



# Lessons from Hedge Fund Registration

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# Motivation

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- Operational Risk
- Not Market Risk
- SEC registration: file a Form ADV by February 1<sup>st</sup>, 2006.
- Filing requirement overturned on June 23<sup>rd</sup>, 2006.
- Now, some do, some don't.



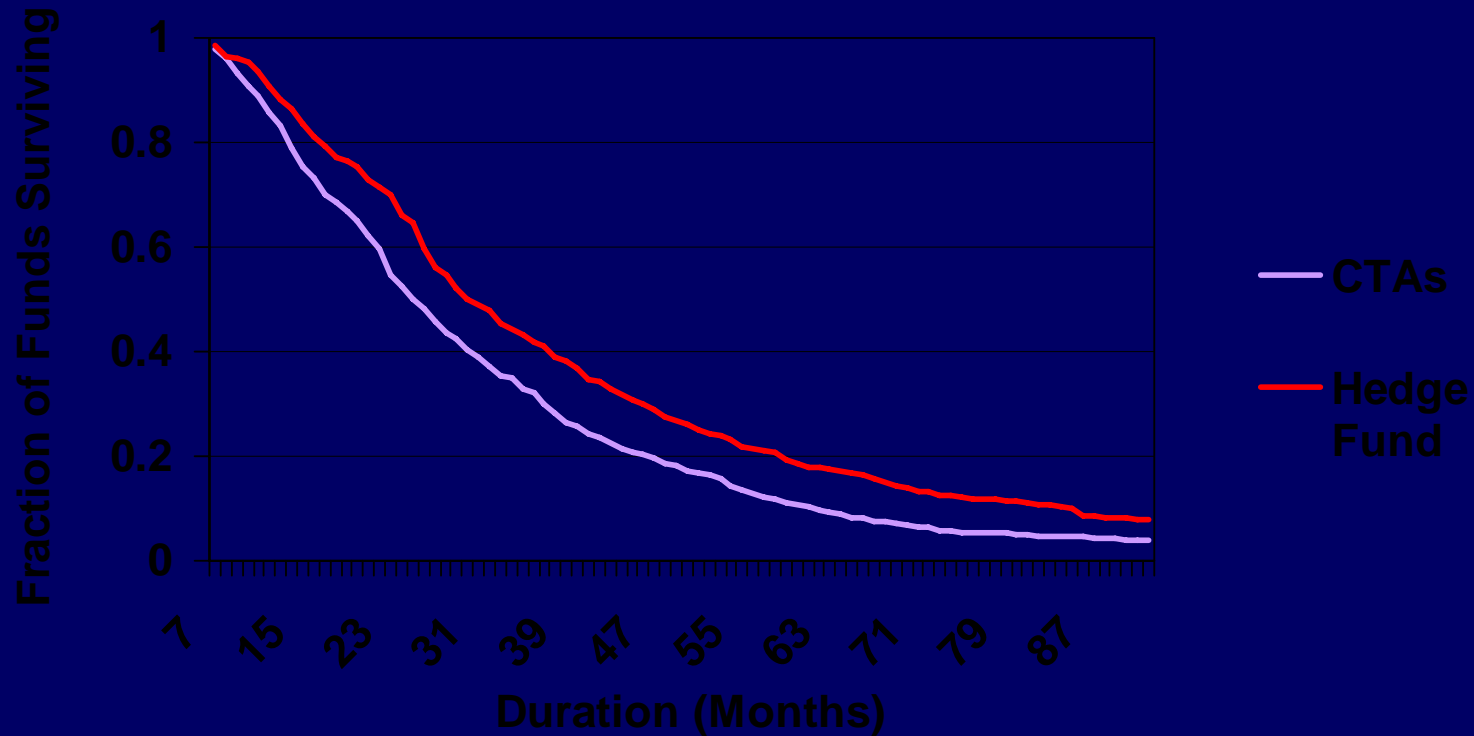
# Institutional Concern About Risk

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- Fiduciary guidelines imply concern for risk
  - Financial risk
  - Operational risk
- Institutional demand
  - Growing popularity of market neutral styles
  - Explosive growth of funds of funds
  - Demand for “market neutral” funds of funds



