purchased investment analysis and inventory software to enable it to “allocate interest earnings, inventory all investments, analyze bond swaps and complete ‘what-if’ analysis.”

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129 See St. Petersburg, Fla., Res. 96-59 (Jan. 18, 1996). This was accompanied by an enabling ordinance just as the 1987 Policy and the 1993 Policy had been. See St. Petersburg, Fla., Ordinance 221-G (Jan. 18, 1996).

130 See St. Petersburg, Fla., Res. 96-59 § 6 (Jan. 18, 1996).

131 See Memorandum from Jeffrey G. Spies, Manager, City of St. Petersburg Capital Finance & Cash Management, to Robert D. Obering, City Manager, & Larry Arnold, Chief Assistant City Manager, City of St. Petersburg I (Sept. 10, 1987) (on file with author) (detailing system flow chart for investment procedures identifying investment decision points).

132 Id. at 3.
2. Systematic Reporting and Communication

The city’s finance professionals satisfied the communication and reporting requirements of the investment policies by publishing quarterly financial reports containing important information regarding the general value and earnings of the investment portfolio. At the most basic level, each of the reports presented trailing-quarter-plus-twelve-months data detailing the total investment in the portfolio, the portfolio’s earnings, and its month-to-month rates of return. Each report also included a schedule detailing the investments in the portfolio at the end of the quarter under analysis.

Second, the reports provided detailed information on the value and type of the city’s CMO investments. From the March 31, 1991, quarterly report on, the finance director reported on the specific investments in CMOs, as well as changes in and the outlook for the interest rate and fixed-income market environments. The new investments in CMO products were also noted from the September 30, 1991, quarterly report on.

Third, the reports provided increasingly sophisticated information about the derivatives investments and portfolio performance. By the March 31, 1991, quarterly report, the finance director was reporting the amortized book value of the overall investment portfolio, instead of the par investment value, reflecting a closer “mark-to-market” awareness as the instruments and investments began to grow more complex.

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Additionally, having shifted to an active investment strategy in December 1991, the quarterly reports presented additional information about the trading profits being earned on a month-to-month basis.\textsuperscript{138} By the March 31, 1993, quarterly report, the market value of the investments, as well as their amortized book value, were presented in the reports.\textsuperscript{139} By September 1993, the quarterly reports differentiated between CMO classes.\textsuperscript{140} In the September 30, 1994, quarterly report, the treasurer also began to present comparative investment analysis as well as graphic information on the maturity distribution of the investments in the portfolio.\textsuperscript{141}

These quarterly reports were widely distributed among the investment and policymaking staff. From April 1991 to April 1992, these reports were distributed by then-Finance Director R.L. Ashton to various city personnel, from the assistant city manager to the administrator of internal services.\textsuperscript{142} They may also have been distributed to the mayor and City Council. From October 1992 through January 1996, these quarterly reports were distributed to the mayor and City Council.\textsuperscript{143}

\textsuperscript{139} See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12) Months Ended March 31, 1993 (Attachment "A") (on file with author).
\textsuperscript{140} See supra note 136.
\textsuperscript{141} See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12) Months Ended September 30, 1994 (Attachments "D", "E", & "F") (on file with author). In the March 31, 1995, quarterly report, for example, the treasurer presented a sample investment risk analysis predicting values and behavior of the CMOs in the event of different interest rate shifts. See Jeff Spies, City of St. Petersburg Report on Investment Activities for the Twelve (12) Months Ended March 31, 1995, (Attachment "E") (on file with author).
\textsuperscript{142} See Memorandum from R.L. Ashton, Finance Director, City of St. Petersburg, to L.E. Arnold, Chief Assistant City Manager, City of St. Petersburg, through Bruce A. Hall, Deputy City Manager, Community Development and Fiscal Management, City of St. Petersburg 1 (Apr. 3, 1991) (on file with author) (including Quarterly Investment Report); Memorandum from R.L. Ashton, Finance Director, City of St. Petersburg, to Rick Dodge, Assistant City Manager, City of St. Petersburg, through John Habgood, Administrator, Internal Services, City of St. Petersburg 1 (Oct. 7, 1991) (on file with author) (same); Memorandum from R.L. Ashton, Finance Director, City of St. Petersburg, to Rick Dodge, Assistant City Manager, City of St. Petersburg, through John Habgood, Administrator, Internal Services, City of St. Petersburg 1 (Apr. 9, 1992) (on file with author) (same).
\textsuperscript{143} See Memorandum from Norman W. Hickey, City Manager, City of St. Petersburg, to Mayor and City Council, City of St. Petersburg 1 (Oct. 22, 1992) (on file with author) (forwarding quarterly investment portfolio report); Memorandum from R.L. Ashton, Finance Director, City of St. Petersburg, & Jeff Spies, Treasurer, City of St. Petersburg, to David Fischer, Mayor, City of St. Petersburg, through John Habgood, Administrator, Internal Services, City of St. Petersburg 1 (Apr. 16, 1993) (on file with author) (same); Memorandum from David J. Fischer, Mayor, City of St. Petersburg, to City Council, City of St. Petersburg 1 (Oct. 21, 1993) (on file with author) (same); Memorandum from David R. Fischer, Mayor, City of St. Petersburg, to City Council, City of St. Petersburg 1 (Apr. 21, 1994) (on file with author) (same); Memorandum from David J. Fischer, Mayor, City of St. Petersburg, to City Council, City of St. Petersburg 1 (Nov. 8, 1994) (on file with author) (same); Memorandum from David J. Fischer, Mayor, City of St. Petersburg, to City Council, City of St. Petersburg 1 (Nov. 2, 1995) (on file with author) (same); Memorandum from David J. Fischer, Mayor, City of St. Petersburg, to City Council, City of St. Petersburg 1 (Jan. 17, 1996) (on file with author) (same).
C. Informed and Authorized Execution

On the basis of St. Petersburg’s sophisticated investment investigation and evaluation process, the auditors from KPMG Peat Marwick cleared the city and its financial officers of any possible negligence or wrongdoing:

[The investigators from KPMG Peat Marwick] said the city’s heavy investments in derivatives, now considered as a highly risky maneuver, were perfectly fine under the city’s rules. . . . The investigators’ report . . . rejected nearly all of [former financial advisor Frank] Strahsmeier’s criticisms and recollections, and supported earlier assertions by city officials that the audit would yield no startling revelations.144

This appraisal bears no relationship to the generalized assumptions of most commentators regarding unauthorized or unsophisticated investment officials, and the failures of management controls.

D. Sophisticated Investment Actors and Systems

St. Petersburg’s key investment managers and decisionmakers were unusually financially sophisticated, at least at the individual level. City Treasurer Jeff Spies was primarily responsible for the overall derivatives investment strategy, as well as its trading decisions and operations.145 David Fischer, mayor of St. Petersburg, was also significantly involved with the most general level of investment portfolio knowledge.146 In addition, the City Council was involved with the investment portfolio, approving all changes in the direction, overall composition, and strategy of the investment portfolio from 1991 to 1995.147 Both Spies and Fisher were

144 Neusner, supra note 35.
145 The City Council specifically empowered the city treasurer to make investment decisions. See, e.g., St. Petersburg, Fla., Res. 96-59 §§ 8-10 (Jan. 18, 1996) (delegating authority to treasurer and establishing investment procedures and internal controls); St. Petersburg, Fla., Res. 93-363 § 1(IX) (May 6, 1993) (defining the finance director’s authority and establishing internal controls). See also Noam M.M. Neusner, Criticism Spurs City Review of Investments, TAMPA TRIB., May 9, 1995, St. Petersburg, at 2 (reporting KPMG Peat Marwick’s finding that existing system of investment management was “very broad” and gave treasurer “too much control with too little oversight”).
146 Fischer was elected into the position of “the strong mayor” in St. Petersburg, which shifted from a government run by appointed administrator to one run by an elected official. See Alicia Caldwell, Emerging from Battle, Fischer Finds He Has Muscle, ST. PETERSBURG TIMES, Mar. 24, 1993, at 7BX (describing “strong mayor” structure and Fischer’s plans and competence to oversee $353 million budget). Fischer asserted authority as mayor and consolidated power over various administrative arms of the government, including control over fiscal services and direct authority over city administration. See Monica Davey, Fischer Shuffles Top Aides, Takes Control of Services, ST. PETERSBURG TIMES, July 7, 1993, at 1.
147 See, e.g., St. Petersburg, Fla., Res. 96-59 § 16 (Jan. 18, 1996) (requiring City Council oversight and approval of changes in investment policy); St. Petersburg, Fla., Res. 93-363 § 1(XI) (May 6, 1993) (same); St. Petersburg, Fla., Res. 87-678 § 1(XII) (Sept. 3, 1987) (same).
extremely sophisticated and professional individuals who were familiar with investment management. The City Council was also relatively well informed, if not as sophisticated.

1. Qualified City Treasurer

Jeff Spies, city treasurer during the 1991-1995 derivatives investment period, was an educated, experienced, and sophisticated investment manager. Spies was particularly well informed regarding municipal finance and investments in derivatives, and quite established, with a good reputation.

Perhaps most tellingly, Spies himself stated explicitly that he understood the nature of the CMO holdings. In 1995, following the city’s $40 million loss, St. Petersburg declined to join in lawsuits by other Florida municipalities and a broad range of other investors that suffered significant derivatives losses, despite invitations by those investors’ lawyers. Instead, Spies stated: “I would have no basis. . . . I can’t imagine how I or the city could say we didn’t have knowledge of a particular investment.”

Thus, St. Petersburg’s treasurer was a sophisticated and highly competent investment advisor and manager; he had substantial financial training and expertise, served as a leader and expert in the world of municipal finance and investment, and believed both ex ante and ex post that he understood the nature of the derivatives market and its risks.

