

VIRGINIA JOURNAL of LAW and TECHNOLOGY

UNIVERSITY OF VIRGINIA	FALL 2002	7 VA. J.L. & TECH. 6
------------------------	-----------	----------------------

Trading at Stale Prices with Modern Technology:  
Policy Options for Mutual Funds in the Internet Age

Conrad S. Ciccotello\*  
Roger M. Edelen  
Jason T. Greene  
Charles W. Hodges

---

I. Understanding the Stale Pricing Problem.....	3
A. An Example Using International Funds.....	3
B. Stale prices in domestic funds?.....	5
C. Dilution Effect.....	6
D. Performance Effect.....	8
II. Rules for Open-End Fund Pricing.....	8
A. Historical Perspective on Mutual Fund Pricing.....	9
B. Mutual Fund Mis-pricing.....	10
C. Forward Pricing versus Backward Pricing.....	12
D. Fair Value Pricing.....	12
E. Current Guidance.....	13
III. How Can the Stale Price Problem Be Addressed?.....	15
A. <i>Ex ante</i> approaches.....	15
B. <i>Ex post</i> approaches.....	17
IV. Regulatory Scheme.....	22
A. Fair Value ( <i>Ex Ante</i> ) Considerations.....	22
B. Recognize that <i>ex post</i> techniques can address stale price trading.....	26
C. How would these regulatory refinements affect industry operations?.....	27
V. Summary and Conclusions.....	30

---

1. Open-end mutual funds offer individual investors many structural advantages over direct investment, including diversification, professional management, and liquidity. The advantages of funds have brought tremendous success to the open-

---

\* The authors are grateful to Joan Gabel for helpful comments and suggestions and to Laurie Jablow for editorial assistance.

- end fund industry, but also concern about several issues.<sup>1</sup> Along with their advantages, open-end mutual funds also have structural disadvantages, such as the challenge of pricing shares for sale or redemption.<sup>2</sup> This article examines how technology permits trading to take systematic advantage of the prices offered by funds.
2. Mutual fund portfolio valuation methods often result in a price that offers traders the ability to earn vastly higher returns with no additional risk.<sup>3</sup> Excess returns to traders come at the expense of the fund's buy-and-hold investors. Recent empirical research estimates a wealth transfer from buy-and-hold investors to stale price traders of about a quarter of a billion dollars a year.<sup>4</sup>
  3. Ironically, one of the "best" features of open-end funds – seemingly free liquidity – makes the wealth expropriation by stale price traders possible. Mutual funds provide the ability to redeem shares at the next calculated net asset value (NAV) as of the time the order is received, generally 4:00 P.M. Eastern Time in the United States. The benefit of liquidity is that there is usually no direct cost to the investor who purchases or sells shares.<sup>5</sup> To provide this free liquidity feature, open-end funds must set their net asset value daily. This task is problematic because the last trade prices of the fund's underlying assets, which are used in its valuation, are often hours or even days old, hence stale.
  4. Funds holding significant amounts of small capitalization domestic stocks or foreign stocks are particularly vulnerable to stale pricing,<sup>6</sup> but other U.S. domestic funds are not immune.<sup>7</sup> With over 10,000 open-end mutual funds, traders who exploit stale prices have a number of targets from which to choose. With the

---

<sup>1</sup> See generally Arthur Levitt, Keeping Faith with the Shareholder Interest: Strengthening the Role of Independent Directors of Mutual Funds, Speech before the Mutual Funds and Investment Management Conference, (Mar. 22, 1999) available at <http://www.sec.gov/news/speech/speecharchive/1999/spch259.htm>; (paraphrasing from a speech by Chairman Levitt of the Securities and Exchange Commission at The Mutual Funds and Investment Management Conference); see also Arthur Levitt, *The Future of Our Markets: Dynamic Markets, Timeless Principles*, 2000 COLUM. BUS. L. REV. 1 (2000).

<sup>2</sup> Open-end fund marketing literature commonly advises investors that equity funds are long-term investments not intended for short-term speculation. See, e.g., AMERICAN CENTURY – WHAT'S BEHIND THE ADVICE WE GIVE, available at [http://www.americancentury.com/advice/help/help\\_methodology.jsp#philosophy](http://www.americancentury.com/advice/help/help_methodology.jsp#philosophy) (last visited Aug. 28, 2001).

<sup>3</sup> See John M. R. Chalmers et al., *On the Perils of Financial Intermediaries Setting Prices: The Mutual Fund Wild Card Option*, 56 J. FIN. 2209 (2001).

<sup>4</sup> See Jason T. Greene & Charles W. Hodges, *The Dilution Impact of Daily Fund Flows on Open-End Mutual Funds*, 65 J. FIN. ECON. 131 (2002). See also Rahul Bhargava et al., *Exploiting International Stock Market Correlations with Open-End International Mutual Funds*, 25 J. BUS. FIN. & ACCT. 765, 765-66 (1998).

<sup>5</sup> See Chalmers et al., *supra* note 3, at 2213-18 (noting that in their sample of over 900 funds, about 60 percent have a sales load or transaction fee).

<sup>6</sup> See generally Greene & Hodges, *supra* note 4.

<sup>7</sup> See Chalmers et al., *supra* note 3, at 2215.

- speed and simplicity of trading via modern technology,<sup>8</sup> coupled with institutional arrangements such as fund supermarkets,<sup>9</sup> daily large scale trading based on stale prices offers large benefits at relatively low costs to the traders. Profit opportunities for stale price traders come at the expense of the fund's buy-and-hold investors in the form of dilution<sup>10</sup> and performance degradation.<sup>11</sup>
5. Open-end fund pricing problems are not new. For years, fund families have wrestled with various pricing methods aimed at reducing the opportunities for risk-free trading profits.<sup>12</sup> But the importance of how open-end fund shares are priced has become increasingly critical as funds have become easier to trade. Rather than using regular ("snail") mail for fund purchase or redemption requests, investors can now rely on high-speed communication technology, including the Internet, to trade funds on a daily basis. The explosive growth of technology that facilitates the stale price trading of open-end funds has brought significant policy challenges to fund families and regulators.
  6. In Part I, this article examines the stale pricing problem. Part II reviews the rules for open-end fund pricing and sets the controversy of fund pricing in historical perspective. Part III explores the options for addressing stale prices, dividing them into *ex ante* policies, i.e. pricing rules,<sup>13</sup> or *ex post* policies, imposing restrictions on trading or costs for liquidity.<sup>14</sup> Part IV reviews the regulatory actions that have been taken to address stale price trading and recommends two refinements to the current policy. Part V concludes.

## I. Understanding the Stale Pricing Problem

### A. An Example Using International Funds

7. It is possible to illustrate a stale-price trading strategy with an example from an international fund. Such a fund is domiciled in the U.S. but invests in international stocks. Consider the timeline for trading in markets around the globe: the first markets to open after a weekend are the Asian and Pacific markets, such as Tokyo, Hong Kong, and Sydney. The next markets to open are the European trading centers in Germany, France, and the United Kingdom.<sup>15</sup> Finally, the U.S., Canadian, and Latin American markets begin trading. By the time trading

---

<sup>8</sup> For a more complete discussion of the technological advances in securities markets, see Paul D. Cohen, *Securities Trading Via the Internet*, 4 STAN. J.L. BUS. & FIN. 1 (1999).

<sup>9</sup> Schwab One Source is one of a growing number of 'fund supermarkets' that allow the trading of hundreds (or even thousands) of different funds through one channel.

<sup>10</sup> See Greene & Hodges, *supra* note 4, at 144-147.

<sup>11</sup> See Roger M. Edelen, *Investor Flows and the Assessed Performance of Open-End Mutual Funds*, 53 J. FIN. ECON. 439 (1999).

<sup>12</sup> See Chalmers et al., *supra* note 3, at 2216-20.

<sup>13</sup> See *id.* at 2219-21.

<sup>14</sup> See Greene & Hodges, *supra* note 4, at 148, 149.

<sup>15</sup> See generally M. Copeland & T. Copeland, *Leads, Lags, and Trading in Global Markets*, 54 FIN. ANAL. J. 70, 72 (1998).

- commences in New York, the Asian markets have closed, but most European markets continue trading. By 11:30 A.M. in New York, most of the European markets have closed.<sup>16</sup>
8. Despite the timing of trading in the underlying (international) stocks held by the U.S. domiciled mutual fund, shares in the fund itself trade only once per day, at 4:00 P.M. Eastern Time. Under the current rules, the value of each asset in the portfolio is usually determined by its last trade price in its home market.<sup>17</sup> At 4:00 P.M. Eastern Time, when U.S. markets close, many of the world's financial markets last traded several hours earlier. For Japanese stocks, the last trade of the day occurred hours prior to when the trading *began* in New York. For European stocks, the last trade price occurred prior to noon in New York. Therefore, the prices used to calculate the NAV of U.S.-based international mutual funds are "stale." Stale prices cannot reflect price-relevant information that is "released" or revealed subsequent to the asset's last trade.<sup>18</sup>
  9. What type of information could be released after foreign markets close? One pattern that might constitute valuable information is the association between the value changes among markets. Financial research has established that movements in the U.S. market tend to lead to movements in other markets.<sup>19</sup> For example, suppose the U.S market experiences a sharp movement up on Monday afternoon. Because of the positive correlation between the U.S. market and foreign markets, the Asian markets can be predicted to increase once they begin trading (their next day). Following suit, the European markets are likely to move up as their markets open.
  10. Predictability in next-day price changes normally is not exploitable by trading foreign shares themselves because those shares tend to re-price the instant trading resumes the next day. However, traders can exploit the pricing of U.S. domiciled mutual funds that hold foreign shares because these funds are not re-priced in response to information that has not yet been traded upon. Valuation of fund shares using stale prices thus leads to a profitable mutual fund trading strategy.
  11. The stale price trading strategy is to buy (i.e., exchange into) international mutual

---

<sup>16</sup> See *id.* There are some exceptions. See Vincent Boland, *Trading Fad Leaves Dealers with Time on Their Hands*, FIN. TIMES, May, 29, 2000, at 19 (noting that Milan and Frankfurt Bourses extended the close of their trading day to 1830 GMT in May and June of 2000).

<sup>17</sup> See Accounting Series Release No. AS-118 [1937-1982 Transfer Binder] FED. SEC. L. REP. (CCH) ¶72,140 (Dec. 23, 1970).

<sup>18</sup> See Chalmers et al., *supra* note 3, at 2220.