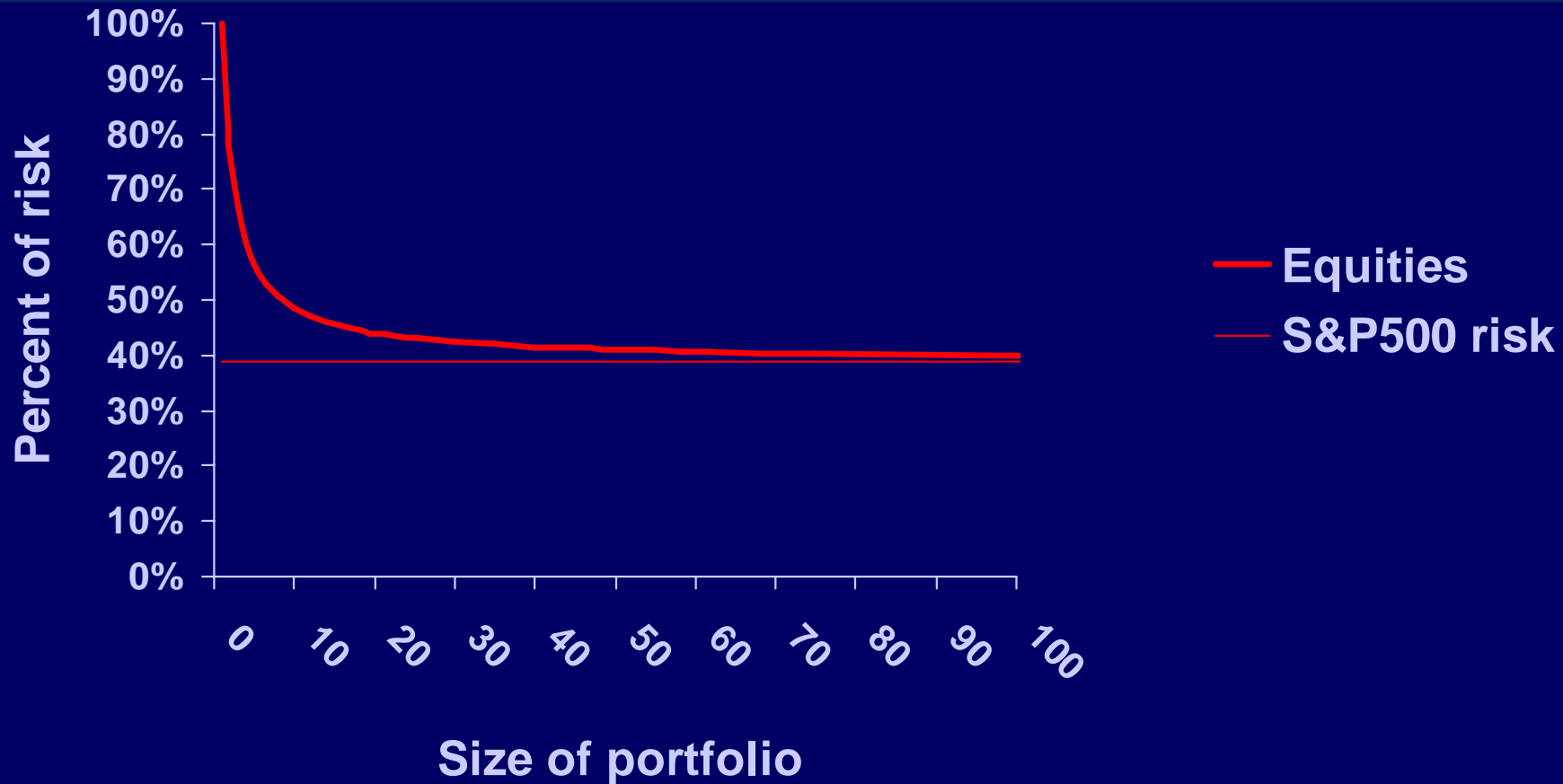
# Operational Risk



**Hedge fund failure**



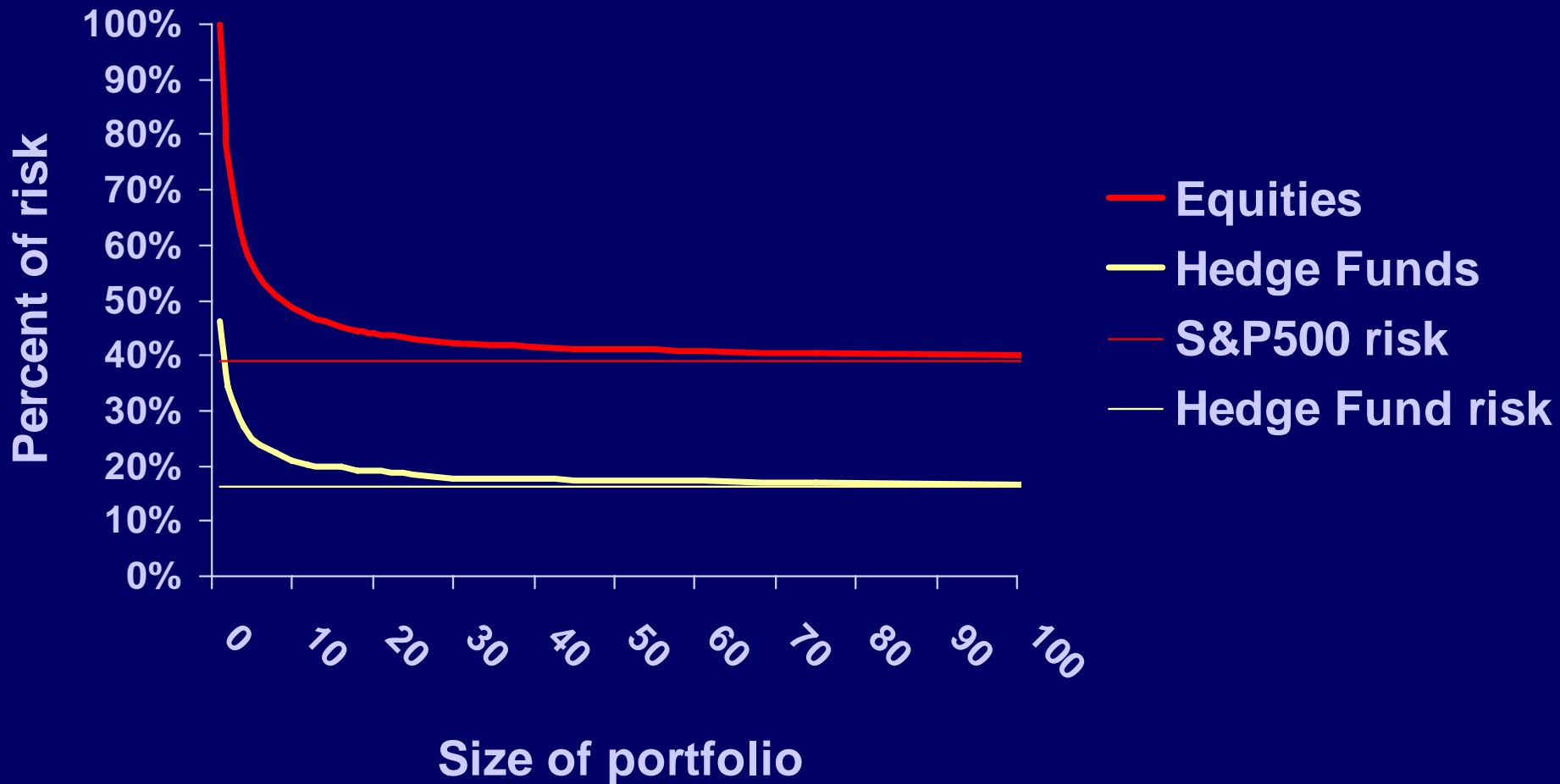
# Financial Risk



Source: Elton and Gruber 1995. Risk is measured relative to the standard deviation of the average stock