2. Experienced Mayor

David Fischer, mayor during the critical 1991-1995 period, was also a financially sophisticated actor. Fischer was endorsed and elected in part because of his financial expertise. Fischer was, as a general matter, well

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148 Spies earned finance and accounting degrees from DePaul University in Chicago, IL, and worked as a CPA in an accounting firm there before transferring to the firm’s Tampa offices. See Robert Trigaux, Burned by Derivatives, ST. PETERSBURG TIMES, Feb. 5, 1995, at 1H.

149 Spies worked for several municipalities as finance director and assistant city manager before starting to work for St. Petersburg in 1987. He had successfully managed St. Petersburg’s roughly $200 million to $300 million investment portfolio since 1987. See id.

150 See id.

151 Spies was a prominent board member of the Municipal Treasurers’ Association (MTA), a national trade group in Washington, DC, and regularly wrote on investment issues for the MTA’s monthly publication, Treasury Notes. See id. One major newspaper characterized Spies as “an acknowledged authority on municipal finance.” Michael A. Hiltzik, Information Gap Revealed on Bond Borrowing, L.A. TIMES, Dec. 6, 1994, at A1. Mayor Fischer publicly remarked that he considered Spies “probably one of the better municipal money managers around.” Trigaux, supra note 148 (quoting Mayor Fischer).

152 See Smith, supra note 22.

153 Id.

154 See Mark Journey, 3 Ex-Mayors Back Fischer, ST. PETERSBURG TIMES, Mar. 17, 1993, at
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educated and experienced\textsuperscript{155} in both finance\textsuperscript{156} and politics;\textsuperscript{157} he is also described as having specialized experience in municipal finance, having worked as a consultant and financial advisor for thirty-two years before retiring in 1989.\textsuperscript{158}

3. Informed City Council

Less information is available about the financial expertise of the members of the City Council. It appears that they were significantly less knowledgeable than Spies or Fischer about the nature of derivatives and other investments. According to press accounts in 1995, the City Council members were unaware of the actual nature and types of investments that they were approving, even though they received reports and passed detailed resolutions. Ed Cole, a City Council member, argued in August 1995 that the City Council still needed a better understanding of what the CMO investments actually were.\textsuperscript{159} Other City Council members were reported as stating their concern that city financial officers "made poor decisions and did not indicate how risky derivatives can be."\textsuperscript{160}

Other press reports similarly indicate that the City Council approved the liberalization of the investment policy and the shift to active investment without understanding what derivatives actually were: "[C]ouncil members several times in recent years actually approved loosening restrictions to allow more aggressive investing. Before any members had heard of derivatives investments, the council approved allowing their staff to invest as much as forty percent of the portfolio in that sort of instrument."\textsuperscript{161} Recalling the liberalization of the city's investment policy, one City Council member stated that "I'm not sure we knew exactly what we were doing [with regard to the policy changes the City Council had approved]. . . . It came in the midst of a glowing financial report, and it sounded like a minor modification."\textsuperscript{162}

\begin{itemize}
\item \textsuperscript{1} ("Three former mayors endorsed incumbent David Fischer . . . citing his leadership, financial expertise and temperament.")
\item \textsuperscript{155} Fischer received a bachelor's degree in business administration from Duke University in 1955, and then worked in the municipal bond industry for 28 years. See Caldwell, supra note 146.
\item \textsuperscript{156} Fischer was president and chief administrative officer of the brokerage firm Fischer, Johnson, Allen & Burke from 1977 to 1986. See id.
\item \textsuperscript{157} Fischer served on the City Council from 1975 to 1979, chairing the various other city committees and commissions during the early 1990s, and becoming president of the Chamber of Commerce in 1982. See Mark Journey & Alicia Caldwell, Fischer Will Seek Re-Election, ST. PETERSBURG TIMES, Dec. 17, 1992, at 1.
\item \textsuperscript{158} See id.
\item \textsuperscript{159} See Noam M.M. Neusner, City's Investments Losing Less Money, TAMPA TRIB., Aug. 2, 1995, St Petersburg, at 1.
\item \textsuperscript{160} Id.
\item \textsuperscript{161} Smith, Council Nears Changes, supra note 91.
\item \textsuperscript{162} Id. (quoting City Council Member Connie Kone).
\end{itemize}
In sum, two of the key actors in the investment management process, the treasurer and the mayor, were sophisticated financial players with significant experience in municipal finance and investment. They appeared to be cognizant of the nature of the investments and risks they were assuming with the increase in CMO holdings. Less can be said for the City Council, which, according to press reports, did not fully understand the nature and risk of derivatives investments. However, as discussed above, the City Council was kept fully informed as to the nature of the investments and their performance over time.

Thus, in general, St. Petersburg had a well developed, documented, and integrated investment management and approval system. The City Council enacted and reviewed detailed and substantive written investment policies, and revised them multiple times from 1991 to 1995, including explicitly to authorize the CMO investments. The city investment managers established and adhered to solid procedures and possessed sophisticated equipment. Finally, the city had specialized, skilled, and financially sophisticated investment managers in Treasurer Spies and Mayor Fischer. The apparent lack of understanding by the City Council appears the only inadequacy of the St. Petersburg system.

E. Conclusion

St. Petersburg’s formal democratic decisionmaking procedure, well-defined internal investment plan, detailed quarterly reports, and sophisticated investment managers substantially undercut the attempt to explain the city’s derivatives losses as resulting from a failure of internal controls.

It could be argued that the City Council could have been more informed or could have made a greater effort to understand the risks involved. However, this is less a failure of internal controls or procedure than a substantive problem involving the sophistication of the City Council itself. Furthermore, it is unclear whether any checks-and-balances, internal management, or risk control systems could have corrected for the City Council’s putative ignorance. Indeed, if the City Council’s ignorant but formally perfect execution of the substantial internal control procedures supports any argument, it is that such checks-and-balances explanations are inherently limited by the boundaries of substantive knowledge. It should be reemphasized that there was no finding of any impropriety on the part of Spies or Fischer, nor even a suggestion that they acted negligently. Whether the City Council should be considered negligent when, arguably, its agents acted in a reasonable manner, is a far more complex question.

The upshot of this discussion is that the interest-rate sensitive CMO
portfolio was not the result of failing internal controls or unsophisticated investment managers. This portfolio, which ultimately proved financially disastrous, was deliberately established pursuant to full procedural checks-and-balances, with complete disclosure, and under sophisticated management.

IV. Rejecting the Procedure Solution

An examination of St. Petersburg's policies and procedures undermines the persuasiveness of the procedural solution. This Part establishes that St. Petersburg was already in substantial if not complete compliance with both the G30 recommendations and the Florida investment policy statute at the time it experienced its dramatic derivatives losses. Complying with these checks-and-balances-based procedural regimes did not prevent St. Petersburg's derivatives losses. Thus, the prescriptive half of the procedure mantra, namely that checks-and-balances-based procedure would have prevented or will prevent derivatives losses, appears at best inapplicable to and at worst refuted by the experience of St. Petersburg.

A. Substantial Compliance with the G30 Recommendations

St. Petersburg's investment policy and approval system, regular and detailed reporting procedures, and sophisticated investment managers substantially conformed to the major relevant checks-and-balances recommendations made by the G30.163 In matters of decisionmaking, reporting, and investing, St. Petersburg was already following each recommendation completely: its investment plan and policy were approved by the City Council; it employed authorized and sophisticated personnel to invest in derivatives products; and it provided more than ample disclosure and accounting. In only one area, market valuation and market risk, did St. Petersburg not wholly satisfy the G30 recommendations. Even there, Spies and Fischer appear to have understood the market risks involved and tried

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163 The G30 made twenty recommendations in six areas, which it then sorted into nine categories. See G30 STUDY, supra note 17. The general areas included: general policies; valuation and risk management; credit risk measurement and management; enforceability; systems, operations, and controls; and accounting and disclosure. See id. at 6. The G30's recommendations on credit risk measurement and management are not relevant in this case because St. Petersburg invested in CMO derivatives. The principal of these derivatives was generally guaranteed by the government, so a discussion of credit risk is not particularly meaningful. Likewise, I will not discuss the G30's fourth suggestion ("[a]ssess the credit risk arising from derivatives activities based on frequent measures of current and potential exposure against credit limits"), id. at 7 (Summary); see also id. at 13-15 (Recommendations 10-11), and fifth suggestion ("[r]educe credit risk by broadening the use of multi-product master agreements with close-out netting provisions, and by working with other participants to ensure legal enforceability of derivatives transactions within and across jurisdictions"), id. at 7 (Summary); see also id. at 16-17 (Recommendations 13-15).
to disclose them to the City Council prior to making major changes to the portfolio.

1. Procedural Safeguards: Policy Determination; Professional Assistance; Accounting and Disclosure

St. Petersburg's system of investment decisionmaking and reporting complied with all of the G30's recommendations as to internal control procedural safeguards. First, the G30 specifically suggested that derivatives dealers and end-users "[d]etermine at the highest level of policy and decision making the scope of its involvement in derivatives activities and policies to be applied."\(^{164}\) This recommendation includes establishing "overall risk management and capital policies approved by [the dealer's or end-user's] board of directors", reviewing these policies as conditions change, clearly defining the purposes and policies for derivatives use, and ensuring that the policies are approved and enforced at all levels of management.\(^{165}\)

St. Petersburg clearly fulfilled this requirement and addressed the major concern of unauthorized investing. Its written investment policies delineated objectives; clearly authorized and delegated the power to make investment decisions; defined in detail authorized investment types, concentration levels, and exposure levels; and established controls and principles.\(^{166}\) The mayor and City Council members themselves approved these policies through formal votes, and reviewed and revised the policies multiple times over the relevant period.