<sup>19</sup> See, e.g., Kent G. Becker et al., *The Intertemporal Relation Between the U.S. and Japanese Stock Markets*, 45 J. FIN. 1297 (1990); Alastair Craig et al., *Market Efficiency Around the Clock: Some Supporting Evidence Using Foreign-Based Derivatives*, 39 J. FIN. ECON. 161 (1995); Cheol Eun & Sangdal Shim, *International Transmission of Stock Market Movements*, 24 J. FIN. & QUANT. ANAL. 241 (1989); Yasushi Hameo et al., *Correlations in Price Changes and Volatility Across International Stock Markets*, 3 REV. FIN. STUD. 281 (1990); Mervyn King & Sushil Wadhvani, *Transmission of Volatility Between Stock Markets*, 3 REV. FIN. STUD. 5 (1990); Wen-Ling Lin et al., *Do Bulls and Bears Move Across Borders? International Transmission of Stock Returns and Volatility*, 7 REV. FIN. STUD. 507 (1994).

funds on days when the U.S. market moves up and sell (exchange out of) international mutual funds on days when the U.S. market moves down. This strategy yields higher returns with lower risk than a “buy and hold” investment strategy.<sup>20</sup> The large profits at relatively low risk are quite attractive to almost any investor.<sup>21</sup> Moreover, the strategy is easily implemented; trade once per day, just prior to the close of U.S. equity markets. Mutual fund trades or exchanges can be transacted through the Internet and/or by automated telephone programs at most fund families.<sup>22</sup>

## **B. Stale prices in domestic funds?**

12. Even though this article illustrates a stale-price trading strategy by using a U.S. domiciled fund that holds foreign stocks, the scope of this problem (or opportunity, depending upon the perspective) is not limited to funds that hold stocks in non-U.S. markets. Profitable stale-price trading strategies also exist in domestic equity funds.<sup>23</sup> Stale prices in domestic funds result from the fact that many stocks do not actively trade. Inactive stocks’ last trade prices, on which funds base their NAV, are potentially stale relative to what they would otherwise be if the stocks were actively traded.
13. Financial research has established that small company stocks tend to trade infrequently compared to large company stocks.<sup>24</sup> To illustrate the effect of this phenomenon, return to the example where the U.S. market experiences a strong move up in afternoon trading. Assuming that a small company stock traded early in the day and did not trade subsequently, that stock’s last recorded trade price would not reflect the strong market move upward. Because mutual funds use the stock’s last traded price for valuation purposes, the end-of-day NAV will be stale relative to the information available near the end of the trading day.<sup>25</sup> The more concentrated a mutual fund is in stocks that do not trade frequently, the more severe this problem. Therefore, the stale-price trading strategy has the greatest profit potential among the domestic funds that hold small company stocks.
14. Empirical research suggests that domestic stale pricing strategies are not as

---

<sup>20</sup> See Chalmers et al., *supra* note 3, at 16.

<sup>21</sup> See Mindy Charski, *Latest Mutual Fund Game: Buy and Dump*, U.S. NEWS & WORLD REP., May 24, 1999, at 74 (comparing the rapid trading of funds to that of individual stocks (day trading)).

<sup>22</sup> See, e.g., Kimberly Weisul, *Charles Schwab Offers Trading of Mutual Funds on Web Site*, INVESTMENT DEALERS’ DIG., July 22, 1996, at 9. In 1996, Schwab began offering trading capability for over 1000 funds over the Internet to complement the ability to trade funds over the telephone, or in branch offices; see *id.*

<sup>23</sup> See Chalmers et al., *supra* note 3, at 16; see also, Eric Zitzewitz, *Daily Mutual Fund Net Asset Value Predictability and the Associated Trading Profit Opportunity* (Feb. 2000) (unpublished manuscript, on file with the author).

<sup>24</sup> See, e.g., Andrew Lo & A. Craig MacKinley, *An Econometric Analysis of Nonsynchronous Trading*, 45 J. ECONOMETRICS 181 (1990).

<sup>25</sup> See Chalmers et al., *supra* note 3, at 14. The trading time lag for small capitalization domestic versus large capitalization domestic stocks is typically shorter than that for international stocks (especially Asian) versus U.S. stocks; see *id.*

profitable as international strategies.<sup>26</sup> In addition, there is no current evidence that traders actually exploit the profit potential of domestic funds.<sup>27</sup> One explanation is that stale price traders are focusing on international funds where the profit potential is generally higher.

15. But U.S. funds might become attractive targets for exploitation. The degree of correlation between the U.S. market return and the return on the non-traded asset figures heavily in stale price trading profitability.<sup>28</sup> Small-capitalization domestic stocks – particularly those with a high market risk (beta) – are far more correlated with the U.S. market trigger than international assets.<sup>29</sup> Exploitation of domestic-fund pricing errors might grow, especially if evidence of the profitability of stale-price trading strategies becomes more generally known.

### C. Dilution Effect

16. Profits from stale-price trading strategies come at the expense of the non-trading mutual fund shareholders. The transfer of wealth from the passive (non-trading) mutual fund shareholders to the traders occurs through “dilution.”<sup>30</sup> Stale-price traders buy (sell) shares of the mutual fund just prior to positive (negative) returns in the fund. The fund manager cannot invest (liquidate) the cash from the stale price trader prior to the predictable next-day follow-through return in the underlying stocks. Indeed, to avoid this dilution the fund manager would have had to complete the investment (liquidation) of cash prior to the underlying stocks’ last trades. In the case of Asian assets, that means that the fund manager must invest (liquidate) some thirteen hours *prior to* knowing what trade is needed! Therefore, the fund’s cash position increases (decreases) just prior to and during positive (negative) returns on the fund’s stock holdings. This dilutes the fund’s positive returns to be lower than they would have been had the cash flows not been present. Exhibit 1 provides a numerical illustration of the effect.

#### 17. Exhibit 1 - Dilution Example

---

<b>Fund A (without fund flows)</b>		<b>Fund B (with dilutive fund flows)</b>	
<b><u>Time 0</u></b>		<b><u>Time 0</u></b>	
<b>Risky Assets</b>	<b>\$100</b>	<b>Risky Assets</b>	<b>\$100</b>
<b>Cash</b>	<b><u>\$0</u></b>	<b>Cash</b>	<b><u>\$10</u></b>
<b>Total Assets</b>	<b>\$100</b>	<b>Total Assets</b>	<b>\$110</b>
<b>Shares outstanding</b>	<b>10</b>	<b>Shares outstanding</b>	<b>11</b>

<sup>26</sup> See Chalmers et al., *supra* note 3, at 2215-18.

<sup>27</sup> See Greene & Hodges, *supra* note 4, at 2217-19.

<sup>28</sup> See *id.* at 10-12.

<sup>29</sup> See Chalmers et al., *supra* note 3, at 2212-13.

<sup>30</sup> See Greene & Hodges, *supra* note 4, at 14-16.

<b>NAV per share</b>	<b>\$10.00</b>	<b>NAV per share</b>	<b>\$10.00</b>
<b><u>Time 1</u></b>		<b><u>Time 1</u></b>	
<b>Risky Assets</b>	<b>\$110</b>	<b>Risky Assets</b>	<b>\$110</b>
<b>Cash</b>	<b>\$0</b>	<b>Cash</b>	<b>\$10</b>
<b>Total Assets</b>	<b>\$110</b>	<b>Total Assets</b>	<b>\$120</b>
<b>Shares outstanding</b>	<b>10</b>	<b>Shares outstanding</b>	<b>11</b>
<b>NAV per share</b>	<b>\$11.0000</b>	<b>NAV per share</b>	<b>10.9091</b>
<b>NAV Return</b>	<b>10.00%</b>	<b>NAV Return</b>	<b>9.09%</b>
		<b>Dilution</b>	<b>-0.91%</b>

18. This exhibit shows two mutual funds. Both funds hold identical risky assets that offer a return of 10% between time 0 and time 1. Fund B issues one new share at time 0, resulting in \$10 of cash and one additional share outstanding compared with Fund A. Under the assumption that Fund B cannot invest the cash in risky assets between time 0 and time 1, Fund B experiences a negative impact from dilution.

19. With enough active traders, this dilution effect can be both noticeable and statistically significant. Empirical estimates from a sample of about twenty-percent of the international funds available to U.S. investors suggest that in the twenty-six-month period from February 1998 through March 2000, the transfer of wealth from passive fund shareholders to stale price traders was about \$420M.<sup>31</sup> Assuming that this sample is representative of the universe of international funds, the transfer of wealth over that two-year period exceeded one billion dollars.<sup>32</sup> The average international fund's return was decreased by nearly fifty basis points per year from the dilution caused by stale-price trading.<sup>33</sup>

20. While passive shareholders in international funds are currently losing significant profits to active traders through dilution, the potential for wealth transfers exists in some domestic funds as well.<sup>34</sup> Shareholders in domestic funds are seemingly safe for the moment, only because they are not quite as attractive targets to the active traders. However, these shareholders are nonetheless in jeopardy. If the problem of stale prices is addressed in international funds, but not in domestic

<sup>31</sup> See *id.* at 16-17.

<sup>32</sup> See *id.* at 21.

<sup>33</sup> See *id.* at 16.

<sup>34</sup> See Chalmers et al., *supra* note 3, at 2213-15.

funds, the active traders can be expected to shift their attention to raiding domestic funds. Any self-regulatory or governmental policies must therefore address dilution effects in both international and domestic funds.

#### **D. Performance Effect**

21. In addition to the dilution effects, stale price trading hurts buy-and-hold shareholders by hampering the fund's operations. Managers of open-end funds that experience high levels of inflows and outflows transact less efficient orders.<sup>35</sup> The Montgomery Emerging Asia Fund provides an interesting example. On a single day in 1998, the fund experienced seven million dollars in inflows.<sup>36</sup> After capturing short-term profits, these inflows quickly reversed, forcing the fund manager to liquidate investments to meet the fund's redemption requests.<sup>37</sup>
22. Those investors who buy the fund's shares and hold for longer terms bear the burden of the performance costs of the "free" liquidity offered by the fund.<sup>38</sup> Sadly for these patient shareholders, the funds where prices are the most stale and where dilution by stale price trading is the most attractive are also those funds where stale price trading would most greatly harm fund operations. International and small capitalization stocks tend to be the most expensive to trade.<sup>39</sup> The threat of having to sell recently purchased positions (or *vice versa*) drives managers to hold more cash.<sup>40</sup> Stale price trading thus costs buy-and-hold shareholders in two ways – dilution and performance degradation.<sup>41</sup>

## **II. Rules for Open-End Fund Pricing**

23. Recent technological advances such as the Internet have created new challenges for funds by facilitating the stale-price trading of their shares. This article argues that the SEC should consider changes in policies to address these trading opportunities. The suggested policy innovations are not the first to be made regarding the pricing of open-end fund shares, however. To place the current policy recommendations in context, this section offers an historical perspective on the evolution of open-end fund pricing.

---

<sup>35</sup> See Edelen, *supra* note 11, at 442.

<sup>36</sup> See Charski, *supra* note 21, at 74. The fund had \$30M in total assets at the time; *see id.*

<sup>37</sup> *See id.*

<sup>38</sup> See Greene & Hodges, *supra* note 4, at 1.

<sup>39</sup> These stocks would tend to have the high bid-ask spreads due to low volume of trading and high risks of market making relative to large-cap U.S. stocks.

<sup>40</sup> See Aaron Lucchetti, *Frequent Trading Worries Fund Firms*, WALL ST. J., Sept. 20, 2000, at C1 (quoting Paul Schatz, President of the Society of Asset Allocators and Fund Timers). Trading in and out of international funds is "...an awful way to make money. The other [non-trading] shareholders get left with the loss..." because frequent trading forces the manager to trade more stocks and hold more cash to deal with quick moves. *Id.*

<sup>41</sup> *See id.* at C19 (quoting Ralph Wanger, manager of Acorn Fund and head of Wanger Asset Management, confirming that his international fund has been forced to increase cash holdings in the face of increased trading).