# Financial Risk





# Research Questions

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- Anything interesting in ADVs?
- Useful? To Whom?
- Or Redundant and Costly?
- Value of SEC Oversight?

# Data

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- ADV
- TASS
  - management companies matched with ADV forms by both name and address from the “Company” TASS file..



# Data (cont.)

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- 893 of 1,697 (52.3%) TASS management companies identified.
- 2,272 of the 4,019 (56.5%) of TASS funds.
- Unmatched TASS Companies:
  - 22% had assets under \$25 million
  - 2% had lockup longer than 2 years
  - 73% were foreign based

# Form ADV

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- 35 pages long.
- General info.
- Questions on:
  - potential conflicts of interest
  - legal or regulatory issues [Item 11]
  - ownership structure (both direct and indirect)



# Phil Goldstein

- ADV form asks everything from “your last small pox vaccination to every dirty joke you got on Email”
- Item 11
  - Felonies
  - Investment-related misdemeanors
  - Any SEC, CFTC or self-regulatory issues
  - Lawsuits

# Tests and Results

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- A “Problem” fund = a fund whose management company answered ‘Yes’ to ANY question on Item 11.
- Of 2,272 funds 358 (15.8%) are defined as “problem.”
  - 128 of 893 (14.3%) management companies.
- Of the 10,295 total ADV registrations, 1,526 (14.8%) had a “problem.”



# “Problem” vs. “Non-Problem”

|                          | “Problem Funds” |              | “Non-Problem” funds |              |              |                 |
|--------------------------|-----------------|--------------|---------------------|--------------|--------------|-----------------|
|                          | Mean            | Median       | Mean                | Median       | Diff         | <i>p</i> -value |
| Avg. Return              | <b>0.89</b>     | <b>0.80</b>  | <b>0.98</b>         | <b>0.84</b>  | <b>-0.09</b> | <b>0.05**</b>   |
| Std. Dev.                | <b>2.60</b>     | <b>1.79</b>  | <b>2.74</b>         | <b>2.08</b>  | <b>-0.14</b> | <b>0.28</b>     |
| 1 <sup>st</sup> Order AC | <b>0.14</b>     | <b>0.15</b>  | <b>0.14</b>         | <b>0.14</b>  | <b>0.00</b>  | <b>0.82</b>     |
| Sharpe Ratio             | <b>0.33</b>     | <b>0.29</b>  | <b>0.39</b>         | <b>0.30</b>  | <b>-0.06</b> | <b>0.01***</b>  |
| AUM (\$mm)               | <b>218.23</b>   | <b>58.74</b> | <b>180.23</b>       | <b>54.00</b> | <b>38.0</b>  | <b>0.20</b>     |
| Age (Years)              | <b>5.65</b>     | <b>4.50</b>  | <b>4.99</b>         | <b>3.92</b>  | <b>0.66</b>  | <b>0.01***</b>  |
| Min Invtmnt              | <b>0.98</b>     | <b>0.50</b>  | <b>1.30</b>         | <b>0.50</b>  | <b>-0.32</b> | <b>0.35</b>     |
| Management fee           | <b>1.37</b>     | <b>1.25</b>  | <b>1.38</b>         | <b>1.50</b>  | <b>-0.01</b> | <b>0.63</b>     |
| Incentive fee            | <b>15.23</b>    | <b>20.00</b> | <b>17.52</b>        | <b>20.00</b> | <b>-2.29</b> | <b>0.00***</b>  |
| HWM                      | <b>0.69</b>     | <b>1.00</b>  | <b>0.82</b>         | <b>1.00</b>  | <b>-0.13</b> | <b>0.00***</b>  |
| Lockup                   | <b>4.07</b>     | <b>0.00</b>  | <b>4.48</b>         | <b>0.00</b>  | <b>-0.41</b> | <b>0.24</b>     |