Second, St. Petersburg's highly sophisticated staff and management systems conform to the G30's suggestion that derivatives end-users "[a]uthorize only professionals with the requisite skills and experience to transact and manage the risks, as well as to process, report, control, and audit derivatives activities."\(^{167}\) This recommendation advises that specialists should control the derivatives activities of the organization, but also warns against reliance on a few specialists, emphasizing that it is important for management and support staff to understand not only the derivatives, but also the broader business context.\(^{168}\)

St. Petersburg again substantially complied. Spies and Fischer were financially sophisticated individuals who apparently understood the nature

\(^{164}\) Id. at 7 (Summary).
\(^{165}\) Id. at 9 (Recommendation 1).
\(^{167}\) G30 STUDY, supra note 17, at 8 (Summary); see also id. at 18 (Recommendation 16).
\(^{168}\) See id. at 18 (Recommendation 16).
of the derivatives investments the city was making.\textsuperscript{169} Of course, the portion of the recommendation warning against reliance on that expertise might be a more important and valid criticism of St. Petersburg’s investment system: while Spies and Fischer had the expertise and understood the derivatives and their risks, the City Council—effectively “upper management”—may not have.\textsuperscript{170}

Additionally, St. Petersburg’s investment system satisfied the G30’s proposals for management information systems.\textsuperscript{171} This recommendation advises that the information systems employed by end-users in their derivatives operations be appropriate to the nature, size, and complexity of their derivatives operations.\textsuperscript{172} Specifically, the G30 recommended that end-users’ systems should, at a minimum, be able to group exposures and analyze aggregated risk meaningfully.\textsuperscript{173} St. Petersburg had sophisticated computer systems with the ability to track individual investments in derivatives and other securities as well as to produce aggregated risk analysis.\textsuperscript{174}

Finally, St. Petersburg’s extensive reporting and accounting systems complied with the G30’s suggestion to “[v]oluntarily adopt accounting and disclosure practices for international harmonization and greater transparency, pending the arrival of international standards.”\textsuperscript{175} The G30 recommended that end-users account for derivatives used to manage risks in order to make the method of recognizing income consistent with the risks being managed.\textsuperscript{176} Derivatives not used for risk management should be marked to market.\textsuperscript{177} In addition, the financial statements of the end-users of derivatives should include information about management’s attitude to financial risks, the use of instruments, and the monitoring and controlling of those risks; accounting policies; analysis of positions at the balance sheet date; and analysis of the credit risk inherent in those positions.\textsuperscript{178}

This recommendation in the G30 report was intended mainly to promote disclosures to investors, rather than to internal management. St. Petersburg’s internal reporting, however, appears to be in substantial

\begin{itemize}
  \item \textsuperscript{169} See supra Part III.D.1-2.
  \item \textsuperscript{170} See supra Part III.D.3.
  \item \textsuperscript{171} The G30’s eighth suggestion was to “[e]stablish management information systems sophisticated enough to measure, manage, and report the risks of derivatives activities in a timely and precise manner.” G30 STUDY, supra note 17, at 8 (Summary); see also id. at 18-19 (Recommendation 17).
  \item \textsuperscript{172} See id. at 18 (Recommendation 17).
  \item \textsuperscript{173} See id. at 19 (Recommendation 17).
  \item \textsuperscript{174} See supra Part III.B.1.
  \item \textsuperscript{175} G30 STUDY, supra note 17, at 8 (Summary); see also id. at 19-21 (Recommendations 19-20).
  \item \textsuperscript{176} See id. at 19 (Recommendation 19).
  \item \textsuperscript{177} See id. (Recommendation 19).
  \item \textsuperscript{178} See id. at 21 (Recommendation 20).
\end{itemize}
compliance with the principles of the reporting recommendation. St. Petersburg did not hold any derivatives for purposes other than investment; therefore, it could and did report its derivatives valuations and income on par with the income from other investment sources. While it did not begin reporting mark-to-market values for the derivatives in the portfolio until September 30, 1993, all reports thereafter provide market valuation numbers. The introductory remarks prefacing each report do discuss some of the city’s perspectives on investment management. When combined with the investment policies’ statements of objectives and risk management, these remarks seem to present a fairly comprehensive statement of the city’s attitude towards risk, its use of instruments, and its internal controls and monitoring.

2. Market Valuation and Market Risk Quantification

St. Petersburg also substantially complied with the G30’s recommendations for market valuation and market risk quantification, though its adherence in this area was somewhat less complete. The G30 suggested “[valu[ing] derivatives positions at market, at least for risk management purposes.” The recommendations instructed dealers to monitor at least daily their derivatives positions based on mid-market levels less costs, and they instructed end-users to consider doing so regularly as well. Furthermore, the G30 suggested that an end-user “[q]uantify its market risk under adverse market conditions against limits, perform stress simulations, and forecast cash investing and funding needs.” Finally, the G30 suggested creating separate systems, with separate personnel, for overseeing credit and risk management decisions. According to the recommendations, independent credit

179 See Quarterly Reports, supra note 24.
180 See id.
181 See id.
182 See, e.g., St. Petersburg, Fla., Res. 96-59 (Jan. 18, 1996) (establishing internal control mechanisms, including authorization of investment function, audit provisions, and risk assessment); St. Petersburg, Fla., Res. 93-363 (May 6, 1993) (same); St. Petersburg, Fla., Res. 87-678 (Sept. 3, 1987) (same).
183 G30 STUDY, supra note 17, at 7 (Summary); see also id. at 9-10 (Recommendations 2-3).
184 See id. at 9 (Recommendation 2).
185 See id. at 13 (Recommendation 13).
186 Id. at 7 (Summary); see also id. at 10-13 (Recommendations 4-7, 9). The recommendations suggest specifically that sources of revenue and risk should be clearly understood, see id. at 10 (Recommendation 4); that market risk should be measured as “value at risk,” using probability analysis and an appropriate (one-day) time horizon, see id. at 10-11 (Recommendation 5); that stress simulations both of market fluctuation and market inactivity should be performed, and appropriate contingency plans developed, see id. at 11-12 (Recommendation 6); and that cash investing and funding requirements should be forecasted, see id. at 12 (Recommendation 12).
187 See id. at 8 (Summary) (recommending that municipalities “[e]stablish market and credit risk management functions with clear authority, independent of the dealing function”); see also id. at
Managers should approve credit exposure standards, set and monitor credit limits, review call credits and monitor credit risk concentrations, and review and monitor risk reduction arrangements. These functions should be clearly authorized and independent from the transactional functions.

Spies and St. Petersburg appear to have complied to a limited degree with these recommendations. St. Petersburg tracked the market value of the CMO holdings from its March 31, 1993, quarterly report on. Before that time, the reports presented book values, not market-based accounting. Although it is unclear whether Spies internally marked the portfolio every day, it seems likely, given his computer and systems purchases in 1987, that he would monitor market valuations. Moreover, Spies’s active involvement in the investing in and trading of these derivatives suggests that he would have regularly monitored the instruments’ market valuations.

Nevertheless, Spies, and St. Petersburg did not completely comply with the G30’s recommendation on market risk quantification. Press reports suggest that the City Council was much less aware of the nature and risk of the CMO holdings than either Spies or Fischer. In addition, St. Petersburg does not seem to have performed a market risk analysis along the lines suggested in the G30 report. Stress simulations and market risk analysis only begin to appear in communications between Spies and the City Council in 1995, and even there the stress scenario used is a simplistic simulation, not the value-at-risk analysis suggested in the G30 report. Although Spies may have done internal calculations, none appear to have been disclosed to the City Council.

Despite this omission, Spies does appear to have been aware of the timing and cash funding risk of the CMO holdings; he deliberately avoided

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12, 15, 19 (Recommendations 8, 12, 18). Specifically, independent market risk managers should develop and monitor adherence to risk limit policies; design and execute stress simulations to measure all variations of market fluctuation; assess and report market and other risk components’ effect on revenue; monitor and calibrate the variance between actual and predicted portfolio volatility; and review, approve, and reconcile pricing and valuation models used by various parts of the organization. See id. at 12 (Recommendation 8).

188 See id. at 15 (Recommendation 12).

189 See id. at 15 (Recommendation 12). Additionally, the report recommends that end-users and dealers should “clearly designate who is authorized to commit their institutions to derivatives transactions.” Id. at 19 (Recommendation 18).


191 See id.

192 See supra Part III.B.1.

193 See supra Part III.D.3.


195 See generally Quarterly Reports, supra note 24. One of the few recommendations that KPMG Peat Marwick made regarding the management of the portfolio was that Spies prepare quarterly reports for the City Council laying out the worst-case scenario. See Neusner, supra note 25.
leveraging the portfolio and ensured that there would be enough diversification to provide adequate cash for the city’s operating needs. Additionally, although St. Petersburg did not begin market marking its derivatives investments until it had invested in derivatives for over a year, it complied with most of the G30’s recommendations on market risk disclosure prior to the interest rate spike in 1994. Finally, although the City Council may not have been fully aware of the market valuation and risk of the investments, both Spies and Fischer were extremely well informed, and the investments were approved by City Council resolutions.

