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**Systemic Risk and Hedge Funds**

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Main Issue:

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Hedge Funds Increase Systemic  
risk?

Hedge Funds Create Risk?

# There Are Really Three Different Questions

- Hedge Funds are Riskier than Other Asset Classes?
- Are Hedge Funds Getting Riskier Over Time?
- Hedge Funds Create Systemic Risk?

- The paper suggests (with appropriate caveats) that the answer should be Yes to all the three questions.

- **Hedge Funds are Riskier:**

- They have more "tail risk".
- Their returns may become synchronized ("phase-locking risk").
- They are less liquid than Mutual Funds.

- **Hedge Funds are getting Riskier over Time:**

- Measure of Illiquidity is increasing (autocorrelation).
- Reduced Performance.
- Liquidation Probabilities is at a ten year high.
- Switching-models imply higher probability of a regime with low returns.

- **Hedge Funds Create Systemic Risk:**

- Banking sector is exposed to hedge-fund risks.
- Conclude "Systemic Risk is on the Rise".

## My Answers: Yes, No and No.

- I believe that hedge funds are riskier than other investments.
- I am not convinced that they are becoming riskier.
- Not convinced that systemic risk is on the rise.



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# Hedge Funds Are Getting Riskier?

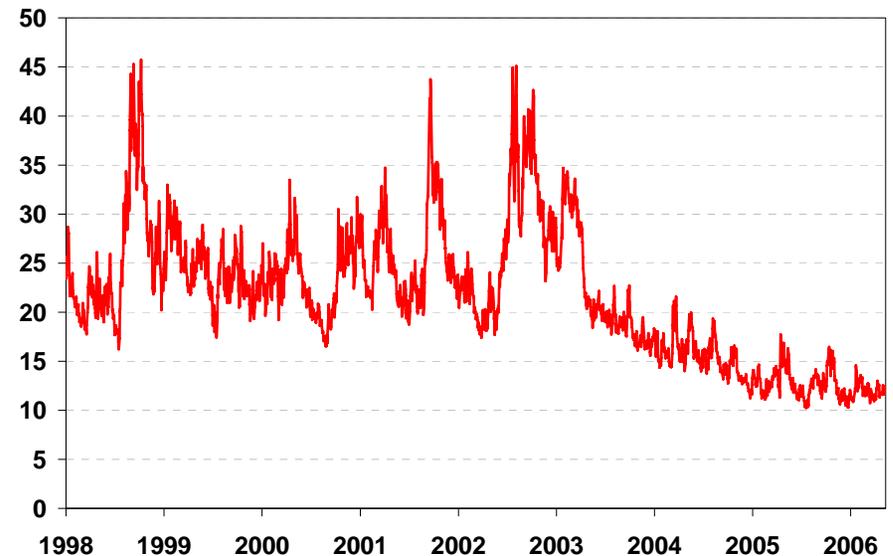
# Mind the Overall Trend: Risk Aversion is Falling in all Markets

- The decrease in returns and volatility over the recent years may be reflecting this trend.

EMBI+ Index



VIX S&P500 Volatility Index



# Hedge Funds are Sophisticating their Risk Management

**Hedge Funds want to stay in Business and care about reputation.**

**A forward looking stress-based risk limit is an important tool in an overall risk strategy:**

- Stress-based scenarios take into account tail and phase-locking risk and provide an ex-ante risk measure.
- It provides an aggregate stop-loss measure for the fund

**Protecting against illiquidity risk:**

- Pricing conservatively illiquid assets (long positions use last bid prices, short positions last ask prices).
- Allocations in less liquid assets should be proportional to daily volume traded.
- Calculate stress scenarios taking into account the estimated time needed to liquidate position.

**Leverage**

- Accounting-based leverage ratios do not measure risk.
- Risk-based leverage measures focus on the solvency and liquidity risk of the fund.

# Risk Assessment at Gávea Investimentos

**We classify risks into five classes:**

**1. Price (or market) Risk**

- Worst Plausible Scenario (Stress Test)
- Historical Simulation (ST)
- Historic Event Simulation (ST)
- Value-at-Risk
- Multifactor models

**2. Solvency**

- Buying Power
- Stressed Buying Power
- Worst Plausible Scenario / Buying Power
- Initial Margin / Available cash

**3. Liquidity**

- Position volume / traded volume
- Position volume / amount issued
- # of days to liquidate position

**4. Counterparty**

- Risk exposure by counterparty, type of contract and maturity

**5. Operational**

- Check lists, double checks, reconciliation

# Is illiquidity on the rise?

- Is auto-correlation a good proxy for illiquidity?
- Yes, auto-correlation may be a good proxy for cross-sectional liquidity differentials. And indeed, some hedge funds are more illiquid.
- Does that imply illiquidity is on the rise? Auto-correlations may not be good proxy for time-variation in liquidity exposure. A possible counter-example: bull and bear markets.