# Table 2B/C: Problem vs. Non-Problem

|                        | Problem<br>% Yes | Non problem<br>% Yes | Diff | <i>p</i> -value |
|------------------------|------------------|----------------------|------|-----------------|
| Conflict of Interest   |                  |                      |      |                 |
| Broker/Dealer          | <b>73.8</b>      | <b>24.8</b>          | 49.0 | ***             |
| Investment Comp        | <b>50.4</b>      | <b>16.0</b>          | 34.4 | ***             |
| Investment Advisor     | <b>74.7</b>      | <b>41.3</b>          | 33.4 | ***             |
| Bank                   | <b>40.4</b>      | <b>9.8</b>           | 30.6 | ***             |
| Sponsor of LLP         | <b>56.8</b>      | <b>22.2</b>          | 34.6 | ***             |
| BuySellYourOwn         | <b>30.1</b>      | <b>8.4</b>           | 21.7 | ***             |
| BuySellYourselfClients | <b>85.2</b>      | <b>69.6</b>          | 15.6 | ***             |
| RecSecYouOwn           | <b>74.9</b>      | <b>50.8</b>          | 24.1 | ***             |
| AgencyCrossTrans       | <b>31.2</b>      | <b>2.3</b>           | 28.9 | ***             |
| RecSalesInterest       | <b>22.6</b>      | <b>15.7</b>          | 6.9  | ***             |
| RecBrokers             | <b>45.7</b>      | <b>38.4</b>          | 7.3  | ***             |
| OtherResearch          | <b>81.3</b>      | <b>69.9</b>          | 11.4 | ***             |



# Table 2D: “Problem” vs. “Non-Problem”

|                          | Problem Funds |             | Non-Problem funds |             | Diff  | <i>p</i> -value |
|--------------------------|---------------|-------------|-------------------|-------------|-------|-----------------|
|                          | Mean          | Median      | Mean              | Median      |       |                 |
| Direct Owners            | <b>7.85</b>   | <b>7.00</b> | <b>6.44</b>       | <b>5.00</b> | 1.41  | 0.00***         |
| Controlling              | <b>8.47</b>   | <b>7.00</b> | <b>6.46</b>       | <b>5.00</b> | 2.01  | 0.00***         |
| Percent 75%              | <b>0.73</b>   | <b>1.00</b> | <b>0.50</b>       | <b>0.50</b> | 0.23  | 0.00***         |
| Domestic Entity          | <b>0.80</b>   | <b>1.00</b> | <b>0.50</b>       | <b>0.50</b> | 0.30  | 0.00***         |
| Indirect Owners          | <b>2.26</b>   | <b>1.00</b> | <b>1.30</b>       | <b>0.00</b> | 0.88  | 0.00***         |
| Levered?                 | <b>0.51</b>   | <b>1.00</b> | <b>0.58</b>       | <b>1.00</b> | -0.07 | 0.03**          |
| Margin?                  | <b>0.36</b>   | <b>0.00</b> | <b>0.49</b>       | <b>0.00</b> | -0.13 | 0.00***         |
| Person Capital<br>(\$mm) | <b>1.18</b>   | <b>0.00</b> | <b>2.64</b>       | <b>0.00</b> | -1.46 | 0.02**          |

# Probit Model

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- Do ADV conflict and ownership variables distinguish problem funds?
- Control For type and style.
- Relationship variables for potential conflicts correlated.
  - Reduced to single variable.