3. Summary

In sum, St. Petersburg’s investment management system substantially conformed to the relevant recommendations of the G30 report. The city’s formal policies, decisionmaking procedures, investment managers, and reporting and disclosure system conformed with the G30’s emphasis on involving the highest level of decisionmaking in derivatives investment policy and on ensuring sufficient transparency and authorization to facilitate intelligent, informed investment decisions. Although St. Petersburg did not completely comply with the G30’s recommendations on market valuation and market risk assessment, the city came into market-valuation compliance before the derivatives losses occurred, and the City Council authorized the derivatives investments. The city’s enactment, repeated review, and amendment of its detailed written investment policies address the G30’s concern about making and periodically reviewing clear policy statements about derivatives investment. In accordance with the G30’s recommendation, Spies was reporting mark-to-market data on a quarterly basis by March 1993. By initiating stress testing and market risk assessment in 1995, the city started to address the G30 suggestion that these practices be regularly instituted, although the City Council was probably less knowledgeable than Spies and Fischer about the city’s balance between risk and reward. Finally, St. Petersburg’s sophisticated and experienced treasurer and mayor match the profile of highly skilled investment professionals and decisionmakers, in accordance with the G30 recommendations. The City Council’s apparent lack of understanding is at the heart of the G30 warning against overdependence on sophisticated managers when investing in poorly understood financial instruments. Nonetheless, analyzed against the background of the G30’s concerns, it appears that St. Petersburg did the vast majority of things right; the city’s policies, practices, and personnel appear to comport with most of the

196 See Trigaux, supra note 148 (distinguishing St. Petersburg’s problems from those of Orange County, and attributing to Spies cash flow and market risk considerations and management).
recommendations of the G30 report.

B. Compliance with the Florida State Investment Policy Legislation

St. Petersburg also satisfied \textit{ex ante} all of the requirements of the Florida investment policy legislation. Unlike other states' regulations, which barred municipalities from investing in derivatives entirely, in addition to requiring written investment policies and procedural reforms, the Florida statute is almost purely procedural. It establishes that each municipality must adopt a framework outlining objectives, guidelines, internal controls, and reporting requirements, and it requires that permissible investment types be listed and approved. St. Petersburg's investment policies—arguably as far back as 1987—conformed with these requirements.

A quick overview of the most important requirements of the statute will demonstrate St. Petersburg's compliance. First, all of St. Petersburg's investment plans complied with the statute's general requirements to set standards for objectives, performance, and prudence. For example, the statute established a clear hierarchy of objectives for the investment of local government surplus funds. The statute stated explicitly that the highest priority would be "the safety of principal and liquidity of funds," and that optimizing investment returns would be a secondary objective. Each of St. Petersburg's written policies contained exactly these ordered objectives. The statute also required the development of performance measurements, and St. Petersburg's various investment policies required that performance standards be established. The statute further mandated that the investment policy include a description "of the level of prudence and ethical standards to be followed," including adoption of the "Prudent Person Rule." Each of the investment policies in place during this period in St. Petersburg had exactly this rule as the standard of prudence.

In addition, St. Petersburg's investment plans had always contained

\begin{itemize}
  \item \textsuperscript{197} FLA. STAT. ch. 218.415 (1995); \textit{see also} id. ch. 218.415(2) (requiring explicit statement of investment objectives, which "shall include safety of capital, liquidity of funds, and investment income, in that order").
  \item \textsuperscript{198} \textit{See id.}
  \item \textsuperscript{199} \textit{See St. Petersburg, Fla., Res. 96-59 § 5 (Jan. 18, 1996) (stating primary objective of preserving principal, with generating returns a secondary priority); St. Petersburg, Fla., Res. 93-363 § 1(II) (May 6, 1993) (same); St. Petersburg, Fla., Res. 87-678 § 1(II) (Sept. 3, 1987) (same).}
  \item \textsuperscript{200} \textit{See FLA. STAT. ch. 218.415(3) (1995).}
  \item \textsuperscript{201} \textit{See St. Petersburg, Fla., Res. 96-59 § 9 (Jan. 18, 1996) (requiring that performance standards be established); St. Petersburg, Fla., Res. 93-363 § 1(IV) (May 6, 1993) (same); St. Petersburg, Fla., Res. 87-678 § 1(IV) (Sept. 3, 1987) (same).}
  \item \textsuperscript{202} \textit{FLA. STAT. ch. 218.415(4) (1995).}
  \item \textsuperscript{203} \textit{See St. Petersburg, Fla., Res. 96-59 § 3 (Jan. 18, 1996) (establishing prudent person standard); St. Petersburg, Fla., Res. 93-363 § 1(III) (May 6, 1993) (same); St. Petersburg, Fla., Res. 87-678 § 1(III) (Sept. 3, 1987) (same).}
\end{itemize}
provisions limiting the range of investments and setting up internal controls; these provisions also complied ex ante with the statute. For example, the Florida statute required the investment policy to list authorized investments, and further provided that derivatives must be specifically authorized by the investment plan and “may be considered only if the unit of local government’s chief financial officer has developed sufficient understanding of the derivatives products and has the expertise to manage them.”  

Leverage or reverse repurchase agreements are allowed only to the extent that they provide liquidity and can be sustained by local government resources and expertise. Again, St. Petersburg had long been in compliance. The city’s investment policies clearly established the nature of authorized investment instruments, including limits on concentration, and limits on specifically named derivatives.  

In its investment policies, St. Petersburg explicitly provided for limits on security issues, issuers, and maturities in keeping with the size and nature of the public funds, as required by the statute. The city’s investment policies also satisfied the statutory requirement to have structuring provisions for liquidity purposes.  

Additionally, St. Petersburg’s investment policies had long had internal controls provisions and reporting requirements that met the standards subsequently set by the statute. The statute required that the investment plan “establish a system of internal controls which shall be in writing and made a part of the government entity’s operational procedures,” to be reviewed periodically by independent auditors. The St. Petersburg investment policies all contained explicit provisions for the required internal control mechanisms. In addition, the statute required that the chief financial officer make regular, publicly available reports to the governing body on the type, book value, market value, and income earned by the securities in the portfolio. St. Petersburg came into full

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205 See id.
211 See St. Petersburg, Fla., Res. 96-59 § 10 (Jan. 18, 1996) (establishing minimum internal controls); St. Petersburg, Fla., Res. 93-363 § 1(IX) (May 6, 1993) (same); St. Petersburg, Fla., Res. 87-678 § 1(X) (Sept. 3, 1987) (same).
compliance with the statute in its 1996 Policy;\textsuperscript{213} its 1993 and 1987 Policies provided less detail on what information was required\textsuperscript{214} and had different reporting requirements.\textsuperscript{215}

Other less relevant provisions required by the statute—including diversification,\textsuperscript{216} authorized dealers,\textsuperscript{217} custodial agreements,\textsuperscript{218} repurchase agreements,\textsuperscript{219} competitive bids,\textsuperscript{220} and opt-out provisions\textsuperscript{221}—also had long been part of St. Petersburg’s investment policies.

In short, St. Petersburg’s investment policies, as early as 1987, contained provisions almost completely satisfying the requirements of the
1995 Florida investment policy statute. Each of the provisions prescribed by the statute had been incorporated into the investment policies and enabling ordinances enacted, reviewed, and revised by the City Council. This is not entirely surprising, given that the MTA, including Spies himself, helped draft the investment policy statute and propel it through the Florida legislature.222

V. Discussion

The policies, practices, and personnel of the St. Petersburg investment management and approval system appear to have met substantially all of the recommendations of the G30 report and the requirements of the Florida investment policy statute. Consequently, St. Petersburg's derivatives losses undermine the procedure-based explanation that derivatives losses result from a failure of internal controls or the presence of unsophisticated investment officials. Furthermore, St. Petersburg's experience suggests that sophisticated investment policies, practices, and personnel, even in substantial compliance with government recommendations, are insufficient to prevent significant derivatives losses. Procedure is therefore inadequate both as an explanation and as a solution.

Given the procedural safeguards St. Petersburg had in place, the $40 million paper loss it suffered on its derivatives investments appears puzzling. How could there be such a sizable loss with such solid procedural policies and skilled personnel in place? This Part considers four different possible explanations for the losses St. Petersburg experienced following the collapse in CMO values. It illustrates that procedural failure and the principal-agent problem do not adequately explain St. Petersburg's derivatives losses. Instead, this Part argues that problems of risk perception and the unfortunate outcome of a rational risk-return strategy offer a more convincing diagnosis.

This Part then applies these conclusions to recently enacted regulations providing disclosure and mark-to-market requirements for derivatives investments, contending that while the additional information required by these reforms might enhance risk assessment and calculations of risk and return, it might also confuse investment managers, increase costs without real benefits, or reduce returns below levels commensurate with the risk of the investments. Ultimately, these reforms may prove no more effective than the previous reform efforts in averting derivatives investment losses. Consequently, this Part concludes that procedure-based explanations for derivatives losses are at best inadequate and at worst misleading, and that procedural reforms should be examined skeptically.

222 See Shields, supra note 99.
Myth of Procedure: Derivatives Investment Reform

A. Presenting Explanations

1. Procedural Failure Redux

The least compelling explanation for St. Petersburg’s derivatives losses is that St. Petersburg’s compliance with the G30 recommendations and the Florida investment policy statute was insufficient because the procedural safeguards advanced by the G30 and the Florida legislature were themselves inadequate. According to this formulation, better designed procedures might have averted the crisis. Less ambitiously, a procedure-based critique might argue that St. Petersburg did not comply sufficiently with the G30 recommendations.

At first glance, St. Petersburg’s experience appears to support this procedure diagnosis. For example, the City Council did not appear to understand adequately the risks posed by the city’s derivatives investments, as evidenced by admissions by City Council members that they rubber-stamped the increases in the city’s CMO holdings without understanding the nature of derivatives or the risks involved. Additionally, St. Petersburg’s late shift to market valuation of its derivatives holdings could be viewed as inadequate compliance with the proposed procedure. Recent reforms requiring mark-to-market accounting for derivatives offer further support for the argument that St. Petersburg’s procedures were inadequate to prevent the losses the city ultimately suffered.