## A. Historical Perspective on Mutual Fund Pricing

24. The challenges associated with pricing date back over seventy-five years to the birth of mutual funds in 1924.<sup>42</sup> The first of what would later be called open-end mutual funds was the Massachusetts Investors Trust, which opened in March 1924.<sup>43</sup> In August 1924, State Street Investment Corporation became the second open-end fund,<sup>44</sup> followed in November 1924 by Incorporated Investors, which was later renamed Putnam Investors Fund.<sup>45</sup> While these three funds differed in several ways, each contained two common innovations that became unique to the open-end structure and critical to pricing the claims on fund shares.<sup>46</sup> The first innovation was a self-liquidating feature, which allowed investors to redeem their shares directly with the mutual fund company in exchange for cash.<sup>47</sup> The second was a simple all-equity capital structure consisting only of a single class of equity securities.<sup>48</sup>
25. Initially, the closed-end mutual fund and other investment company forms had greater success than open-end funds. By 1929, open-end funds contained only two percent of total mutual fund assets.<sup>49</sup> With the market crash of 1929 and the following Great Depression, however, the open-end mutual fund, which continuously offers shares to the public and allows investors the opportunity to

---

<sup>42</sup> See WILLIAM J. BAUMOL ET AL., *THE ECONOMICS OF MUTUAL FUND MARKETS: COMPETITION VERSUS REGULATION* 27 (1990); see also *Protecting Investors: A Half Century of Investment Company Regulation by Division of Investment Management*, United States Securities and Exchange Commission, U.S. Government Printing Office, May 1992, at 422 (noting that with the passage of the Investment Company Act of 1940, 15 USC § 80a-5, funds were limited to either open-end or closed-end status – the act defined a closed-end company as any company other than an open-end company).

<sup>43</sup> See *A Study of Mutual Funds, Prepared for the Securities and Exchange Commission*, Wharton School of Finance and Commerce, U.S. Government Printing Office, Washington (1962) at 37; see also W. H. STEINER, *INVESTMENT TRUSTS: AMERICAN EXPERIENCE* 208 (1929) (arguing that beyond being the first open-end fund, this Investment Company was unusual in that it gave the investors some control over the selection fund management in that members elected a president that then approved the choice of Trustee. Most Trusts during this era had a self-perpetuating management that could not be changed by the investors).

<sup>44</sup> See Clive Runnells, *The Past, The Present and the Future*, in *HOW TO START, OPERATE, AND MANAGE MUTUAL FUNDS* (Lucile Tomlinson, ed., 1971) at 7.

<sup>45</sup> See *id.*

<sup>46</sup> See Steiner, *supra* note 43, at 209 (citing the Incorporated Investors fund, which originally had a 15-year term after which the fund would be liquidated); see also Runnells, *supra* note 44, at 7.

<sup>47</sup> See *A Study of Mutual Funds, Prepared for the Securities and Exchange Commission*, *supra* note 43, at 37 (citing as an example the Massachusetts Investors Trust redeemed shares at Net Asset Value minus two dollars per share); see also Steiner, *supra* note 43, at 55-59 (commenting that prior to this time, some funds did allow investors to exchange their Investment Company shares for the underlying securities held by the Investment Company. This type of fund was known as a Banker's Share Company). See *id.* at 221. These shares were normally non-transferable. Thus investors could only sell their shares to the Investment Company. See *id.*

<sup>48</sup> See Runnells, *supra*, note 44, at 7. See generally Steiner, *supra* note 43. The single equity security was not so much an innovation, but rather a unique feature. The normal capital structure for Investment Companies/Trusts of the period was to have several debt/bond issues and multiple classes of equity. See *id.*

<sup>49</sup> See *A Study of Mutual Funds, Prepared for the Securities and Exchange Commission*, *supra* note 43, at 37.

redeem their shares on demand at NAV, became a preferred vehicle.<sup>50</sup> A key to investors' preference for the open-end structure was that other types of Investment Companies depended upon market forces to set their share prices. Closed-end shares, for example, often sold at a large discount to the value of the portfolio's underlying securities and sometimes these funds had no investors willing to set a price at which others could buy.<sup>51</sup>

## B. Mutual Fund Mis-pricing

26. The pricing of open-end mutual fund shares (necessary any time fund shares are issued or redeemed) troubled funds and state regulators from the birth of open-end funds in the 1920s.<sup>52</sup> If the calculated NAV were to deviate systematically and predictably from the value of the fund's underlying assets, fund traders could dilute the returns of buy-and-hold investors.<sup>53</sup> The pricing issue became a problem for federal regulators with the passage of the Investment Company Act of 1940.<sup>54</sup>
27. Potential mis-pricing of open-end mutual fund shares is largely related to three accounting issues.<sup>55</sup> Because they continuously sell and redeem shares, open-end mutual funds must calculate their balance sheet in two stages.<sup>56</sup> In the first stage, the fund determines or estimates the market value of the fund's holdings and then divides that by the number of outstanding shares to determine the NAV. In the second stage, the fund sponsor uses the NAV to record any redemptions or purchases. The three accounting issues that impact pricing are: (1) the decision as

---

<sup>50</sup> See Steiner, *supra* note 43, at 221-22 (describing that, in writing prior to the passage of the Investment Company Act of 1940, Steiner simply calls the price at which these funds would redeem shares the "redemption price" or "cash value of participation.") This redemption price was calculated in the same manner as net asset value. The term net asset value was not generally used until around the time of the passage of the Investment Company Act of 1940. This article uses the term Net Asset Value to describe the price at which an open-end mutual fund either sells or redeems shares for both the pre-1940 and post-1940 time frames. *See id.* at 222. *See generally* 15 U.S.C. § 80a-5(a)(1) (1994) (defining an open-end company as "a management company which is offering for sale or has outstanding any redeemable security of which it is the issuer").

<sup>51</sup> *See A Study of Mutual Funds, Prepared for the Securities and Exchanges Commission, supra* note 43, at 37-39.

<sup>52</sup> *See* BAUMOL ET AL., *supra* note 42, at 49-52, (reviewing some of the pre-1940 problems). *See generally* Steiner, *supra* note 45 (discussing accounting issues in the early American Investment Trusts).

<sup>53</sup> *See* Greene & Hodges, *supra* note 4, at 8-14. The deviation must be both predicable and systematic in order for traders to exploit the mispricing. Predictability allows the trader to know "whether" to buy or to sell. Systematic permits the trader to know "when" to buy or sell. *See id.*

<sup>54</sup> *See* Steiner, *supra* note 43, at 301-18 (reviewing state level regulation of Investment Companies in the 1920's).

<sup>55</sup> Accounting Series Release No. AS-118 [1937-1982 Transfer Binder] FED. SEC. L. REP. (CCH) ¶72,140 (Dec. 23, 1970) governs the valuation of securities within a fund.

<sup>56</sup> Per the Investment Company Act of 1940, this calculation must be at least daily. *See* ROBERT C. POZEN, THE MUTUAL FUND BUSINESS, MIT PRESS 474-482 (1996). Since the beginning of the open-end mutual fund, the sales of mutual fund shares, especially front-load funds, were typically contracted out to a "principal underwriter." The accounting for sales and purchases is often contracted to a "transfer agent." *See id.*; *see also* UNITED STATES SECURITIES AND EXCHANGE COMMISSION, *supra* note 42, at 291-92 (noting that prior to the Investment Company Act of 1940, some open-end funds suspended redemption privileges).

- to when the newly calculated NAV becomes effective (Stage 2); (2) whether all investors are required to sell and redeem at the NAV (Stage 2); and (3) the method of determining the market value of the financial securities held by the mutual fund (Stage 1).
28. At various times prior to the passage of the 1940 Act, abuses of these three accounting issues were common. In some cases, a mutual fund would arbitrarily suspend the redemption privilege.<sup>57</sup> The funds often justified this action on the basis of charter documents that were not routinely distributed to shareholders.<sup>58</sup> Motives for the suspension of redemption rights included net redemptions exceeding net purchases, redemptions reducing net assets (and therefore management fees), and prevention of shareholders switching to other funds.<sup>59</sup>
29. Another common accounting manipulation led to “dual pricing.”<sup>60</sup> Historically, funds calculated NAV as of the close of the New York Stock Exchange. However, before the passage of the 1940 Act, a fund would not publish the NAV until the next morning at 10 A.M. Eastern Time.<sup>61</sup> Thus from the market close until 10 A.M. the following day, two prices would effectively exist. Fund insiders and large investors, who were allowed to buy and sell without paying a load, could create a riskless arbitrage by simultaneously buying at the low price and selling at the high price.<sup>62</sup> This riskless arbitrage significantly diluted the holdings of buy-and-hold investors.<sup>63</sup>
30. A similar abuse occurred when different investors paid different prices for shares.<sup>64</sup> Differential pricing was due to the “bootleg” secondary markets outside of the fund family. In these markets, brokers who were not fund underwriters would quote buy and sell prices that were “inside” the redemption and offering prices set by the mutual fund company.<sup>65</sup> In some cases, fund outsiders could use this secondary market to create arbitrage opportunities.<sup>66</sup> Sales of shares at different prices also occurred inside fund companies.<sup>67</sup> In this case, some insiders were allowed to purchase their shares at a discount to NAV, while external purchasers bought at NAV plus a commission (front-load).<sup>68</sup>

---

<sup>57</sup> *See id.* at 427-428. Under 15 U.S.C. § 80a-22(c) (1994), the SEC has broad authority to regulate the price a shareholder will receive upon redemption. Section 22(e) prohibits the suspension of the redemption privilege and requires redemption within 7 days. *See id.*

<sup>58</sup> *See id.*

<sup>59</sup> *See id.*

<sup>60</sup> *See* BAUMOL, ET AL., *supra*, note 42 at 51.

<sup>61</sup> *See id.*

<sup>62</sup> *See* UNITED STATES SECURITIES AND EXCHANGE COMMISSION, *supra* note 42, at 300-01.

<sup>63</sup> *See generally* 15 U.S.C. § 80a-22(d) (1994). This riskless arbitrage was specifically outlawed by Section 22(d) of the Investment Company Act of 1940. *See id.*

<sup>64</sup> *See* UNITED STATES SECURITIES AND EXCHANGE COMMISSION, *supra* note 42, at 301-04.

<sup>65</sup> *See id.* at 302-03.

<sup>66</sup> *See id.* at 302.

<sup>67</sup> *See id.* at 301.

<sup>68</sup> *See id.* at 303.

### C. Forward Pricing versus Backward Pricing

31. The 1940 Act eliminated price discrimination, but the potential for dilution continued. From the passage of the 1940 Act until 1968, the pricing norm was to calculate a NAV that remained in effect for the next twenty-four hours.<sup>69</sup> Thus, most funds calculated NAV *prior* to the point in time when they offered investors the ability to purchase or redeem shares.<sup>70</sup> Backward pricing, as it was known, created stale prices.<sup>71</sup> Backward pricing presented investors (or their aggressive brokers) with the opportunity to make large speculative profits by purchasing large blocks of fund shares during a rising market and selling the shares quickly after the NAV was recalculated to reflect the market's rise.<sup>72</sup> Successful implementation of this strategy resulted in dilution for the fund's buy-and-hold shareholders.
32. Responding to what it perceived to be widespread abuses that resulted from backward pricing, the Commission adopted Rule 22c-1 in 1968.<sup>73</sup> Section 22(c) of the Investment Company Act of 1940 and Rule 22c-1 instruct mutual funds as to how to calculate their net asset value (NAV).<sup>74</sup> Reversing what had been the norm (backward pricing), Rule 22c-1 requires funds to adopt a forward pricing rule in which they sell or redeem shares at the NAV that is first computed *after* the order is received.<sup>75</sup>

### D. Fair Value Pricing

33. For the purposes of calculating value, Section 2(a)(41) of the Investment Company Act of 1940 divides securities into two classes.<sup>76</sup> Where securities have "readily available" market quotations, "current market value" should be used.<sup>77</sup> Current market value is generally accepted to be a security's last quoted sales price on a national exchange.<sup>78</sup> Where securities do not have a "readily available" market quotation, "fair value" should be used.<sup>79</sup> The fund's board of directors has the power to determine "fair value" in good faith.<sup>80</sup>

---

<sup>69</sup> See *id.* at 292-293.