**Correlogram of S&P 500 monthly returns**

|     | Sample: January/1995 to July/1996 |             |         | Sample: January/1990 to December/1994 |             |         |
|-----|-----------------------------------|-------------|---------|---------------------------------------|-------------|---------|
| Lag | Auto-correlation                  | Q-statistic | P-value | Auto-correlation                      | Q-statistic | P-value |
| 1   | -0.05                             | 0.05        | 0.82    | -0.13                                 | 1.07        | 0.30    |
| 2   | 0.53                              | 6.68        | 0.04    | 0.06                                  | 1.31        | 0.52    |
| 3   | -0.27                             | 8.55        | 0.04    | -0.05                                 | 1.48        | 0.69    |
| 4   | 0.19                              | 9.45        | 0.05    | -0.22                                 | 4.77        | 0.31    |
| 5   | -0.37                             | 13.40       | 0.02    | -0.08                                 | 5.20        | 0.39    |
| 6   | 0.29                              | 15.89       | 0.01    | -0.08                                 | 5.69        | 0.46    |



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# Hedge Funds Create Systemic Risk?

# Is illiquidity in hedge funds a problem for the system?

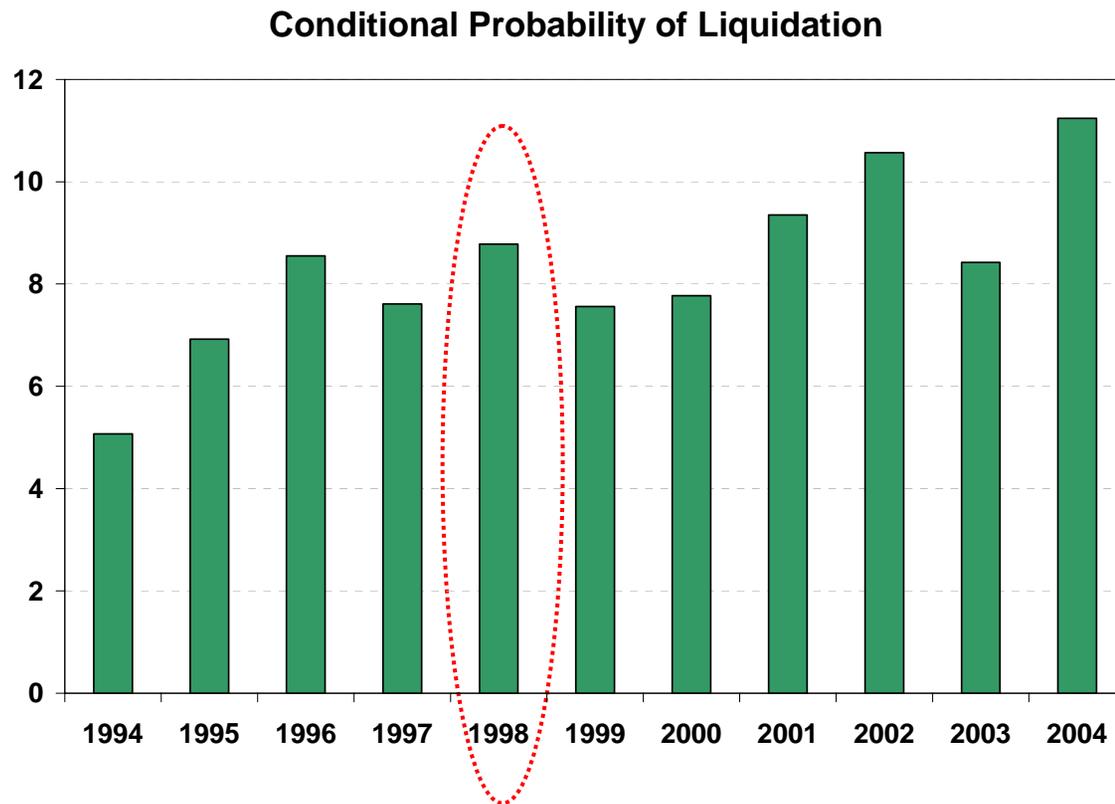
- The key issue: liquidity of assets and liabilities should match
- Hedge funds have learnt with bank runs:
  - Average lock-up of two years
  - Few pre-determined withdrawal dates per year
  - Pre-notice for withdrawal
  - Gates

# Is the correlation between the banking and the hedge funds industries an indicator of system vulnerability?

- Banks and hedge funds returns are probably driven by the same factors:
  - World economic momentum
  - Shifts in risk aversion
  - Shocks in local markets
- If there is indeed relevant causality, is it clear that bad returns of hedge funds might actually lead to banking crises?

# Are hedge funds liquidations a sign of systemic crises?

- *The 1998 example:* the likelihood of liquidation increased only slightly. However, the hedge fund industry did contribute to systemic risk.



# The regulatory issue

- One could argue that more regulation is needed to protect hedge fund investors against non transparent risk
- But hedge fund investors are different.
- And systemic risk is related to financial linkages. Is there a need for regulation for systemic risk purposes?
  - The main channel for hedge funds to impact systemic risk is through their counterparties.
  - However hedge funds and other institutions operate on the same set of rules (ISDA, margin requirements, funding capacity).
- Despite regulatory concerns, risk management available to hedge funds has improved over the last decade.

# Concluding Remarks

- Hedge funds are indeed riskier than other asset classes, but the evidence that they are becoming riskier over time and creating systemic risk is not clear.
- Hedge funds face the same global conditions as the rest of the financial system. In times of greater tolerance for risk, yield-seeking behavior eventually leads to lower returns. This is not an independent additional source of risk.
- Hedge Funds (not all) have improved their risk management, including liquidity risk, in the last few years. New models and innovations coming from academics is more than welcome.