However, the procedure diagnosis does not satisfactorily explain several aspects of St. Petersburg’s experience. First, St. Petersburg did substantially comply with the G30 recommendations and the Florida investment policy statute. Even if the City Council was unaware of the risks involved, the sophisticated treasurer and mayor should have obtained some benefits from following these recommended procedural guidelines. However, no such benefits are readily apparent. Moreover, although St. Petersburg did not implement a mark-to-market accounting system until September 1993, this shift still occurred six months before the portfolio value losses in March 1994. When juxtaposed against St. Petersburg’s

223 Cf. Morrison, supra note 13 (describing CFTC official’s view that control procedures would have solved derivatives problems).
224 See supra Part III.D.3.
225 See supra notes 189-91, 196-200 and accompanying text.
227 See supra Part IV.
228 See supra Part IV.A.2.
substantial compliance with the G30 and Florida guidelines, it seems implausible that the city’s slight deviations from the recommended procedures made such a significant difference.

Second, even if St. Petersburg was only in limited compliance with the recommended procedural safeguards, the magnitude of the city’s losses—$40 million out of $290 million—is comparable to those suffered by other municipalities without similar procedures and policies. For example, in Charles County, Maryland, where derivatives investments were made in direct contravention of that municipality’s written investment policy, the city’s investment principal shrank from $30 million to $24 million because of derivatives trading losses, a loss of 20% of portfolio value comparable to the 14% paper loss St. Petersburg experienced. While not on the same scale as the City Colleges of Chicago’s losses, St. Petersburg’s losses were significant and in the same range as those of non-procedurally-compliant municipalities and public institutions. Thus, the procedural safeguards St. Petersburg had in place seem to have made little difference.

Third, even if checks-and-balances procedural mechanisms might help limit losses, the explanation that procedures were insufficient provides no means to determine why a given level of procedure is inadequate or how much procedure would be sufficient. It should be recalled that many government officials who were strong advocates of procedural safeguards suggested that the kind of recommendations made by the G30 and the Florida legislature would be sufficient to curtail derivatives losses. The fact that St. Petersburg was in full compliance with the Florida statute suggests that this kind of procedure did not protect, and indeed could not have protected, against derivatives losses in all cases.

Finally, the argument that checks-and-balances-based procedure would by itself enable municipalities to avoid derivatives losses ignores the possibility that a municipality might intentionally engage in a high-risk, high-return investment strategy that, by definition, carries the potential for significant losses. St. Petersburg’s shift to an active trading policy and a highly interest-rate-sensitive position may illustrate such a conscious high-risk strategy. Although this proposition will be discussed at greater length below, the procedure hypothesis is undermined by its failure to address this possibility.

In conclusion, St. Petersburg’s compliance with the G30 and Florida

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229 See O’Dell, supra note 3.
230 See Wayne, Local Governments, supra note 1 and accompanying text.
231 In some cases, of course, this kind of procedure might very well avert some hidden disaster. Barings is one example where disclosure might have stopped the trading earlier. See Morrison, supra note 13.
232 See Morrison, supra note 13 and accompanying text.
233 See infra Part V.A.4.
procedural guidelines, the existence of comparable losses in noncompliant municipalities, the ambiguity about what level of procedure is sufficient, and the failure to consider that a municipality might intentionally engage in a high-risk strategy weigh heavily against the validity of the procedure-based explanation for derivatives losses.

2. Principal-Agent Problem

Equally uncompelling is the argument that the St. Petersburg losses were caused by differences between the incentives of the city's investment authorities and those of its City Council or populace—the age-old principal-agent problem. This argument essentially states that principals, in this case the taxpayers or City Council, have different motivations and risk profiles than their agents, here the treasurer and other investment officials.234 The principal-agent explanation posits that, because finance officers are not risking their own money when they are investing it, they are not deterred by potential losses. At the same time, finance officers are evaluated based on the gains they generate for their municipalities. These two factors create a bias towards progressively riskier investments, especially in times of low interest rates.235 Solving this problem might be possible through better procedural controls over the actions of finance officers, but a similar principal-agent problem could arise with a city council. There, the differences in incentives for the politicians (staying in power as long as possible) and the community they represent (having a financially stable government that provides adequate services) create a conflict between the need for earnings and revenues in the short run and the bias against immediate tax increases. Some commentators have suggested that such differences in incentives fueled the risky investing by Orange County and other municipalities.236 According to the principal-agent formulation, St. Petersburg's losses resulted from a failure to align the interests of the people and the city with those of the investment managers and City Council members. In other words, the procedures were not correctly calibrated to address the alignment of interests.

There is very little evidence supporting a principal-agent explanation for St. Petersburg’s derivatives losses. Indeed, most of the facts cut against such an explanation. All of Spies's actions as treasurer were in compliance

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235 See Geckeler, supra note 18, at 293-95 (arguing that municipal finance officers have significant bias towards high risk investments because of poor incentive structures).

with and approved by City Council resolutions.\textsuperscript{237} No allegations were ever made that the treasurer and the City Council were pursuing different investment objectives or strategies, and an independent auditing firm likewise found no wrongdoing or divergence of interests.\textsuperscript{238} Furthermore, there were no allegations of City Council-voter splits, and neither the mayor nor the City Council members were removed from office following the derivatives losses. Finally, and, perhaps most tellingly, Spies was retained as treasurer following the derivatives losses.

Moreover, there is reason to believe that Spies, as a well known figure in the municipal treasurers' community,\textsuperscript{239} would have suffered national reputational damage had he chosen to speculate with St. Petersburg's investments or otherwise acted to further his personal interests at the expense of the city. In fact, the principal-agent problem in this case may have even been turned on its head. Spies's role in the MTA, rather than promoting rogue behavior or divergence from the City Council's wishes, might have increased his propensity to establish sound investment policies and to become more sophisticated in pursuing the City Council's objectives. Spies drafted St. Petersburg's investment policy long before working on the Florida legislation, and gained City Council approval for his activities.

3. Risk Assessment Challenges

A more subtle and compelling explanation for St. Petersburg's derivatives losses looks away from procedure to the difficulties inherent in assessing risk itself. This explanation posits that fundamental limits on individuals' abilities to interpret and understand risk may undercut the effectiveness of any procedural safeguard.

In a variety of contexts, commentators have argued that individuals have significant difficulties in assessing and correctly quantifying risk, particularly in complex situations. According to many scholars, individuals suffer from biases, problems of estimation, bad heuristics, psychological artifacts, and other cognitive limitations that severely impact their ability to assess risk meaningfully.\textsuperscript{240} As Paul Slovic has noted, most people rely on intuitive risk judgments, called "risk perceptions," to evaluate

\begin{itemize}
\item \textsuperscript{237} See supra Part III.C.
\item \textsuperscript{238} See id.
\item \textsuperscript{239} See supra notes 149-51 and accompanying text.
\end{itemize}
hazards.\textsuperscript{241} Their perceptions are heavily influenced by media reporting and anecdotal experience with hazards.\textsuperscript{242} Furthermore, even the production of contrary evidence may not alter individuals’ initial understanding of risks: “New evidence appears reliable and informative if it is consistent with one’s initial beliefs; contrary evidence tends to be dismissed as unreliable, erroneous, or unrepresentative.”\textsuperscript{243} If people lack strong initial opinions, “the opposite situation exists—they are at the mercy of the problem formulation.”\textsuperscript{244} Thus, in assessing risks, individuals form and retain strong, non-statistically-based perceptions and understandings.

Individuals also attach more significance to discrete, high-impact events than chronic exposure when estimating risk,\textsuperscript{245} and tend to have unwarranted optimism about personal risks.\textsuperscript{246} Because of biases against negative evidence, the desire not to be a victim, and cognitive errors, individuals tend to underestimate their own personal risk.\textsuperscript{247}

The limitations of individual risk assessment suggest that even sophisticated individuals like Spies and Fischer might underestimate the risks posed by a high level of CMO investment, in that they would tend to rely only on limited perceptions of risk from their past experiences and would have difficulty establishing new measurements of risk. In addition, they would tend to focus only on catastrophic changes in risk and tend to interpret the riskiness of their position optimistically.

Under this explanation, any procedure might prove inadequate to direct investment decisions concerning complex and risky securities like CMOs, whether or not perfect information was available.\textsuperscript{248} In this context, even if the City Council, treasurer, and mayor all had perfect information regarding the city’s derivatives investments, it is unlikely that they could have adequately assessed the risk inherent in the derivatives instruments. Under this view, procedures cannot be calibrated to correct a risk analysis failure.

Some evidence appears to support the explanation that risk assessment and perception limitations may have contributed to the derivatives losses. Although Spies claims to have understood the nature of

\textsuperscript{241} See Paul Slovic, Perception of Risk, 236 SCIENCE 280, 280 (1987).
\textsuperscript{242} See id.
\textsuperscript{243} Id. at 281; see also Donald T. Hornstein, Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis, 92 COLUM. L. REV. 562, 605-07 (1992) (discussing the role of heuristics in individual risk perception).
\textsuperscript{244} Slovic, supra note 241, at 281.
\textsuperscript{245} For example, Slovic notes that the public focuses primarily on high-risk events, such as Three Mile Island. See id. at 283.
\textsuperscript{247} See id.
\textsuperscript{248} See generally Slovic, supra note 240.
the derivatives he was purchasing and their level of risk, the market itself poorly understood how CMOs would perform in a volatile-interest-rate environment. The fact that extremely sophisticated hedge fund traders and scores of other institutional investors were damaged by unexpected CMO performance during the spring 1994 interest rate hike$^{249}$ suggests that the City Council and treasurer were operating in an environment of general information failure regarding the nature of the CMO securities.