<sup>70</sup> See Barry Barbash, *Remembering the Past: Mutual Funds and the Lessons of the Wonder Years*, ICI Securities Law Procedure Conference, Dec. 4, 1997, at 1-2.

<sup>71</sup> See *id.*

<sup>72</sup> See *id.*

<sup>73</sup> See *id.*

<sup>74</sup> See 15 U.S.C. § 80a-22(c) (1994); 17 C.F.R. § 270.22c-1 (1999).

<sup>75</sup> See *id.* § 270.22c-1

<sup>76</sup> See 15 U.S.C. § 80a-2(a)(41) (1994).

<sup>77</sup> See *id.*

<sup>78</sup> See Accounting Series Release No. AS-118 [1937-1982 Transfer Binder] FED. SEC. L. REP. (CCH) ¶72,140 (Dec. 23, 1970).

<sup>79</sup> *Id.*

<sup>80</sup> *Id.* (No single standard for computing "fair value" exists. But as a general principle, it is thought of as the amount that an "owner might reasonably expect to receive [for the fund shares] upon their current sale." *Id.*)

34. Two issues complicate the determination of fair value. First, there are no clear standards for when “fair value” should be applied. The second problem consists of determining fair value in the event it should be applied.<sup>81</sup> The lack of uniformity creates problems in the pricing of funds. These problems are especially severe in funds that hold foreign securities.<sup>82</sup>
35. Pricing issues come to the forefront during times of large market moves. During October 1997, for example, Asian markets were undergoing severe turbulence. On Tuesday, October 28, 1997, the Hong Kong market index declined about fourteen-percent, following the previous day’s decline on the New York Stock Exchange. Later on Tuesday, October 28, the New York market rallied. United States funds holding Hong Kong securities were now faced with a dilemma.<sup>83</sup> Should they invoke “fair value” rules? Some did not, instead choosing to compute NAV from the Tuesday closing prices in Hong Kong.<sup>84</sup> Other fund families, such as Fidelity, concluded that the closing prices in Hong Kong did not represent “fair value” and calculated their funds’ NAV based on another method.<sup>85</sup>

## E. Current Guidance

36. Largely as a result of the Asian crisis in 1997, the SEC undertook a series of actions to clarify some aspects of open-end mutual fund pricing. In a 1998 review, the Commission restated that its fundamental regulatory tenets would continue to be forward pricing, the use of market quotations for NAV computation, and the use of fair value pricing under some circumstances.<sup>86</sup>
37. On this third tenet, the Commission took several actions aimed at addressing the criticism from investors about the use of fair value pricing.<sup>87</sup> Funds must use plain English to discuss pricing, include a statement that explains the impact of fair value pricing, and discuss the circumstances under which fair value pricing might

---

<sup>81</sup> Thomas Ogden & Cindy O’Hagan, *Mutual Funds Confront Dilemmas in Trying to Value Portfolios: SEC Needs to Provide Updated Guidelines*, N.Y.L.J., Dec. 7, 1997, at 7.

<sup>82</sup> *See id.*

<sup>83</sup> *See* 17 C.F.R. § 270.22c-1 (1999). Large price swings that roil through markets in sequence present an opportunity to view this issue clearly. One irony that appears is that stale prices essentially result in backward pricing. The fund is setting the NAV *prior* to when investors make orders *if* the prices it uses to set NAV are stale. So despite the forward pricing reforms (Rule 22c-1), the perils of backward pricing remain.

<sup>84</sup> *See id.*

<sup>85</sup> Edward Wyatt, *Mutual Funds: What’s Fair in Fund Value?* N.Y. TIMES, Nov. 9, 1997, § 3, at 12 (citing Fidelity’s attempts to extrapolate value from analyzing securities in New York with links to securities in Hong Kong).

<sup>86</sup> *See* Barbash, *supra* note 70, at 7-8.

<sup>87</sup> *See* Ogden & O’Hagan, *supra* note 81 (A number of investors who had expected to profit from the large price swings in the Asian Market complained to the SEC when fund families such as Fidelity invoked fair value pricing).

be employed.<sup>88</sup> Such discussion must be included on the mutual fund registration form N-1A.<sup>89</sup>

38. Even after the 1998 review, however, the nagging issue of what actually constituted a trigger for fair value pricing remained.<sup>90</sup> The Commission subsequently came forward with correspondence addressing this issue and tying the use of fair value pricing to a “significant event.”<sup>91</sup> In a letter sent by Chief Counsel Scheidt to counsel for the Investment Company Institute (ICI) on December 8, 1999, the SEC argued that the 1940 Act required fund boards to determine the fair value of securities in several circumstances.<sup>92</sup> When the market on which the security is traded, for example, does not open for an entire trading day, the market quotations for the security are not “readily available” and fair value pricing is appropriate.<sup>93</sup> Merely concluding that a market quotation is not readily available, however, does not preclude a board from using the market closing price for a security.<sup>94</sup> Fund boards were also advised to consider the nature and duration of the event impacting the market or security.<sup>95</sup> Part of that evaluation includes trading volumes, values of derivative securities, government announcements, and currency trading.<sup>96</sup>
39. In an April 30, 2001 letter to the ICI, the SEC went even further to address fair value pricing.<sup>97</sup> The Commission argued that a fund board *must* use fair value pricing if a significant event (one that would affect the value of a portfolio security) has occurred since the closing of a foreign market but before the NAV calculation.<sup>98</sup> The letter indicates that such an event could be related to a single issuer or an entire market, or could be linked to a natural disaster, armed conflict, or significant government action.<sup>99</sup> The 2001 letter also focused more on the market timing issues associated with stale prices, observing that the Asian markets are open during the evening in the United States.<sup>100</sup>

---

<sup>88</sup> SEC Release No. 33-7512; 34-39748; IC 23064, *Final Rule: Registration Form Used by Open-End Management Investment Companies*, SEC Release Nos. 33-7512; 34-39748; IC 23064; File No. S7-10-97, 17 C.F.R. 230, 232, 239, 240, 270, 274 (June 1, 1998). [hereinafter SEC Release].

<sup>89</sup> *See id.*

<sup>90</sup> *See* Barbash, *supra* note 70, at 7-8.

<sup>91</sup> Letter from Douglas Scheidt, Associate Director and Chief Counsel of the Securities and Exchange Commission, to Craig Tyle, General Counsel of the Investment Company Institute (Dec. 8, 1999), available at <http://www.sec.gov/divisions/investment/guidance/tyle120899.htm> [hereinafter SEC letter].

<sup>92</sup> *See id.*

<sup>93</sup> *See id.*

<sup>94</sup> *See id.*

<sup>95</sup> *See id.*

<sup>96</sup> *See id.*

<sup>97</sup> Letter from Douglas Scheidt, Associate Director and Chief Counsel of the Securities and Exchange Commission, to Craig Tyle, General Counsel of the Investment Company Institute (Apr. 30, 2001), available at <http://www.sec.gov/divisions/investment/guidance/tyle043001.htm> [hereinafter SEC letter].

<sup>98</sup> *See id.*

<sup>99</sup> *See id.*

<sup>100</sup> *See id.*

### III. How Can the Stale Price Problem Be Addressed?

40. This section examines the approaches to address the expropriation of shareholders' wealth from stale price trading. *Ex ante* policies aim at addressing the stale-price problem itself. The term *ex ante* refers to the goal of correcting the pricing problem *before* stale price traders have a chance to take advantage of stale prices. Conversely, *ex post* policies do not attempt to correct the stale price, but rather focus on balancing the interests of those that trade and those that do not trade. One example is to charge traders a transaction fee to compensate passive fund shareholders for the costs that trading imposes on the fund, such as dilution and performance degradation.

#### A. *Ex ante* approaches

41. The strategy of using stale prices to earn abnormally high profits stems from the ability to predict changes in NAV. The direct way to eliminate the problem is to change the way that NAV is set. Particular to U.S. funds, fund sponsors need a NAV-setting algorithm that makes subsequent NAV changes unpredictable given all public information available to investors at 4:00 P.M. Eastern Time. This section discusses the feasibility and problems associated with such an approach.

42. Closing (last trade) prices of stocks often do not produce NAV with the desired property of unpredictable subsequent changes.<sup>101</sup> Any algorithm with this property must therefore *impute* a value to stocks where no trading has yet occurred – a challenging proposition. Unless the rule is objective and mandatory, advisors run the risk of appearing arbitrary when they invoke special rules or models.<sup>102</sup> Moreover, the rule itself runs the risk of being gamed, or presenting an unfair trading environment to certain investors.<sup>103</sup>

43. How might such a rule work in practice? Empirical work has put sufficient structure on the source of valuation errors to guide the development of potentially effective solutions. One procedure uses the midpoint of the stock's bid and ask quote (as opposed to an actual trade price) to compute NAV.<sup>104</sup> A second approach is to scale the price of any stock that has not recently traded according

---

<sup>101</sup> See Chalmers et al., *supra* note 3, at 2219-2223. Closing prices might be "stale," as in the case of international funds, or funds might be holding domestic securities that are thinly traded, or even restricted from trading.

<sup>102</sup> See Ogden & O'Hagan, *supra* note 81. (observing that both Fidelity and T. Rowe Price chose to invoke fair value pricing following the large rebound in the U.S. market on October 28, 1997. Traders had pumped nearly \$20M on October 28 into one Fidelity fund heavily invested in Hong Kong expecting the Asian markets to rally upon their opening).

<sup>103</sup> See Ogden & O'Hagan, *supra* note 81, at 7 (arguing that invoking fair value pricing balances the interests of long-term and short-term shareholders). "The lack of accurate quotations due to market dislocation raises difficult issues concerning a fund manager's obligations to short-term and long-term investors. Whereas strict adherence to highly volatile dealer quotes might serve the interests of investors seeking to trade on market disruptions, consideration of underlying 'fair values' might often be the best way to protect long-term holders against dilution of a fund's assets." *Id.*

<sup>104</sup> See Chalmers et al., *supra* note 3, at 2219-23.