# Probit Results

|                        | Model 1   | Model 2   | Model 3   |
|------------------------|-----------|-----------|-----------|
| Log Assets             | 0.012     | -0.023    | -0.005    |
| HWM                    | -0.193**  | -0.111    | -0.140    |
| Mean Return            | -0.039*** |           | 0.063     |
| Incentive Fee          |           | -0.039*** | -0.038*** |
| Relationship           |           | 0.790***  | 0.682***  |
| AgencyCrossTrans       |           |           | 1.418***  |
| RecSecYouOwn           |           | 0.313***  | 0.333***  |
| BuySellYourOwn         |           | 0.679***  |           |
| Other Research         |           | 0.321***  | 0.256**   |
| PercentOwner75         |           |           | 0.554***  |
| Direct Domestic        |           |           | 0.128***  |
| Pseudo R-squared       | 3.97%     | 16.62%    | 25.73%    |
| Number of Observations | 1971      | 1971      | 1954      |

# Leverage and Problem

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- Can lenders tell the difference?
- TASS leverage variables
  - Average leverage
  - Maximum leverage
- Style controls

# Leverage and Problem

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- First, cross-section.
- Second, time-series.
  - a z-score created from TASS data to proxy for operational risk (described later)
  - From 2001-2005, we regress average leverage against the z-score and control for style.

# Leverage and Problem Funds

|               | Problem       | Non problem   | Diff   | p-value |
|---------------|---------------|---------------|--------|---------|
| All funds     |               |               |        |         |
| Leverage      | <b>0.51</b>   | <b>0.58</b>   | -0.07  | 0.03**  |
| Avg. Leverage | <b>53.53</b>  | <b>85.49</b>  | -31.96 | 0.01*** |
| Max Leverage  | <b>98.21</b>  | <b>141.02</b> | -42.81 | 0.00*** |
| No FOF        |               |               |        |         |
| Leverage      | <b>0.61</b>   | <b>0.61</b>   | -0.01  | 0.88    |
| Avg. Leverage | <b>64.81</b>  | <b>95.65</b>  | -30.84 | 0.02**  |
| Max Leverage  | <b>119.59</b> | <b>159.18</b> | -39.59 | 0.05**  |
| 5% Winsorized |               |               |        |         |
| Avg. Leverage | <b>44.54</b>  | <b>65.31</b>  | -20.77 | 0.00*** |
| Max Leverage  | <b>82.45</b>  | <b>108.63</b> | -26.18 | 0.00*** |



# Leverage By Style

| Category         | Matched | Problem | Problem Avg | Non-Problem Avg |
|------------------|---------|---------|-------------|-----------------|
| Convertible Arb  | 4.27%   | 7.24%   | 118.04      | 170.24          |
| Dedicated Short  | 0.70%   | 0.00%   | n/a         | 72.22           |
| Emerging Markets | 4.23%   | 3.06%   | 0.00        | 18.60           |
| Equity Neutral   | 6.34%   | 5.85%   | 185.31      | 61.18           |
| Event Driven     | 12.02%  | 13.65%  | 52.49       | 51.06           |
| Fixed Arb        | 6.07%   | 3.34%   | 287.50      | 419.81          |
| FOF              | 20.77%  | 25.63%  | 6.72        | 36.33           |
| Global Macro     | 3.57%   | 0.84%   | 140.00      | 136.34          |
| Long-Short       | 34.95%  | 32.31%  | 24.86       | 44.93           |
| Managed Futures  | 3.43%   | 4.18%   | 19.34       | 94.38           |
| Multi-Strat      | 3.65%   | 3.90%   | 40.00       | 118.46          |

# Returns

- Do conflicts and capital structure matter to returns?
  - Control for size, risk (std. dev.), onshore/offshore, and style.
- Issues
  - Survived funds (mean and std. effects)
  - Different life-spans (1998 effects)