The risk assessment failure explanation applies even more strongly to the City Council. While Spies seemed generally aware of the risks involved in CMO investments,$^{250}$ City Council members admitted after the derivatives losses that they had approved increasing CMO exposure without fully comprehending the risks involved.$^{251}$ Indeed, it does appear either that the City Council’s actual tolerance for risk changed once the city’s losses were scrutinized by the press, or that it did not assess the risk of its strategy correctly at its initiation.$^{252}$ The City Council was not entirely oblivious to the risks of derivatives investments, of course; the fact that St. Petersburg’s increasing CMO exposure was approved in increments suggests that the City Council must have been aware that risks were increasing. Likewise, the City Council’s shift to an active management policy indicates it had some understanding of the risks involved, as does the fact that the city did not leverage investments in CMOs or invest in non-government-guaranteed CMO hedge funds.$^{253}$ However, while these policies hedged against worst-case-scenario risks, even this minimal level of correct risk assessment occurred within the context of the general market inability to assess the risk of CMO securities.

In conclusion, although the risk assessment failure explanation does not entirely explain St. Petersburg’s experience, it does provide an important insight into the cause of St. Petersburg’s losses—an explanation wholly independent of a failure of procedure. St. Petersburg investment officials perceived some risks and hedged against them, but while the ultimate downside and the general increasing exposure to risk were understood and approved, the CMO risks were fully grasped neither by all actors in the decision-making process in St. Petersburg, nor by the market itself.

This conclusion is, of course, in some tension with the argument that checks-and-balances-based procedural reforms could not provide at least a

$^{249}$ See, e.g., Gary Weiss, The $700 Million Mystery, BUS. WK., Dec. 18, 1995, at 76 (discussing the collapse of David Askin’s mortgage-backed derivative funds following the March 1994 interest rate hike).

$^{250}$ See supra Part III.D.1.

$^{251}$ See supra Part III.D.3.

$^{252}$ See id.

$^{253}$ See supra note 202 and accompanying text.
partial solution for this problem. It is true that the City Council expressed its ignorance of the true nature of the risks involved and that the G30 disclosure proposal (as well as the mark-to-market requirements of the Florida statute) might indeed provide additional information to help overcome this risk perception problem. However, under the circumstances of St. Petersburg's experience, it is unlikely that this kind of enhanced risk disclosure would have made much of a difference, as the City Council still may have proven unable to assess the additional information correctly—a possibility bolstered by the general market's inability to assess that information. In any event, the risk-assessment-failure explanation implies at a minimum that internal procedural controls and disclosure alone, without some kind of additional substantive or risk-oriented safeguard, could not have prevented St. Petersburg's derivatives losses.

4. High-Risk/High-Return Strategy

The most persuasive explanation for St. Petersburg's derivatives losses, however, is that the city knowingly and intentionally engaged in a high-risk, high-return strategy that carried the potential for significant losses, and that those losses unfortunately, but not unexpectedly, occurred as a result of external market factors. This view holds that the procedures were adequately followed, that the actors were informed, and that the procedures succeeded at eliminating the risk they were designed to address. Procedural mechanisms under this view can help to eliminate errors of recordkeeping, information processing, and risk assessment at the level of investments. They can also help identify market risk, timing risk, and exposure. Procedure helps reduce risk based on errors of approval or information; it helps specify the degree of risk to be taken.

However, checks-and-balances procedural mechanisms are not designed to make true weightings of risk versus reward. In other words, procedural safeguards may have protected St. Petersburg from involuntary risk (fraud, mistake), but could not and did not protect it from the risks it decided to take based on potential reward (exotic, high-yield investments). While all instruments and exposures were approved in detailed substantive resolutions by the relevant authorities, the real question is not whether the process by which the investments were made was defective, but rather, more subtly, whether the procedure successfully eliminated other kinds of risk, such as fraud or mistake, and whether the risk/return ratio was knowingly chosen.

St. Petersburg did generate substantial above-market earnings on the portfolio in the early 1990s and, even taking into account the market

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254 See supra Part III.A.
losses, its portfolio appeared to perform well above comparable risk-free investments. St. Petersburg deliberately pursued riskier, higher-yield derivatives investments in what was then a lower interest rate market for traditional investments. Its reward—significantly larger returns from its passive investments and subsequent active trading strategy—was the result of engaging in relatively riskier investments. Under this view, St. Petersburg was perhaps like any other sophisticated investor; it consistently engaged in higher risk investments, with potentially higher returns, but in doing so exposed itself to potentially greater losses. This is not a puzzling failure of procedure, but rather an affirmation of the principle that with return comes risk.

The conclusions of the KPMG study, coupled with the fact that the city did not join the burgeoning crop of lawsuits filed by Florida municipalities regarding CMO investments, suggest that this fourth explanation might best explain the events in St. Petersburg. The city knowingly took an aggressive position in the market with the new securities it approved, despite having limited information, specific limits on treasurer-council communications, and full understanding of the risk associated with CMOs. The active management policy itself was approved, and each investment in a more sophisticated set of CMO derivatives products was validated. The City Council and the city appear to have known that the actions of the investment managers were aimed at a more risky strategy, and that they were approving greater concentrations of increasingly sophisticated securities. Indeed, the fact that they recognized Spies for his performance under these conditions indicates that—even if the City Council members were not aware fully of the risks of the securities they were purchasing—they were at least aware that they had delegated enormous and increasing discretion to Spies to make such investments. It should be reiterated that St. Petersburg reaped enormous rewards from this higher-risk strategy, a fact that also did not go unnoticed by the city.

The realization of market risk offers the most convincing explanation for St. Petersburg's losses. The actors were, of course, constrained in their access to information and ability to assess underlying risks. However, the City Council was relatively well informed of the nature and risk of underlying CMO assets, clearly had knowledge of the increasing level of

255 See supra Part I.A.2.
256 See id.
257 See id.
258 See Part III.D.3.
259 See id.
260 See Smith, supra note 22 (reporting that Spies received a plaque and $2,000 bonus from the City Council in October 1992 for his performance—an award given while he was working under loosened investment guidelines).
discretion granted to Spies regarding investments, and ultimately approved a higher-risk active management policy. Spies himself was well informed of the risks and the nature of the underlying CMO securities, yet helped the city assume that market risk. The strongest part of this explanation is, therefore, that the St. Petersburg experience involved the informed and understood assumption of risks—whether direct (by the treasurer and through the approvals of increased CMO exposure by the City Council) or indirect (by the City Council in delegating active management and investment type decisions to the treasurer)—that unfortunately were realized.

B. Evaluating Proposals

1. Existing Procedure-Based Reforms

The two most likely causes of St. Petersburg’s derivatives investment losses—risk assessment limitations and the realization of market risk as a consequence of a deliberate high-risk, high-return strategy—suggest that the effect of existing and future procedure-based reforms may be as limited as those of the G30 and Florida state legislature. They may cabin some risk, corral investment official “cowboys,” identify unscrupulous brokers, or even focus officials on specific risks. However, problems in risk perception and the pursuit of high-risk, high-return strategies may continue to generate significant future derivatives losses. Indeed, the causes of St. Petersburg’s losses imply that some of these procedural proposals may even be counterproductive.

This can be seen through an examination of the recent move to mark-to-market and market risk assessment procedural requirements for derivative securities. Since the experiences of St. Petersburg and other municipalities in 1994, the SEC, Government Accounting Standards Board (GASB), and Financial Accounting Standards Board (FASB) have issued a number of regulations and proposals that establish additional procedural requirements in an attempt to safeguard the public from the danger of derivatives.261 Designed specifically to protect investors from disasters like that in Orange County, the FASB262 and GASB263 standards essentially

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262 The FASB disclosure standard, known as FAS 119, requires disclosure of the face value and market risk of derivatives. See Reva B. Steinberg & Steven Blum, Accounting for Derivatives and Hedging Activities: The FASB Proposes an Answer to a Thorny Problem, INSIGHTS, Oct. 1996, at 23.
263 The GASB rule that went into effect on June 30, 1997, required governments and government investment pools to record the market value of their investments, including derivatives, in their annual financial reports. See id.; see also Katherine M. Reynolds, Regulation: SEC Unwavering
require investors to mark-to-market the value of their derivatives investments. The SEC requires that investors disclose accounting policies for derivatives and material market risks associated with derivatives use, both qualitatively and quantitatively.

The lessons of St. Petersburg illustrate that these procedural reforms may be extremely limited in effect, and perhaps counterproductive. First, risk assessment challenges suggest that even with additional information, investors and city councils will be unable to assess the value of derivatives products easily. Spies himself noted this objection to the GASB standard:

As a board member of the Municipal Treasurers Association, I think a lot of cities and small villages are going to have a hard time sorting out all the issues associated with fair market pricing. . . . You're going from absolutely nothing except for a footnote to a whole large-scale system for recording investments. This new standard is not going to be easily accepted.

Second, the lesson of risk assessment limitations suggests that such complex information may actually cause additional problems. Because the fair value disclosure requirement necessitates an estimate of a derivative security that may be illiquid, it can cause both increased inaccuracy and confusion. The aforementioned literature on risk assessment, which states that individuals latch onto specific information about risks, particularly in complex situations, further implies that this information may actually distort perceptions rather than provide a clearer understanding of these investments.