- to market moves during the non-trading period.<sup>105</sup> Using quotes does little to deter stale price trading, but “market-updating” does reduce the correlation between fund returns and lagged market returns.<sup>106</sup> From these empirical results, it appears that “fair value pricing” rules might have the potential to curtail the expropriation of wealth by stale price traders.<sup>107</sup>
44. A simpler approach would be to offer the shares at the NAV computed on the day *after* the order requests are received. For example, an investor making a buy order at 3:55 P.M. on Tuesday would have his or her order executed at the NAV computed at 4:00 P.M. on Wednesday. While this certainly has the potential to reduce the staleness of prices, research has suggested that it would not eliminate dilution.<sup>108</sup>
45. *Ex ante* pricing rules have a major advantage – they impose no cost on shareholders who trade fund shares for exogenous reasons, such as a liquidity need or a desire to change one’s asset allocation. As long as the rules are well published and effective, it would seem that they would deter trading of fund shares that was motivated by the (now defunct) stale price.
46. Note that an *ex ante* pricing rule is really a contracting solution. The fund manager does not know the ‘true’ valuation of the assets held until they next trade. If the fund manager uses a pricing rule or algorithm to determine value, then the fund will have to spell out the policy in advance to shareholders, probably with a warning period. Investors would then be free to accept the policy or leave the fund. Under one fair value pricing method, the typical alternation of price for domestic funds is about three to five cents.<sup>109</sup> Assuming that the average fund trades at about thirty dollars per share, this equates to about ten basis points (0.1%). Moreover, the algorithm is just as likely to lower, as it is to raise NAV relative to the closing-price algorithm, so no bias obtains.<sup>110</sup>
47. But, fair value pricing is arguably not true pricing because there is no transaction validating that price.<sup>111</sup> Validation thus amounts to a battle of pricing models. Using models could bring about claims of arbitrary pricing. For example, when is fair value pricing to be employed? If only on certain days, then what are triggering events?<sup>112</sup> Despite the regulatory suggestions, it might be difficult to

---

<sup>105</sup> See *id.* at 2220.

<sup>106</sup> See *id.* at 2222.

<sup>107</sup> See *id.*

<sup>108</sup> See Jacob Boudoukh et al., *The Last Great Arbitrage: Exploiting the Buy-and-Hold Mutual Fund Investor* (unpublished manuscript, on file with the author).

<sup>109</sup> See Chalmers et al., *supra* note 3, at 2223. Although the exact magnitude of the correction for international funds remains an empirical issue, it is likely that the adjustment would be similar to that for domestic funds.

<sup>110</sup> See *id.* at 2221.

<sup>111</sup> See *id.* at 2220. The joint-hypothesis problem in asset pricing is due to not knowing the true price. Researchers must assume a pricing model to test whether prices conform to that model. See *id.*

<sup>112</sup> If markets in the Asian region close for a day due to weather, for example, would that constitute a triggering event?



describe when fair value pricing would be employed in advance of the actual usage.<sup>113</sup> It would seem that the fair value algorithm would need to be applied indiscriminately every day. Even without claims of arbitrariness, applications of fair value pricing could confuse investors and turn them away from open-end funds.

## B. *Ex post* approaches

48. Unlike *ex ante* policies, *ex post* approaches make no attempt to adjust a stale NAV *before* investors are able to trade to take advantage of it. Instead, *ex post* policies take effect *after* a trade (presumably at a stale price) has been made.<sup>114</sup> These policies are a contracting solution whereby the family agrees with traders about limits on trades or costs imposed on trading. Notified of these restrictions or costs, traders either refrain (or are stopped) from trading after some level of action, or pay once the trade has been made.

### 1. Restrictions on Number of Trades

49. A number of open-end fund families have noticed that trading has increased in recent years.<sup>115</sup> Many of these families have explicitly attributed this increase to stale price exploitation.<sup>116</sup> One *ex post* policy to address this increase is to place a limit on the number of trades over a certain timeframe. Investors might be limited to four trades per year, for example.<sup>117</sup> A variation on this policy is to forbid another trade in a particular fund for a period of time, ten days for example, following a trade in that fund.<sup>118</sup>

50. Restrictions on trades certainly hit their intended target – those intending to trade to take advantage of stale prices. But exchange restrictions potentially impose costs on all shareholders, regardless of their trading motive. Arguably, some traders might not be seeking to exploit stale prices, but have “legitimate” asset allocation or liquidity needs. Trade limits impose costs on “innocent” traders, and are thus an unwanted side effect.<sup>119</sup>

---

<sup>113</sup> See Ogden & O’Hagan, *supra* note 81 (finding that there is a lack of uniformity among fund sponsors in using fair value pricing).

<sup>114</sup> See Greene & Hodges, *supra* note 4, at 17-19. There would be no reason why a fund family could not combine both *ex ante* and *ex post* approaches. See *id.*

<sup>115</sup> See Lucchetti, *supra* note 40, at C19 (noting that the most disturbing trend is the widespread trading in retirement (401k style) as well as taxable accounts).

<sup>116</sup> See Jeffrey Laderman, *Fast-Buck Traders Get the Heave-ho*, BUS. WK., Sept. 6, 1999, at 74. (noting that traders could also be engaging in a market timing or sector rotation strategy); see also *The Bizarre, the Peculiar, and the Excessive*, TIAA-CREF PARTICIPANT, Nov. 1999, at 2-3.

<sup>117</sup> See Chalmers et al., *supra* note 3, at 2218-20. (finding that approximately 40% of their sample of funds reported such a limit on trading in their prospectus).

<sup>118</sup> This restriction reduces the option value of trading relative to a straight restriction on the numbers of trades.

<sup>119</sup> An analogy to a treatment for cancer is appropriate here. The chemotherapy attacks healthy, as well as cancerous cells.

51. Regardless of the side effects, a number of fund families have attempted to thwart stale-price trading using exchange restrictions.<sup>120</sup> Most families limit exchanges to between four and eight per year.<sup>121</sup> Others try to address concerns with side effects by reserving the right to limit exchanges for “market timers.”<sup>122</sup> Despite the stated policies, the extent to which the funds actually enforce such policies is unclear. There is only weak evidence that explicit policies described in the fund prospectus that restrict exchanges are related to the actual level of stale price trading. In one empirical study of 109 international funds, about 40% (50 funds) had some type of exchange restriction.<sup>123</sup> The level of dilution between funds that had and those that did not have trading restrictions was virtually identical.<sup>124</sup> If trading restrictions were effective, funds with such restrictions should exhibit lower dilution. These results suggest that trading restrictions alone do not reduce dilution significantly.
52. Restrictions could be ineffective for several reasons. First, funds might be lax in enforcing trading restrictions or lack the technology to monitor trading activity. Because large fund families typically have ten million accounts or more, monitoring for trading activity and/or enforcing any restrictions on such activity in each account could be expensive. Indeed, some funds state that they only monitor the trading in large accounts (over one million dollars, for example).<sup>125</sup> Focusing on large accounts should reduce monitoring expenses. But this approach does nothing to deter stale price trading by those with account values under the limit.
53. Second, most exchange restrictions apply only to retail fund customers. Shareholders who invest in a fund through company retirement programs are often subject only to the terms of the retirement plan, which typically call for unlimited exchange privileges.<sup>126</sup> Even if the contract does not allow unlimited

---

<sup>120</sup> Letter from David Shunk, Teachers Insurance and Annuity Association College Retirement Equities Fund (TIAA-CREF) to fund shareholders (May 1, 2000) (on file with author) (announcing a policy to limit transfers to three per month (from the same account) starting on June 1, 2000) [hereinafter Letter from TIAA-CREF].

<sup>121</sup> See Chalmers et al., *supra* note 3, at 2219-20.

<sup>122</sup> See TEMPLETON FOREIGN FUND PROSPECTUS (Jan. 1, 2001), available at <http://franklin-templeton.com> (last visited Aug. 29, 2001). The prospectus states, “The Fund may restrict or refuse purchases or exchanges by Market Timers. You may be considered a Market Timer if you have (i) requested an exchange out of any of the Franklin Templeton funds within two weeks of an earlier exchange request out of any fund, or (ii) exchanged shares out of any of the Franklin Templeton funds more than twice within a rolling 90 day period, or (iii) otherwise seem to follow a market timing pattern that may adversely affect the Fund.” *Id.* at 32.

<sup>123</sup> See Greene & Hodges, *supra* note 4 at 17-19.

<sup>124</sup> See *id.*

<sup>125</sup> See *id.* at 18.

<sup>126</sup> Retirement plans are large business deals for funds, so terms that favor flexibility for plan participants are not surprising. Some retirement plan providers are resisting this. TIAA-CREF is a noteworthy example. See Letter from TIAA-CREF, *supra* note 120. Trading inside retirement plans is an especially valuable strategy since most of these plans are tax-deferred. Rather than paying short-term capital gains rates for profits, as would occur in taxable accounts, all gains are deferred until distributions are made from the retirement account.

exchanges, shareholders in retirement plans have brought suits claiming such a right.<sup>127</sup> Because substantial holdings of mutual funds are in retirement plans, a fund's restrictions on "retail" trading activity are not particularly effective.<sup>128</sup>

54. To address the ineffectiveness of restrictions due to lack of sufficient monitoring technology or enforcement activity, the fund could employ additional resources and become more diligent. Monitoring and enforcing trading restrictions will be an expensive undertaking, however, and the costs will be borne by all shareholders.<sup>129</sup> Likewise, in the case of retirement plans, funds could lobby plan sponsors to enact and enforce exchange restrictions, or opt out of retirement plans that fail to adhere to or enforce exchange restrictions, or renegotiate the terms of the plan contract. However, these courses of action are costly. Increased monitoring vigilance and technology requires increased outlays, whereas harsher terms with retirement plans might lead to lower revenue for the fund family.
  
55. Enforcement of trading restrictions appears even more difficult when considering the open-end fund industry, rather than an individual family, as the target for stale-price trading. A trader could enter one family, use his/her limited number of exchanges, and then move on to another family. Mutual fund supermarkets make this strategy particularly easy to implement. As intermediaries between investors and funds, supermarkets such as Schwab One Source and Fidelity FundsNetwork, are becoming very popular with investors.<sup>130</sup> However, because they tend to bundle investor orders, supermarkets provide individuals with a degree of anonymity that might make trading restrictions more difficult to enforce. Using supermarkets, traders simply jump from one family to another without even leaving their accounts.<sup>131</sup> Therefore, trading restrictions at the family level cannot be expected to totally thwart traders exploiting stale prices.<sup>132</sup> A coordinated

---

<sup>127</sup> See *Eastman Kodak v. Colonial Trust VII*, No. 99-CV-6235 (W.D.N.Y. filed June 4, 1999). In this situation, the plan entered into an investment management agreement with a mutual fund. At formation, no redemption fees were payable, but the fund subsequently added a redemption fee provision. Alleging that the fund was a fiduciary under ERISA, the plan argued that the imposition was improper.

<sup>128</sup> See *Investment Company Institute*, 1998 Profile of Mutual Fund Shareholders 7, 13, 47 (1999), available at <http://www.ici.org>, calculating that 72% of all mutual fund shareholders own shares through their retirement plan; 50% of share purchases are made through the retirement plan; and about 50% of assets held in retirement accounts).

<sup>129</sup> See *id.* (arguing that these costs must be compared to the costs incurred by allowing stale price trading).

<sup>130</sup> See J. Hechinger, *Fidelity's Rivals Help It Draw "Supermarket Shoppers,"* WALL ST. J., May 26, 1999 (citing the fact that over thirteen percent of all mutual fund purchases are done through either Schwab One Source or Fidelity FundsNetwork).

<sup>131</sup> See, e.g., PROSPECTUS: CHARLES SCHWAB – MUTUAL FUND ONE SOURCE (2001), available at <http://www.schwab.com> (last visited Aug. 28, 2001).