# Return Regression Results

|                        | Model 1  | Model 2   | Model 3   |
|------------------------|----------|-----------|-----------|
| Log Assets             | 0.093*** | 0.095***  | 0.095***  |
| Stdev                  | 0.167*** | 0.167***  | 0.166***  |
| Onshore                | 0.079*** | 0.069**   | 0.077***  |
| Lockup Period          |          | 0.003     |           |
| Incentive Fee          |          | 0.004     |           |
| HWM                    |          | 0.054     | 0.074**   |
| Relationship           |          | -0.080*** | -0.057*   |
| Direct Domestic        |          |           | -0.074*** |
| PercentOwner75         |          |           | -0.103*** |
| Pseudo R-squared       | 35.40%   | 35.83%    | 36.71%    |
| Number of Observations | 1958     | 1958      | 1954      |

# Efficiency vs. Risk

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- Separate Problem and Non-Problem funds.
- Control for Style



# Return Regression Results

|                        | Problem       | Non-problem   | Combined      |
|------------------------|---------------|---------------|---------------|
| Log Assets             | 0.107***      | 0.103***      | 0.105***      |
| Fund Age               | -0.027***     | -0.018***     | -0.020***     |
| Stdev                  | 0.160***      | 0.178***      | 0.176***      |
| Onshore                | 0.057         | 0.110***      | 0.103***      |
| Incentive Fee          | <b>-0.005</b> | <b>0.007*</b> | <b>0.004</b>  |
| HWM                    | <b>-0.033</b> | <b>-0.008</b> | <b>-0.009</b> |
| Relationship           | -0.668***     | <b>-0.023</b> | -0.064**      |
| Internal Conflict      | <b>-0.049</b> | 0.105***      | <b>0.053</b>  |
| Direct Domestic        | <b>0.010</b>  | -0.082***     | -0.073***     |
| PercentOwner75         | <b>-0.146</b> | -0.090***     | -0.100***     |
| Chow test              | <0.01         |               |               |
| Adj. R-squared         | 38.12%        | 38.76%        | 37.40%        |
| Number of Observations | 321           | 1618          | 1939          |

# Observable Proxy

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- No ADVs before 2006
- We use observable TASS characteristics
- Canonical correlation
- Z-scores
- Allows use of history

# Observable Proxy (cont.)

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- Using this “z-score”, we can retrospectively examine the performance of high problem-score funds.
- We use 9 different TASS datasets to update the z-score for each fund yearly.
- Regressions are controlled for style differences using both the TASS style dummies and Brown and Goetzmann (1997) cluster styles.

# Univariate measure of problem

| TASS                |          | ADV               |          |
|---------------------|----------|-------------------|----------|
| Previous Returns    | -0.27*** | AgencyCrossTrans  | 0.06**   |
| Previous Std. Dev.  | -0.36*** | RelBrokerDealer   | 0.24***  |
| Fund Age            | -0.10*** | RelInvestComp     | 0.25***  |
| Log of Assets       | 0.09***  | RelInvAdvisor     | 0.24***  |
| Reports Assets      | 0.07***  | RelPartSponser    | 0.27***  |
| Incentive Fee       | -0.89*** | BuySellYouOwn     | 0.06**   |
| Margin              | -0.29*** | BuySellYourClient | -0.12*** |
| Audited             | -0.21*** | RecSecYouOwn      | 0.32***  |
| Personal Capital    | -0.26*** | RecUnderwriter    | 0.24***  |
| Onshor              | -0.11*** | RecSalesInterest  | 0.28***  |
| OpenToInv           | 0.04     | RecBrokers        | -0.35*** |
| Accepts Mgd. Accts. | -0.13*** | PercentOwner75    | 0.17***  |
| Corr ADV & TASS     | 0.41***  | DirectDomestic    | 0.28***  |