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264 See Reynolds, supra note 261.  
267 See Reynolds, supra note 261; see also Elstein, supra note 265 (discussing lack of information in disclosures); Katherine M. Reynolds, Regulation: SIA Opens Fire Again on FASB’s Draft Accounting Standards, BOND BUYER, June 23, 1997, at 32 (reporting Securities Industry Association complaint that the proposed FASB standard “unfairly singles out derivatives for fair value reporting and discourages prudential risk management”).  
268 See supra notes 240-43 and accompanying text.  
269 The Senate Banking Committee’s securities subcommittee heavily criticized both the SEC and FASB proposals for distorting appearances through selective disclosures: “Both the SEC and the FASB proposals, by focusing on derivative risk exposure in isolation from other risks faced by companies, perversely create the potential to present to investors a distorted and misleading view of company conditions and activities.” Reynolds, supra note 263 (quoting Senate Banking Committee report).
Myth of Procedure: Derivatives Investment Reform

The second lesson of St. Petersburg—that investment officials may deliberately engage in high-risk, high-return strategies—also shows that enhanced disclosure will not effectively prevent derivatives losses, and may indeed prove counterproductive. First, additional disclosure will not by itself prevent officials from engaging in high-risk strategies. Furthermore, although additional information may provide a better basis for initiating high-risk strategies, it appears that the investment information in mark-to-market disclosures provides little data to the investing official—instead, such information may actually distort incentives because of the way it differentially treats types of securities. By imposing costs selectively, this regulation may also distort incentives to invest.

Moreover, such a disclosure rule could be counterproductive by imposing costs on a system that does not need additional information. By requiring disclosures, the procedural rules add significantly to the cost of engaging in high-risk strategies without adding to the benefits, as noted by Spies and other investment officials. Such regulation may encourage investment officials to pursue lower-return strategies than they otherwise would have, in order to avoid the administrative costs.

Thus, the lessons of St. Petersburg indicate that existing procedural reforms will have limited effectiveness in staving off certain kinds of derivatives losses, and may even prove counterproductive by distorting information and imposing additional costs.

Of course, this does not imply that some additional internal controls, disclosure, or transparency will not enable other, less sophisticated municipal investors to avoid risky investments. It simply means that for the sophisticated investor with a correctly calibrated risk-return ratio, checks-and-balances procedural reforms offer limited benefits and can entail additional costs. The public policy decision is whether, in the aggregate, there are more sophisticated players who will benefit from the freedom from additional procedure, or unsophisticated players who need such procedure to limit their potential losses. Different states and

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270 See Elstein, supra note 265. One bank bond analyst scoffed at the information produced by such disclosures: “Show me an analyst that has taken the disclosures that you currently have on derivatives and made any meaningful use out of those disclosures. . . . I challenge you to find one instance. I have never seen it.” Id. (quoting Ethan M. Heisler, a bank bond analyst at Salomon Brothers).

271 See Reynolds, supra note 261.

272 See id. (“Because it is simpler not to determine fair value for off-exchange securities, portfolio managers will simply choose the exempt investments, which will severely limit earnings. . . .”); see also Cindy Skrzycki, On the Hill: Moves to Stamp out Derivatives Disclosure, WASH. POST, Apr. 4, 1997, at G1 (reporting former CFTC chairman Wendy Gramm’s arguments that the SEC’s rules will stifle the market’s ability to measure risk and create “side effects”).

273 See Reynolds, supra note 261; Skrzycki, supra note 272.

274 See Reynolds, supra note 261.
governments have set their standards differently, proposing additional substantive bans on certain kinds of investments or other requirements in some cases, and leaving procedure alone to disclose and clarify the risk in others.\(^\text{275}\)

As a final comment, it is interesting to note that three years after its passage, the Florida statute apparently has not been extensively implemented,\(^\text{276}\) while at the same time the mere institution of additional oversight boards in St. Petersburg has made the city's investment policy much more conservative.\(^\text{277}\) Procedure requires implementation and can also enable substantive changes in orientation.

2. Potential Substantive Limitations and Risk-Based Reforms

St. Petersburg’s experience does not suggest there are no reform proposals that can prevent derivatives investment losses. First, substantive restrictions on derivatives investments would probably curtail future losses. Some commentators favor outright bans on municipal investment in derivatives, while others advocate strict limitations on investment types where adequate managerial personnel are unavailable.\(^\text{278}\) These proposals could prevent losses simply by barring or tightly restricting any investment into derivatives. Commentators who are more skeptical about the competence of municipalities and the adequacy of market checks on these governmental actors have suggested an extension of suitability doctrine to this area of investment law.\(^\text{279}\) Although this approach might run into the same kinds of issues as other procedural attempts at a solution, it may present an external constraint on sellers of derivatives investments that would restrict exposure to derivatives.

Second, time and diversification limits on derivatives exposures could also help reduce potential derivatives losses by providing investment officials with a longer period of time to learn about the risks and behavior of different derivative securities. Limiting investments in higher-risk securities to those that have been traded for a longer period of time and whose behavior is better known could reduce risk assessment difficulties. For example, municipalities might ban investment in a new complex derivative for a "market evaluation period" of a year or two. High-risk

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\(^{275}\) See supra note 11; Cohen, supra note 18, at 92-93.


\(^{277}\) See David K. Rogers, City Primed for Water Well Windfall, ST. PETERSBURG TIMES, Aug. 22, 1998, at 1B.

\(^{278}\) See Romano, supra note 1, at 81-82 (questioning whether government actors should be at all involved in derivatives and advocating better internal controls).

strategies could still be pursued, but only with well understood derivative securities. While this might result in the loss of initial opportunities for early returns when the market for such securities is less competitive and efficient, it might help cabin the market risk taken by a municipal portfolio.280

Thus, following the St. Petersburg example, municipalities might enable their investment managers to invest in a range of securities if they: (1) follow written investment policies with safeguards similar to those of St. Petersburg in order to limit internal risks to a selected level; and (2) limit market risk by waiting to invest in highly sophisticated and innovative securities until they are better understood. This proposal would enable municipalities to control their internal decisions about risk and to set guidelines for their external market risks while retaining the ability to control their exposure to and return from different kinds of market risk. The internal controls should point towards an assessment of the external market risk.

Finally, municipalities could focus on substantive, as opposed to procedural, solutions involving risk education and communication, paralleling similar suggestions made in the environmental law context. Cass Sunstein has suggested that better, clearer information about risks in society will generate significant benefits that will serve the values of liberty, economic efficiency, and democracy.281 He further argues that informational strategies and policies are both possible and practically useful, in spite of the limitations imposed by error-producing heuristics, motivational distortions, information overload, and disclosure issues.282 Although Howard Latin suggests that public education and warning strategies may prove ineffective and even counterproductive because of people's failure or inability to understand or pay attention to warnings and information,283 information regarding the risks of derivatives might help the public avoid real risks and participate in the risk regulation process.284 Roberta Romano has echoed this sentiment in the derivatives context, suggesting that the correct policy would be to focus on improving the investment decisionmaking capacity of government entities and ensuring that there are informed and competent personnel.285

Thus, although the experience of St. Petersburg suggests strong
skepticism and caution when evaluating the effectiveness of any procedural reform proposal, substantive policies that are aimed at overcoming the problems of risk assessment and that take into account high-risk, high-return strategies may be successful in reducing the potential for derivatives investment losses.

Conclusion

Many municipalities suffered enormous financial losses from derivatives investments as a result of serious deficiencies in personnel, practices, and procedure. As a result, a significant number of public organizations and investment officials will undoubtedly benefit from adhering to proposals and regulations, like those of the G30 and the Florida state legislature, and even the new GASB, FASB, and SEC standards.

However, the St. Petersburg experience teaches three important and interrelated lessons about the causes of some derivatives investment losses and the nature of successful derivatives investment reform. First, checks-and-balances-based procedure by itself cannot always prevent derivatives investment losses, and the failure of such procedure does not offer a complete explanation for the municipal derivatives disasters of the 1990s. St. Petersburg’s experience demonstrates that compliance with G30 and Florida state procedural guidelines does not guarantee safety from an investment portfolio meltdown.

Second, the nature of risk assessment and intentional high-risk strategies by investment officials may provide a more robust explanation for some of the most significant derivatives losses of 1994, and perhaps of those likely to arise in the future. The limits of individual perceptions of risk and a deliberate high-risk, high-return strategy appear to have contributed to St. Petersburg’s losses and may help explain other municipalities’ derivatives investment nightmares as well.

Third, current and future procedure-based reforms, both non-substantive and non-risk-based, should be evaluated skeptically. The lessons of St. Petersburg suggest that these solutions may be deceptively incomplete and dangerously oversimplified. Such explanations and proposed solutions might not only be ineffective, but may actually be counterproductive.

Procedure has a role in explaining and thus averting derivatives investment disasters. But procedure as the entire explanation, or a complete solution, is simply a myth.
## Appendix

### Figure 1. St. Petersburg 1987 Policy Authorized Investment Categories.

<table>
<thead>
<tr>
<th>Investment Category</th>
<th>Portfolio Concentration</th>
<th>Maximum Maturity</th>
<th>Other Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Local Government Surplus Trust Fund</td>
<td>n.a. 20%</td>
<td>5 years</td>
<td></td>
</tr>
<tr>
<td>B. Direct U.S. Government Obligations</td>
<td>25% 100%</td>
<td>5 years</td>
<td></td>
</tr>
<tr>
<td>C. Federal Instrumentalities (including Fannie Mae, Freddie Mac and other mortgage securities)</td>
<td>n.a. 10%</td>
<td>5 years</td>
<td>maximum of 5% in any one type</td>
</tr>
<tr>
<td>D. Federal Agency Securities (including Ginnie Mae securities)</td>
<td>n.a. 10%</td>
<td>5 years</td>
<td>maximum of 5% in any one type</td>
</tr>
<tr>
<td>E. Non-Negotiable Certificates of Deposit (CDs)</td>
<td>n.a. 20%</td>
<td>2 years</td>
<td>maximum of 10% with any one issuer</td>
</tr>
<tr>
<td>F. Bankers Acceptance (U.S. only)</td>
<td>n.a. 15%</td>
<td>180 days</td>
<td>maximum of 5% with any one issuer</td>
</tr>
<tr>
<td>G. Non-Taxable Government Bonds</td>
<td>n.a. 10%</td>
<td></td>
<td>maximum of 5% with any one issuer</td>
</tr>
</tbody>
</table>