<sup>132</sup> Fund supermarkets play a key role in addressing stale price trading. For example, TD Waterhouse requires orders to be placed before 2:00 P.M. American Express Brokerage has transaction fees on some accounts and limits or prevents Internet exchanges on others. Schwab requires a customer to hold the position for 180 days or else pay a redemption fee. See, e.g., PROSPECTUS: TD WATERHOUSE BROKERAGE (2001), available at <http://www.waterhouse.com> (last visited Aug. 28, 2001); PROSPECTUS: AMERICAN EXPRESS BROKERAGE (2001), available at <http://www.americanexpress/finance/brokerage.asp> (last visited Aug. 28, 2001); PROSPECTUS: CHARLES SCHWAB – MUTUAL FUND ONE SOURCE (2001), *supra* note 131. Since the fund families are the customers of supermarkets, they might be responding to customer demand.

industry level policy would have to be employed.<sup>133</sup>

56. Regardless of any policy on trading restrictions, such restrictions will not render the stale-price strategy useless. Trading restrictions simply make stale-price trading profitable less often. If a trader is limited to four exchanges per year, the trader might still find it profitable to trade the fund. Empirical research shows that trading only a few times per year can enhance returns to traders, with their profits coming at the expense of the non-trading shareholders.<sup>134</sup>
57. Enacting trading restrictions is not easy, either. TIAA-CREF recently adopted more stringent exchange policies after noticing an increase in trading. Beginning in October 1999, TIAA-CREF enacted rules that began to restrict shareholders in terms of the number of exchanges in and out of funds. A number of shareholders were quite unhappy with both the restrictions and how they were put in place. Under fire from fund participants about lack of notice and confusion in implementation of the restrictions, TIAA-CREF sent out a new policy letter in May 2000.<sup>135</sup> Effective June 2000, participants would be able to make up to three transfers from the same account in a calendar month.<sup>136</sup> Transfers in excess of this number would result in a suspension of electronic (telephone, Internet, and fax) trading privileges for six months.<sup>137</sup>
58. Ironically, the well-publicized change in policy might have had an unintended and undesirable side effect. By raising general investor awareness of the issue, and the profits from stale price trading strategies, the new restrictions and their accompanying attention might lead more traders to take advantage of the profitable opportunity. While each trader might make fewer trades than before the change, their greater number could cause the dilution effect to worsen.

## 2. Redemption Fees

59. Another *ex post* policy measure that aims to thwart stale-price trading is the redemption fee.<sup>138</sup> Some fund families have initiated redemption fees for shareholders whose money has only been invested for a short period.<sup>139</sup> Typically,

---

<sup>133</sup> Fund families are in competition. Arguably any coordination of an industry-wide strategy would have to fall to industry-level associations (such as the Investment Company Institute) or to regulatory authorities.

<sup>134</sup> See Chalmers et al., *supra* note 3, at 2214-17.

<sup>135</sup> See Letter from TIAA-CREF, *supra* note 120.

<sup>136</sup> See *id.*

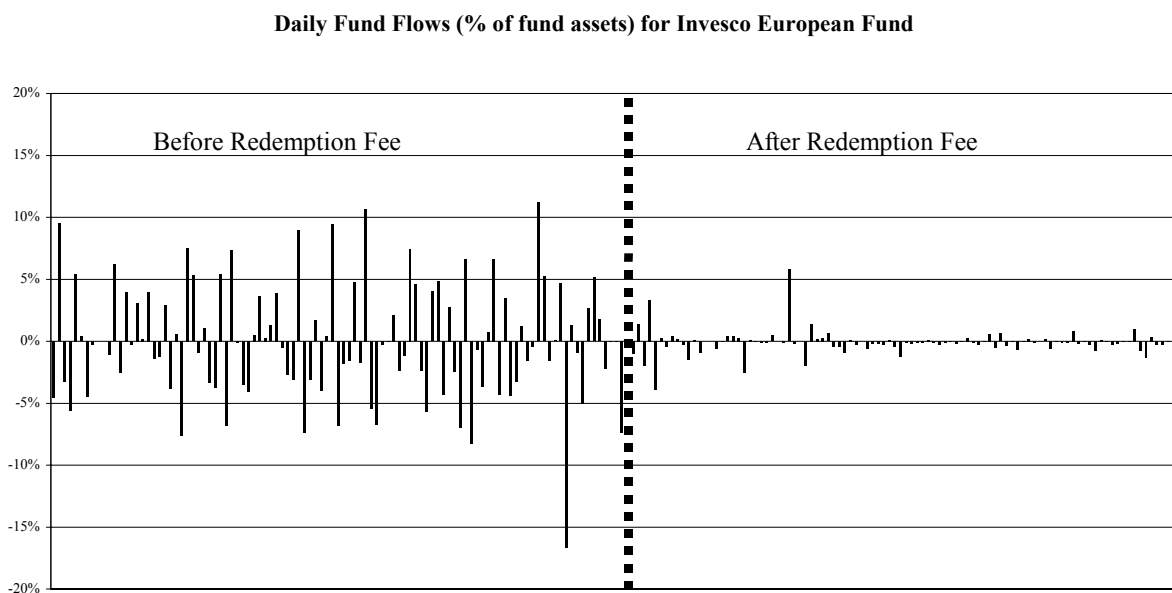
<sup>137</sup> See *id.*

<sup>138</sup> Unlike a load, which is akin to a commission, a redemption fee is returned to the fund itself. A front-end load is paid upon purchase, and might deter stale price trading for shares held only a short period of time since it imposes a trading cost that typically ranges between two and five percent. Back-end loads are imposed on sale, and should have a similar deterrent effect on stale price trading as redemption fees.

<sup>139</sup> See, e.g., PROSPECTUS: INVESCO FUNDS (2001), available at <http://www.invescofunds.com> (last visited Aug. 28, 2001). On some funds, Invesco levies a one-percent redemption fee on shares sold within 90 days of purchase. See also PROSPECTUS: OAKMARK FUNDS (2001), available at <http://www.oakmark.com> (last visited Aug. 28, 2001). Oakmark charges a two-percent redemption fee for funds sold within 90 days of purchase.

these redemption fees are passed on to the remaining fund shareholders. Redemption fees are sometimes reduced or eliminated if the investor has held the shares for a particular length of time.<sup>140</sup> Redemption fees can be quite effective in reducing stale price trading. As an illustration, Exhibit 2 shows the impact of the inclusion of a two-percent redemption fee by the Invesco European Fund. This two-percent fee, which is imposed on any sale made within 180 days of purchase, results in a marked decrease in daily fund flows.<sup>141</sup> However, high redemption fees reduce the liquidity of *all* mutual fund flows and not solely those that represent stale price trading.

**60. Exhibit 2 - Redemption Fee Impacts on Fund Cash Flows**



61. This exhibit shows net daily fund flows to the Invesco European Fund for the months of January 1999 through September 1999. Effective May 1, 1999, Invesco levied a two percent redemption fee for exchanges out of the fund prior to a minimum 180 holding period. The average size of net daily fund flows falls from three and half percent before the fee to a half percent after the redemption fee is in place.<sup>142</sup>

<sup>140</sup> See PROSPECTUS: CHARLES SCHWAB-MUTUAL FUND ONE SOURCE (2001), *supra* note 131. Schwab recently doubled (from 90 to 180 days) the time that retail customers in OneSource funds must hold an investment to avoid a redemption fee. Interestingly, institutional customers' holding period was extended as well, from 60 to 90 days.

<sup>141</sup> See also Chalmers et al., *supra* note 3, at 2216-2219 (finding evidence that funds at greater risk from stale price trading tend to use redemption fees).

<sup>142</sup> The daily fund flows data is provided by TrimTabs, Inc. of Santa Rosa, CA.

62. Similar to trading restrictions, redemption fees have unwanted side effects. Recent studies show that over half of the assets managed at the typical fund enter into and exit from that fund in the course of a year.<sup>143</sup> Redemption fees make capital less mobile, which has unwanted side effects such as sticking investors in the fund with a poor manager. As Exhibit 2 shows, daily flows in and out of the fund were markedly reduced. While some of these flows were likely to be stale price trading, others could have been “legitimate” movements by investors altering their asset allocation, or trades by those desiring liquidity.
63. Moreover, redemption fees cannot address the problems caused by large market moves. For example, in the 1997 Asian Crisis, a fourteen-percent overnight return was available based on the Hong Kong market. At that point, even a two-percent redemption fee would not deter stale price traders.<sup>144</sup>
64. So while redemption fees can curtail daily or very frequent trading, they will not eliminate dilution altogether. A redemption fee simply raises the threshold beyond which a stale price trader will execute an order. If the benefit to the trader exceeds the one-half percent redemption fee, for example, rational traders will choose to incur the cost of the redemption fee and exchange their fund shares. The fund is diluted by the difference between the benefit to the trader and the redemption fee. Moreover, if the fee is waived upon holding the shares for, say, ninety days, then the trader still gets approximately four round-trips per year at no fee. In either case, the fund purchases and sales continue to occur at stale prices.

#### **IV. Regulatory Scheme**

65. The public policy goals of the SEC rules regarding mutual fund pricing are to prevent significant dilution and speculative trading.<sup>145</sup> Despite these goals, the empirical evidence suggests that both dilution and speculative trading appear to occur with regularity.<sup>146</sup> This section examines whether the current regulatory approach to stale price trading, which relies on fair value pricing in response to “significant events,” represents an effective policy. After reviewing the current regulatory scheme, the article proceeds to recommend two improvements. The first is based on the recognition that every day is a significant event when prices are stale. The second involves the consideration of techniques that do not involve pricing, namely *ex post* policies such as redemption fees, to address stale price trading. Lastly, the implications of these suggestions for the industry and for investors are discussed.

##### **A. Fair Value (*Ex Ante*) Considerations**

66. The duty of setting prices for open-end funds rests ultimately with the fund’s

---

<sup>143</sup> See Edelen, *supra* note 11, at 447-48.

<sup>144</sup> Redemption fees, however, could provide deterrence for normal market fluctuation levels.

<sup>145</sup> See Barbash, *supra* note 70.

<sup>146</sup> See Greene & Hodges, *supra* note 4.

board of directors.<sup>147</sup> The board must conduct this function in good faith.<sup>148</sup> The SEC has brought actions against fund directors who have clearly failed to meet the good faith standard.<sup>149</sup> Examples include situations where the directors continued to fair value portfolio securities for an extended period of time even though they knew that those securities had either been de-listed or were restricted from sale.<sup>150</sup> In other cases, the Commission has found problems that relate more to pricing procedures (or lack thereof).<sup>151</sup>

67. The SEC has not hesitated to take enforcement action when there have been egregious violations of fund pricing rules. But what happens when funds attempt to use fair value pricing in good faith? Nearly twenty years ago, the SEC took “no action” in response to the use of fair value pricing by the Putnam Growth Fund.<sup>152</sup> From this decision, it appears that a good faith application of fair value pricing would pass SEC muster.
68. Despite the reluctance of the SEC to second-guess fund pricing done in good faith, the Commission has re-examined stale price regulations during the past three years.<sup>153</sup> Along with reminding directors of their good faith obligations, the SEC has suggested a number of operational procedures. Realizing that boards often delegate pricing matters to fund management, the Commission has recommended the creation of a valuation committee, the development of comprehensive valuation procedures, and periodic review of the valuation methods.<sup>154</sup> In addition, the Commission suggested that the fund board should evaluate the accuracy of their pricing methods by comparisons to quotations from pricing services and dealers, as well as the actual opening prices the next day.<sup>155</sup>
69. This article takes no issue with these recent communications by the SEC. As far as they go, the suggestions made are valuable to addressing stale price trading through the use of fair value pricing. Under current guidance, however, the use of fair value pricing is still tied to “significant events.”<sup>156</sup> What constitutes a “significant event” remains very fuzzy. In the 2001 SEC letter, “significant event”

---

<sup>147</sup> See SEC Release, *supra* note 88; see also Pozen, *supra* note 56.