# Does the operational risk measure predict returns?

|                 | TASS Style Dummies |                 | B-G Style Dummies |                 |
|-----------------|--------------------|-----------------|-------------------|-----------------|
|                 | Coeff              | <i>t</i> -value | Coeff             | <i>t</i> -value |
| 2005            | -1.09%             | -2.97***        | -0.14%            | -2.20**         |
| 2004            | -2.18%             | -6.47***        | -0.31%            | -1.27           |
| 2003            | -6.74%             | -6.06***        | -3.32%            | -4.05***        |
| ...             |                    |                 |                   |                 |
| 1996            | -1.82%             | -2.35**         | -0.80%            | -1.27           |
| 1995            | -1.06%             | -1.16           | -0.86%            | -1.11           |
| 1994            | -2.52%             | -3.21***        | -1.60%            | -2.48**         |
| Average         | -2.03%             | -2.50**         | -1.25%            | -3.39**         |
| Avg. Adj. R-sq. | 9.34%              |                 | 36.77%            |                 |
| Avg. Obs        | 1,338              |                 | 1,338             |                 |

# Does the operational risk measure predict leverage?

|                 | TASS Style Dummies |                 | B-G Style Dummies |                 |
|-----------------|--------------------|-----------------|-------------------|-----------------|
|                 | Coeff              | <i>t</i> -value | Coeff             | <i>t</i> -value |
| 2005            | -18.04             | -4.04***        | -6.39             | -6.80***        |
| 2004            | -28.87             | -5.85***        | -35.16            | -8.25***        |
| 2003            | -24.76             | -4.76***        | -33.38            | -7.19***        |
| 2002            | -17.36             | -3.28***        | -26.96            | -5.68***        |
| 2001            | -21.75             | -3.96***        | -27.21            | -5.30***        |
| Average         | -22.16             | -10.33***       | -25.82            | -5.04***        |
| Avg. Adj. R-sq. | 13.74%             |                 | 2.61%             |                 |
| Avg. Obs        | 2279               |                 | 2279              |                 |

# Investor Flows and Problem Funds

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- So far, redundancy support for equity and debt investors.
- Customers?
- Use z-score and flow-performance analysis to test.

# Flow Analysis

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- Explain Yearly Flow to Top Performers.
- Problem Funds Different?
- Piecewise Performance
- Controls for Category Flows etc.
- Z-score and Interaction
- Interaction Significant?
- 1994 to 2005
- Coefficients and  $t$ -values a la Fama and MacBeth (1973).



# Table 4 – Panel B

|                 | Coeff         | <i>t</i> -value | Coeff         | <i>t</i> -value |
|-----------------|---------------|-----------------|---------------|-----------------|
| Low Rank        | 0.603         | 5.23***         | 0.639         | 6.28***         |
| Mid Rank        | 0.978         | 6.01***         | 0.982         | 6.31***         |
| High Rank       | 0.911         | 6.13***         | 0.894         | 4.75***         |
| Std. Dev.       | -0.022        | -5.43***        | -0.023        | -6.17***        |
| Category Flows  | 0.687         | 8.49***         | 0.688         | 8.35***         |
| Log Assets      | -0.118        | -6.66***        | -0.118        | -6.75***        |
| Mgmt. Fees.     | -0.045        | -3.71***        | -0.044        | -3.52***        |
| Z-score         | <b>-0.006</b> | <b>-0.85</b>    | <b>0.027</b>  | <b>1.06</b>     |
| Low Rank/Z      |               |                 | <b>-0.015</b> | <b>-0.12</b>    |
| Mid Rank/Z      |               |                 | <b>-0.194</b> | <b>-1.80*</b>   |
| High Rank/Z     |               |                 | <b>0.085</b>  | <b>0.70</b>     |
| Avg. Adj. R-sq. | 14.00%        |                 | 14.16%        |                 |
| Avg. Obs        | 966           |                 | 966           |                 |

# Conclusion

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- Problems Correlate to Conflict.
- Return Differential
- Leverage Differential
- Ownership Differential
- No Flow/Performance Differential
- Would Customers Use ADV Information?