### Figure 2. St. Petersburg 1993 Policy Authorized Instrument Selections.

<table>
<thead>
<tr>
<th>Investment Category</th>
<th>Portfolio Concentration</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Maximum Maturity</th>
<th>Other Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Local Government Surplus Trust Fund</td>
<td>n.a.</td>
<td>25% (from 20%)</td>
<td>5 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. U.S. Government Securities (including Direct Obligations)</td>
<td>n.a. (from 25%)</td>
<td>100% (no change)</td>
<td>30 years (from 5 years)</td>
<td></td>
<td>maximum of 5% in any one type</td>
</tr>
<tr>
<td>C. Federal Instrumentalities</td>
<td>n.a.</td>
<td>40% (from 10%)</td>
<td>15 years (from 5 years)</td>
<td></td>
<td>maximum of 5% in any one type</td>
</tr>
<tr>
<td>D. Federal Agency Securities</td>
<td>n.a.</td>
<td>40% (from 10%)</td>
<td>15 years (from 5 years)</td>
<td></td>
<td>maximum of 5% in any one type</td>
</tr>
<tr>
<td>E. Adjustable Rate U.S. Government Securities Mutual Funds</td>
<td>n.a.</td>
<td>25% (from 0%)</td>
<td>Annually reviewed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Collateralized Mortgage Obligations</td>
<td>n.a.</td>
<td>40% (from 0%), with maximum of 20% of all CMO holdings in IO products</td>
<td>30 years, with 15 year pricing; IOs maximum 10 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Non-Negotiable Certificates of Deposit (CDs)</td>
<td>n.a.</td>
<td>20%</td>
<td>4 years (from 2 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Bankers Acceptance (U.S. or Foreign)</td>
<td>n.a.</td>
<td>20% (from 15%)</td>
<td>180 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Commercial Paper</td>
<td>n.a.</td>
<td>20% (from 0%)</td>
<td>1 year</td>
<td></td>
<td>A-1/P-1 only</td>
</tr>
<tr>
<td>J. Corporate Asset Backed Notes</td>
<td>n.a.</td>
<td>20% (from 0%)</td>
<td>5 years</td>
<td></td>
<td>maximum of 5% of portfolio per investment</td>
</tr>
<tr>
<td>K. Non-Taxable Government Bonds</td>
<td>n.a.</td>
<td>25% (from 10%)</td>
<td></td>
<td></td>
<td>maximum of 5% with any one issuer</td>
</tr>
</tbody>
</table>

*Note:* All comparisons are to 1987 Policy amounts.

Figure 3. St. Petersburg Portfolio Investment Value, March 1991-December 1995.

Figure 4. St. Petersburg Investment Portfolio Book Value Rate of Return, March 1991-December 1995.

### Figure 5. City of St. Petersburg Market Adjusted Earnings Rates (since Sept. 30, 1992).

<table>
<thead>
<tr>
<th>Quarter Ending</th>
<th>Book Value Rate of Return (%)</th>
<th>Market Value Adjustments (%)</th>
<th>Market Value Adjusted Rate of Return (%)</th>
<th>State Board of Administration's Rate of Return (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep-92</td>
<td>12.56</td>
<td>2.99</td>
<td>15.55</td>
<td>4.41</td>
</tr>
<tr>
<td>Dec-92</td>
<td>8.25</td>
<td>(1.75)</td>
<td>6.50</td>
<td>4.30</td>
</tr>
<tr>
<td>Mar-93</td>
<td>9.89</td>
<td>(0.46)</td>
<td>9.43</td>
<td>3.65</td>
</tr>
<tr>
<td>Jun-93</td>
<td>7.06</td>
<td>(2.72)</td>
<td>4.34</td>
<td>3.57</td>
</tr>
<tr>
<td>Sept-93</td>
<td>7.53</td>
<td>1.83</td>
<td>9.36</td>
<td>3.56</td>
</tr>
<tr>
<td>Dec-93</td>
<td>8.93</td>
<td>(6.32)</td>
<td>2.61</td>
<td>3.56</td>
</tr>
<tr>
<td>Mar-94</td>
<td>5.65</td>
<td>(28.10)</td>
<td>(22.45)</td>
<td>3.52</td>
</tr>
<tr>
<td>Jun-94</td>
<td>6.84</td>
<td>(15.85)</td>
<td>(9.01)</td>
<td>3.67</td>
</tr>
<tr>
<td>Sept-94</td>
<td>4.96</td>
<td>(8.12)</td>
<td>(3.16)</td>
<td>3.81</td>
</tr>
<tr>
<td>Dec-94</td>
<td>5.75</td>
<td>(1.60)</td>
<td>4.15</td>
<td>4.02</td>
</tr>
<tr>
<td>Mar-95</td>
<td>6.13</td>
<td>9.71</td>
<td>15.84</td>
<td>4.54</td>
</tr>
<tr>
<td>Jun-95</td>
<td>5.78</td>
<td>20.57</td>
<td>26.35</td>
<td>5.05</td>
</tr>
<tr>
<td>Sept-95</td>
<td>5.18</td>
<td>3.01</td>
<td>8.19</td>
<td>5.46</td>
</tr>
<tr>
<td>Dec-95</td>
<td>4.85</td>
<td>9.65</td>
<td>14.50</td>
<td>5.69</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Simple Average for Period Shown</th>
<th>Book Value Rate of Return (%)</th>
<th>Market Value Adjustments (%)</th>
<th>Market Value Adjusted Rate of Return (%)</th>
<th>State Board of Administration's Rate of Return (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.10</td>
<td>(1.23)</td>
<td>5.87</td>
<td>4.20</td>
</tr>
</tbody>
</table>

*Note:* Negative numbers are designated parenthetically.

Figure 6. St. Petersburg CMO Holdings.

Myth of Procedure: Derivatives Investment Reform

Figure 7. St. Petersburg Paper Losses.

Figure 8. St. Petersburg Book Value/Budgetary Earnings Rates (since CMO investments were part of the portfolio).

<table>
<thead>
<tr>
<th>Quarter Ending</th>
<th>Average Portfolio Book Balance ($000s)</th>
<th>Total Portfolio Net Trading Profits ($)</th>
<th>Book Value/Budgetary Annualized Rates of Return Rates of Return</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall Investments (%)</td>
<td>CMO Holdings (%)</td>
<td>SBA (%)</td>
</tr>
<tr>
<td>03/31/91</td>
<td>194,942</td>
<td>-</td>
<td>7.97</td>
</tr>
<tr>
<td>06/30/91</td>
<td>186,722</td>
<td>-</td>
<td>7.76</td>
</tr>
<tr>
<td>09/30/91</td>
<td>172,396</td>
<td>-</td>
<td>7.6</td>
</tr>
<tr>
<td>12/31/91</td>
<td>176,612</td>
<td>119,104</td>
<td>7.26</td>
</tr>
<tr>
<td>03/31/92</td>
<td>190,606</td>
<td>849,813</td>
<td>8.43</td>
</tr>
<tr>
<td>06/30/92</td>
<td>186,075</td>
<td>851,413</td>
<td>8.5</td>
</tr>
<tr>
<td>09/30/92</td>
<td>182,210</td>
<td>2,661,120</td>
<td>12.56</td>
</tr>
<tr>
<td>12/31/92</td>
<td>187,158</td>
<td>447,963</td>
<td>8.25</td>
</tr>
<tr>
<td>03/31/93</td>
<td>212,924</td>
<td>1,978,218</td>
<td>9.89</td>
</tr>
<tr>
<td>06/30/93</td>
<td>218,465</td>
<td>498,722</td>
<td>7.06</td>
</tr>
<tr>
<td>09/30/93</td>
<td>232,962</td>
<td>918,955</td>
<td>7.53</td>
</tr>
<tr>
<td>12/31/93</td>
<td>256,437</td>
<td>1,676,916</td>
<td>8.93</td>
</tr>
<tr>
<td>03/31/94</td>
<td>269,747</td>
<td>(244,278)</td>
<td>5.65</td>
</tr>
<tr>
<td>06/30/94</td>
<td>266,729</td>
<td>468,614</td>
<td>6.84</td>
</tr>
<tr>
<td>09/30/94</td>
<td>262,519</td>
<td>(751,130)</td>
<td>4.96</td>
</tr>
<tr>
<td>12/31/94</td>
<td>261,113</td>
<td>19,453</td>
<td>5.75</td>
</tr>
<tr>
<td>03/31/95</td>
<td>280,606</td>
<td>197,137</td>
<td>6.13</td>
</tr>
<tr>
<td>06/30/95</td>
<td>267,940</td>
<td>370</td>
<td>5.78</td>
</tr>
<tr>
<td>09/30/95</td>
<td>284,172</td>
<td>(410,021)</td>
<td>5.18</td>
</tr>
<tr>
<td>12/31/95</td>
<td>278,388</td>
<td>(539,599)</td>
<td>4.85</td>
</tr>
</tbody>
</table>

Total Net Trading Profits: $8,742,770

Simple Average for Period: 228,386

7.34 10.59 4.66

Note: The City’s first CMO investment was purchased on 2/22/91. All annualized rates of return are calculated amortized book value. Market value changes are not included in annualized rates of return. Negative numbers are designated parenthetically.

Figure 9. St. Petersburg CMO Holdings: Amortized Book Value.

Figure 10. St. Petersburg CMO Holdings: Estimated Market Value.

Figure 11. St. Petersburg CMO Holdings: Paper Losses by Class.

Figure 12. St. Petersburg Quarterly Net Trading Profits.