<sup>148</sup> See *id.*

<sup>149</sup> See SEC letter, *supra* note 97 (referring as examples to *Parnassus Investments*, where directors valued securities at the last NASDAQ quoted prices even after they knew the securities had been de-listed, and *Matter of the Rockies Fund, Inc., et al.*, where directors valued securities as if they were not restricted).

<sup>150</sup> See *id.*

<sup>151</sup> See, e.g., *In the Matter of William P. Hartl*, Exchange Act Release No. 33,165, 1993 SEC LEXIS 3063 (Nov. 8, 1993) (board failed to meet; failed to describe valuation procedures); *In the Matter of Brown*, Exchange Act Release No. 33,438, 1994 SEC LEXIS 30 (Jan. 6, 1994) (board failed to participate in valuation process); *In Mitchell Huggins Asset Management Inc.*, Exchange Act Release No. 39,001, 1997 SEC LEXIS 1793 (Sept. 2, 1997) (fund advisor failed to supervise a portfolio manager that unilaterally overrode pricing service and dealer quotes for mortgage backed securities).

<sup>152</sup> See Putnam Growth Fund, SEC No-Action Letter, 1981 SEC No-Act. LEXIS 3088 (Feb.23, 1981) [hereinafter Putnam].

<sup>153</sup> Extreme volatility in the Asian markets helped to bring attention back to the pricing issue.

<sup>154</sup> See SEC letter, *supra* note 91.

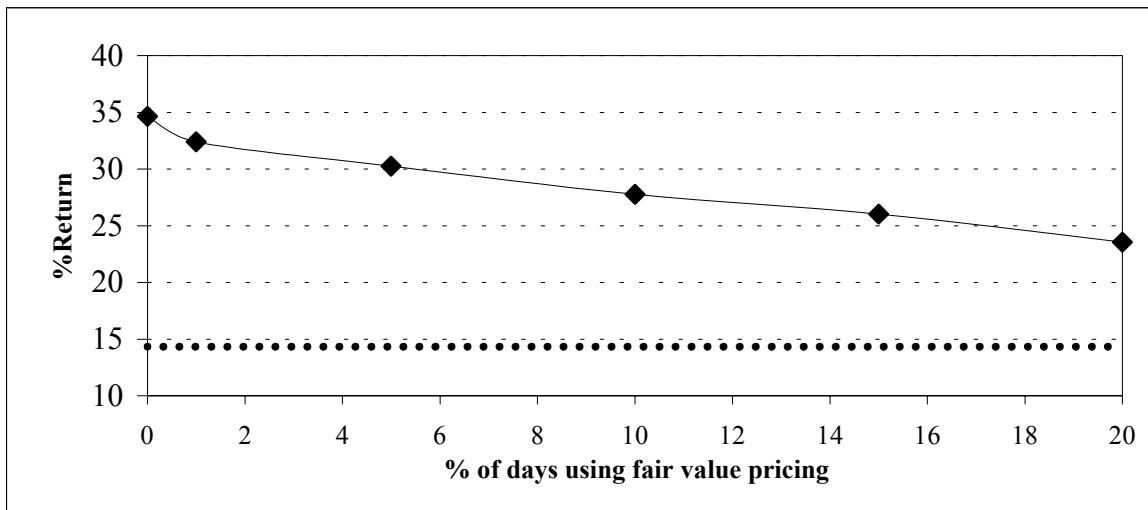
<sup>155</sup> See SEC letter, *supra* note 97.

<sup>156</sup> See *id.*

is defined, in a somewhat circuitous manner, as follows: “Whether a particular event is a significant event depends on whether the event will effect the value of a fund’s portfolio securities.”<sup>157</sup> Clearly, the emphasis is on large market moves, and for funds to use fair value when markets close for unusual events. But isn’t the passage of 12-15 hours since the closing price has been determined, which happens every trading day even in the absence of a typhoon, government overthrow, or some other catastrophe, a “significant event”? Knowing the US market movement on the following day, even if it is quite ordinary, provides the stale price trader quite a bit of information. A typhoon is not required.

70. Exhibit 3 demonstrates that use of fair value pricing strictly in response to large market moves fails to remove the majority of profits from stale price trading. The sample includes 84 international funds that had an average annual return of 13.99% from January 4, 1993, through December 31, 1997. Initially, suppose that the funds in the sample do not employ any fair value pricing. The returns based on a stale price strategy of holding the international funds on days after an S&P 500 positive return and holding cash on days following a negative S&P 500 return average 34.65% a year. The profits from this stale price trading come at the expense of buy-and-hold investors.

71. *Exhibit 3 - Fair Value Pricing and Returns from Stale Price Trading*



72. The results are based on a sample of 84 international funds during January 4, 1993 through December 31, 1997. The average annualized return (marked by the dotted line) for the fund portfolio is 13.99% over this period. The returns based on a stale price strategy of holding the international funds on days after an S&P 500 positive return and holding cash on days following a negative S&P 500 return results in an average annualized return of 34.65%, without fair value pricing of the mutual funds. The returns to the stale price strategy are reduced when fair value pricing is employed for the percentage of trading days indicated (from zero

<sup>157</sup> See *id.*



to 20 percent).

73. But what if the funds had employed fair value pricing techniques<sup>158</sup> on days with “significant” market moves? Fair value pricing on the one percent of trading days with the largest S&P 500 moves each year (i.e. two or three days per year) would reduce the stale price strategy return from 34.65% to 32.5% a year. Even employing fair value pricing on the 20% of trading days with the largest S&P 500 moves, or about once per week on average, would only reduce the stale price trading strategy return to about 23.5% a year.
74. Exhibit 3 shows that applying fair value pricing only on the most “significant” days lowers the profits to a market timing strategy that exploits stale prices. Still, implementing fair value pricing as frequently as once per week would leave substantial profits to a market timer, resulting in significant dilution. The current SEC guidance, however, is filled with references to pricing under “emergency or unusual situations.”<sup>159</sup> It is difficult to reconcile “emergency” with once a week, or even once a month. As such, limiting the focus of fair value pricing to significant events narrows the scope too greatly, and misses a great deal of problem.
75. The SEC argues that “significant fluctuations in domestic or foreign markets may constitute a significant event.”<sup>160</sup> But Exhibit 3 shows that significant dilution potential exists on days that do not have large market moves. Over a period of time, and with a large number of trades, the stale price strategy can expropriate a significant amount of wealth from buy-and-hold investors. The empirical evidence suggests that stale price traders have formed a systematic effort that is not tied only to big events but to daily trading, to bleed funds a little at a time.<sup>161</sup>
76. The SEC needs to communicate that fair value pricing might be a daily exercise. When prices are stale, as routinely occurs in international funds, prices are not “readily available” and every day is a significant event. As such, the term “significant event” really has no utility in this context. Its major purpose might be to dissuade funds from using fair value pricing because of uncertainty as to whether an event is significant.
77. The domestic situation provides another example. Under the current guidance for

---

<sup>158</sup> To simulate the effect of fair value pricing, it is assumed that funds use “perfect foresight.” That is, on days that the fund decides to fair value its shares, it is assumed that the fund will realize the return it actually receives the following day. The following day’s return is corrected (assuming no fair value pricing) by setting its return to zero. While extreme, this method of fair value pricing is unquestionably “fair.” That is, it removes any predictability of the fund’s following day’s price. For robustness, we also implement a fair value scheme that uses the beta of a fund’s returns regressed on the previous day’s S&P 500 return to adjust the fund’s return on fair value days. Beta is multiplied by the current day’s S&P 500 return to achieve fair value vis-à-vis the current day’s S&P 500. This process should remove the predictability of prices on these days. These results are nearly identical to those using perfect foresight.

<sup>159</sup> See SEC letter, *supra* note 91.

<sup>160</sup> See SEC letter, *supra* note 97.

<sup>161</sup> See generally Greene & Hodges, *supra* note 4.

domestic stocks, significant events would probably be linked to market closings or trading halts in individual stocks. But on the vast majority of days, stale price traders are free to exploit prices that might be several hours old, especially in the case of small capitalization stocks that are thinly traded. The empirical evidence suggests that the profit potential for stale price trading of small capitalization stocks is also very significant.<sup>162</sup>

## **B. Recognize that *ex post* techniques can address stale price trading**

78. At this stage, the entire stale price regulatory scheme is based on *ex ante* (pricing) methods. Regulatory communications involving *ex post* techniques would improve the overall scheme. The Commission has not commented on *ex post* approaches to the stale price problem in its recent communications; rather, the focus is on fair value pricing in response to significant events.
79. When the SEC has discussed trading costs, such as redemption fees, it has generally been to express concern about their use.<sup>163</sup> In particular, fees above two percent have triggered a strong negative reaction.<sup>164</sup> Raising the costs for shareholders to leave a fund reduces the liquidity of mutual fund assets.<sup>165</sup> As a barrier to exit, redemption fees tie shareholders to poor managers or harm them if they change investment objectives and need to leave a particular fund.
80. Clearly the Commission wants to be careful about advocating increases in trading costs. That might explain the failure to discuss *ex post* policies as a tool to address stale price trading. But *ex post* policies can be quite an effective tool to combat stale price trading, as Exhibit 2 shows. In the case of Invesco European Fund, the imposition of a two-percent redemption fee for sales within 180 days of purchase virtually eliminates daily trading.
81. Similar to the disclosure of fair value pricing policies, the adequate disclosure of *ex post* approaches is necessary for investors to make informed decisions. Disclosure of *ex post* costs to shareholders up front provides investors with an opportunity for efficient selection of funds. For example, if a fund chooses to impose costs on short-term trades, then investors seeking to take advantage of stale prices might be deterred from entering the fund. Those investors with long-term objectives are unaffected by the added costs imposed on short-term trading.
82. Unlike the concerns about redemption fees, however, the SEC has apparently not

---

<sup>162</sup> See Chalmers et al., *supra* note 3, at 2214-16.

<sup>163</sup> See Erin Arvedlund, *Some Mutual Funds Are Making It Dearer to Juggle Your Nest Egg*, BARRONS, May, 8, 2000, at 28 (quoting Cynthia Fornelli, senior advisor to the SEC Director of the Division of Investment Management, "Nobody has persuaded us yet that a redemption fee above two percent is justified.")

<sup>164</sup> See *id.*

<sup>165</sup> See Laderman, *supra* note 116, at 74 (arguing that exit fees can work against investors' interests by stopping some investors who would be better off selling the fund).

found any difficulty with limitations on the number of trades.<sup>166</sup> Similarly, other limits on trading frequency or timing would appear to be acceptable, especially if aimed at stale price trading. One example is a minimum holding period for exit from or re-entry to a fund following a purchase or sale, respectively. Such restrictions might be very effective against stale price trading since it reduces the trader's options for moving in or out of the fund.

### **C. How would these regulatory refinements affect industry operations?**

83. This section discusses the impacts of the two suggested refinements to the existing regulatory policy on stale price trading. How would funds react to these suggested policy changes and what would be the impact on investors? Both the relaxation of "significant event" triggers and the sanctioned use of *ex post* approaches to combat stale price trading broaden the regulatory latitude offered by the SEC. Arguably, the policy changes make the choice to combat or ignore stale price trading clearer for funds. Assuming proper disclosure of *ex ante* and *ex post* approaches to investors, the article suggests that the refinements encourage a more efficient self-selection in the industry. Stale price traders can be with their own kind, while long-term shareholders can do the same. In sum, it is not trading itself that is undesirable, but the dilution that results from stale-price traders "cohabiting" with long-term shareholders. Making the distinction between funds that tolerate and those that discourage stale price trading is a positive step for both investors and the open-end fund industry.

#### **1. Long-term shareholder interests**

84. The regulatory invitation to combat stale price trading more broadly would be welcomed by families that are trying to protect the interests of long-term shareholders. While it is certainly possible that these families employ daily fair value pricing and *ex post* approaches already, a regulatory sanctioning of their appropriateness (given proper disclosure) would provide additional support against claims by traders that such techniques are not permitted.<sup>167</sup>

85. A stronger posture against stale price trading is only fair to long-term shareholders given the irony in the common admonitions of mutual fund sponsors to invest for the long-term. While this advice is technically correct, it is also misleading.<sup>168</sup> Those investors following long-term, buy-and-hold strategies see (or more likely *do not* see but nonetheless experience) a depletion of their wealth as stale price traders systematically raid open-end funds. The NAV produced by

---

<sup>166</sup> See SEC Release, *supra* note 88.

<sup>167</sup> See Lucchetti, *supra* note 40 (discussing the rights of various groups who time the market); See also Ogden & O'Hagen, *supra* note 81 (describing the complaints filed after fund using fair value pricing in response to the Asian Crisis).

<sup>168</sup> See *McMahan & Co. v. Warehouse Entertainment*, 900 F.2d 576 (2d Cir. 1990); *Lucia v. Prospect St. High Income Portfolio*, 36 F.3d 170, 176-77 (1st Cir. 1994) (discussing disclosures that are technically correct but potentially misleading).

the fund's manager makes this looting possible. Thus, while explicitly advising a buy-and-hold strategy, fund managers implicitly encourage the stale price trading that erodes the wealth of those following their explicit advice.

86. To this point, the SEC has only sanctioned open-end fund directors for egregious violations of pricing rules.<sup>169</sup> Funds appear to have little to fear in terms of regulatory sanctions in response to *good-faith* pricing efforts. However, open-end funds with long-term shareholder clienteles need to be aware of the discipline imposed by competition and market innovation. Failure to be willing and able to take action on stale-price wealth transfers might harm the salability of the open-end fund product. On the other hand, imposing daily fair value pricing and/or raising costs through fees and restrictions on trading might also reduce the salability of the open-end fund product. But long-term investors should value protection from raids more than they disfavor added trading costs.
87. The basic issue is how to protect owners of a financial product whose value is based on a periodically estimated NAV when active traders continually seek opportunities to arbitrage stale prices. Can product innovation render the open-end fund a dinosaur? Exchange traded funds (ETFs) are becoming a viable alternative for some investors. These securities appear to address open-end fund pricing weaknesses by offering shares that trade like individual stocks.<sup>170</sup> Long-term investors might view ETFs as a superior investment product, free from the dilution plaguing open-end funds.<sup>171</sup> Based on their structure, ETFs should offer less of a stale price target than open-end funds.<sup>172</sup> The loss of long-term shareholders would greatly damage the open-end fund industry.
88. Given the additional regulatory latitude suggested by this article, fund boards might feel as if they had more leeway to attack the stale pricing problem. If the goal is to reduce the amount of stale price trading to the greatest extent possible, then a combination of *ex ante* and *ex post* techniques is probably the most effective policy. Having both types of tools would address the stale price problem itself as well as its symptoms.
89. Based on concerns for liquidity, however, fund boards might be reluctant to impose *ex post* policies. In this event, *ex ante* policies can be quite effective against stale price traders. Even *ex post* techniques alone can be effective based on the evidence in Exhibit 2. In sum, sanctioning the broader use of fair value pricing and *ex post* techniques can better protect long-term shareholders.

---

<sup>169</sup> See SEC letter, *supra* note 97.

<sup>170</sup> See Aaron Lucchetti, *Tradable Shares Bring Some Buzz to Mutuals*, WALL ST. J., June 5, 2000, at R1; Hank Ezell, *Mutual Alternatives*, ATL. J. & CONST., June 4, 2000, at G3; see also Karen Damato & Aaron Lucchetti, *Critics Worry about the Risk of Exchange-traded Funds*, WALL ST. J., July 7, 2000, at C1, (describing exchange-traded funds as essentially a hybrid vehicle that has features of both an open-end fund and a futures contract). Exchange traded funds have grown in assets from zero in 1993 to \$45B in 2000. *Id.*

<sup>171</sup> See Jonathan Clements, *A Bettor's Mousetrap Gets Better*, WALL ST. J., May 30, 2000, at C1.

<sup>172</sup> See generally Chalmers et al., *supra* note 3. Stale price trading opportunities in ETFs are arguably less than those available in open-end funds since prices are continuously updated in the former.

## 2. Traders' Interests

90. Not all funds fight stale price trading with the same vigor. Even under the regulatory changes envisioned in this article, it is likely that some funds might continue a policy that essentially ignores stale price trading.<sup>173</sup> Catering to traders has been a boon to some families that are searching for a profitable niche in the increasingly crowded open-end fund universe.<sup>174</sup> Arguably, the current regulatory scheme does not *compel* funds to address stale price trading. The SEC's 2001 letter states that fair value pricing *should* occur after a "significant event."<sup>175</sup> But in the same letter, the SEC acknowledges that funds might use their own milestones or triggers, and recognizes that under the same circumstances it is entirely possible that one fund might use fair value pricing and another would not.<sup>176</sup> Extending that logic to *ex post* techniques, some funds might have a different view of the costs and benefits of redemption fees or trading limits, for example.
91. The SEC remains reluctant to "cross the line" and enter a regulatory regime where they dictate pricing rules. This article's proposals refine the circumstances and scope of stale price trading policies but do not alter the approach whereby individual funds make their own decisions about fair value pricing and trading costs with reasonable diligence and procedures. The Commission correctly recognizes that disclosure to investors is critical to a "market oriented" regulatory approach to stale price trading.<sup>177</sup> Even if the SEC communicates that every day could be a "significant event" and that *ex post* approaches could be used to fight stale price trading, fund boards would still have the latitude to use fair value or impose trading restrictions/costs. Boards less sanguine about the benefits of fair value pricing might be more inclined to balance interests in such a way as to favor trading. Boards more concerned about maintaining liquidity might be less inclined to impose redemption fees or trading limits. Given these "pro-trading" policies and proper disclosure, informed long-term investors are free to go elsewhere.<sup>178</sup>

## 3. Protecting the uninformed

92. Where long-term investors can be hurt is by their inadequate recognition (or by insufficient disclosure) of a fund's inclination towards stale price trading. What does this article offer to those investors? The SEC is currently unwilling to write formal pricing rules, and this article does not suggest that they do. So uninformed

---

<sup>173</sup> See Charski, *supra* note 21 (commenting that several families, including ProFund Advisors LLC, Potomac, and Rydex, welcome high frequency traders).

<sup>174</sup> See Ken Brown, *Buy! Sell! Rydex Gives Fast Traders the Time of Day*, WALL ST. J., May 1, 2000, at M1.

<sup>175</sup> See SEC letter, *supra* note 97.

<sup>176</sup> See *id.*

<sup>177</sup> See SEC Release, *supra* note 88.

<sup>178</sup> See Chalmers et al., *supra* note 3, at 2223-24. The value of such a position would seem to turn on whether investors are adequately notified of the firm's practices.

investors remain at risk for dilution.<sup>179</sup>

93. Implementing this article's recommendations, however, would extend the boundaries of acceptable stale price policies and signal the mutual fund industry again about the seriousness of the issue. Short of dictating pricing rules, the SEC should continue to advise funds about the impacts of stale prices. Continued communication between the SEC and the industry will also increase the likelihood that funds adequately disclose the issue to investors.

## V. Summary and Conclusions

94. Modern Internet and communications technology has made mutual fund trading quite easy. Given the structural flaws in mutual fund pricing, the technology has also put forward a challenge to current regulatory policy. This article examines the economic and regulatory policy issues surrounding stale price trading in open-end mutual funds. International funds are especially vulnerable to stale price trading because the prices they use to calculate their net asset value (NAV) are often 12 to 15 hours old. Small capitalization domestic funds that are thinly traded are also at risk. Using these stale prices, traders can use technology to trade on a daily basis. They buy just before NAV increases and sell just before decreases, thus increasing their return without an increase in risk. Buy-and-hold shareholders pay for this windfall, and suffer significant wealth dilution. Empirical estimates from a sample of international funds suggest that this wealth transfer amounts to over a quarter of a billion dollars a year.
95. The SEC has focused its regulatory efforts on the use of fair value pricing by funds in response to significant events. Fair value pricing is an *ex ante* approach that relies on an algorithm to correct the NAV to reflect information that has been revealed since the last trade in the assets that comprise the NAV. This correction occurs *before* any trading takes place. Under current policy, fair value pricing requires a "significant event" trigger; otherwise a fund must use the "readily available" price. "Significant event" is defined in a circular way, and leaves funds open to two possible errors. Funds could use fair value when prices are "readily available" or funds could fail to use fair value pricing when prices are not "readily available."
96. This article offers two policy-oriented suggestions based on empirical analysis. Empirical estimates suggest that a significant proportion of the profits from dilution occur on "ordinary" days. Since modern technology makes trading easy, dilution is a daily problem (opportunity) for shareholders (stale price traders), and not just an issue that arises after "significant" market moves. So while fair value pricing after a tsunami is a good idea, fair value pricing on sunny days is a good idea too. The SEC should communicate that stale prices themselves constitute a

---

<sup>179</sup> See generally, Roberta Romano, *Empowering Investors: A Market Approach to Securities Regulation*, 107 YALE L.J. 2359 (1998) (arguing that individual investors might not be able to rely on market forces to protect themselves from adverse consequences).

significant event, and that for some funds, especially international or domestic small cap, fair value pricing might be necessary on a daily basis to thwart attempts by stale price traders to raid funds.

97. Second, this article argues that the SEC should communicate that *ex post* techniques can be an appropriate regulatory response to stale price trading. *Ex post* approaches would impose costs (such as redemption fees) on traders *after* the trade. Or, these policies would restrict the right to trade *after* a certain number of trades occurred within an account. The article shows that implementing an *ex post* approach, such as a redemption fee, greatly reduces stale price trading. But while these policies can deter stale price traders, they do not discriminate, and could be costly to any shareholder that wants to trade. At this point, the SEC has been concerned only about the reduction in liquidity for shareholders. The article argues that properly disclosed trading costs and restrictions support a balancing of interests among traders and long-term shareholders. This balance is especially appropriate to consider given the advancements in trading technology.
98. Beyond the regulatory issues, addressing the stale price issue is critical for fund families from a business perspective. Setting up long-term shareholders with advertising that extols the virtues of patience, while permitting the fund to be looted on a daily basis, is an unsustainable strategy over the long run. The suggested refinements proposed by this article increase the arsenal of those funds interested in combating stale price traders. But even under the proposed regulatory refinements, the mutual fund industry would face a situation where some funds aggressively defend themselves against stale price trading while other funds continue to be far less vigilant. Those with trading motives are thus free to select families friendly to their habit. But more importantly, long-term investors must make informed decisions to avoid being bled. They need to select families where their interests will be protected.