How Long is Long Term in Emerging Economies?

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1. Motivation: Why Short-Term Debt?

- Long-term financing is important
- Allows large investments and those with long-term returns
- Permits better risk management
- Reduces risk of crises
- So, why do emerging countries tend to borrow short-term?
- Why do maturities seem to remain short despite efforts to the contrary?

1. Motivation: Why Short-Term Debt?

- Literature has focused on
  1. Demand side
     - Commitment device
  2. Supply side
     - Investor risk aversion
     - Market discipline
     - Agency problems

1. Motivation: Still Many Unknowns

- Though emphasis on supply side, little evidence
  - Evidence on prices and quantities, not investor behavior
- Thus, many unanswered questions
  - How do investors invest? How long?
  - How do investors manage risk?
  - Do investments vary by investor type and with shocks?
  - Does the investment horizon vary by instrument?
  - Are investments affected by liquidity risks?
  - Are decisions constrained by instrument availability?
  - What incentives do investors face?

1. Motivation: What this Paper Studies

- Difficult to answer all emerging questions
- Key to start: Analyze what investors actually do
- This is the focus of this paper
- The paper studies actual portfolios
  - Chilean pension funds
  - Chilean mutual funds
  - US mutual funds

1. Motivation: What this Paper Studies

- Many advantages of analyzing these data
  - Institutional investors: ones expected to be long term
  - Chile has tried to develop markets and extend maturities
  - Chile vs. US
  - Pension vs. mutual funds
- Data
  - Asset level allocation/portfolios
  - Monthly and daily frequencies
  - Large number of funds, many years

1. Motivation: Contribution of the Paper

- Though many potential research projects with these data ...
- This paper: Just one more step into understanding supply side of funds
- Focus on pension fund
  - Thought to be longest investors
  - Most detailed and comprehensive information

1. Motivation: Contribution of the Paper

- Stylized facts on maturity structure
  - Distribution of asset allocation
  - Comparisons across institutional investors
- Explore potential drivers of maturity structure
  - Instrument availability
  - Rebalancing
  - Asset allocation and risk management
  - Outflows
  - Managerial incentives

Presentation

1. Motivation
2. Data and Methodology
3. Maturity Structure of Chilean PFAs
4. What Drives the Maturity Structure?
5. Conclusions

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2. Data and Methodology
Data

- Unique and rich dataset from case of Chile
- Detailed portfolios of the universe of funds from SP
  - Monthly frequency (1996- 2005)
    - 7,501,210 observations
    - 104,789 different securities
    - 57 pension funds
  - Daily frequency (1996-2008), indirectly
    - 201,288,833 observations

2. Data and Methodology
Data

- Detailed portfolios of the universe of Chilean bond mutual funds from SVS
  - Period: 2002-2005
  - Monthly frequency
    - 463,272 observations
    - 79 funds
- Complemented with data on maturity structure of US mutual bond funds from Morningstar
  - Period: 2003-2005
  - Annual frequency

2. Data and Methodology

Measuring maturity structure

- Fraction of fund *k*'s fixed-term assets with term to maturity D :

$$W_{D,k,t} = \sum_i w_{i,t}{}^k I(d_{i,t} = D)$$

- Average fraction across funds and periods

$$W_D = \frac{1}{T}\sum_t \frac{1}{N_t}\sum_k W_{D,k,t}$$

- Cumulative average fraction

$$F(D < \delta) = \sum_{d<\delta} W_d$$

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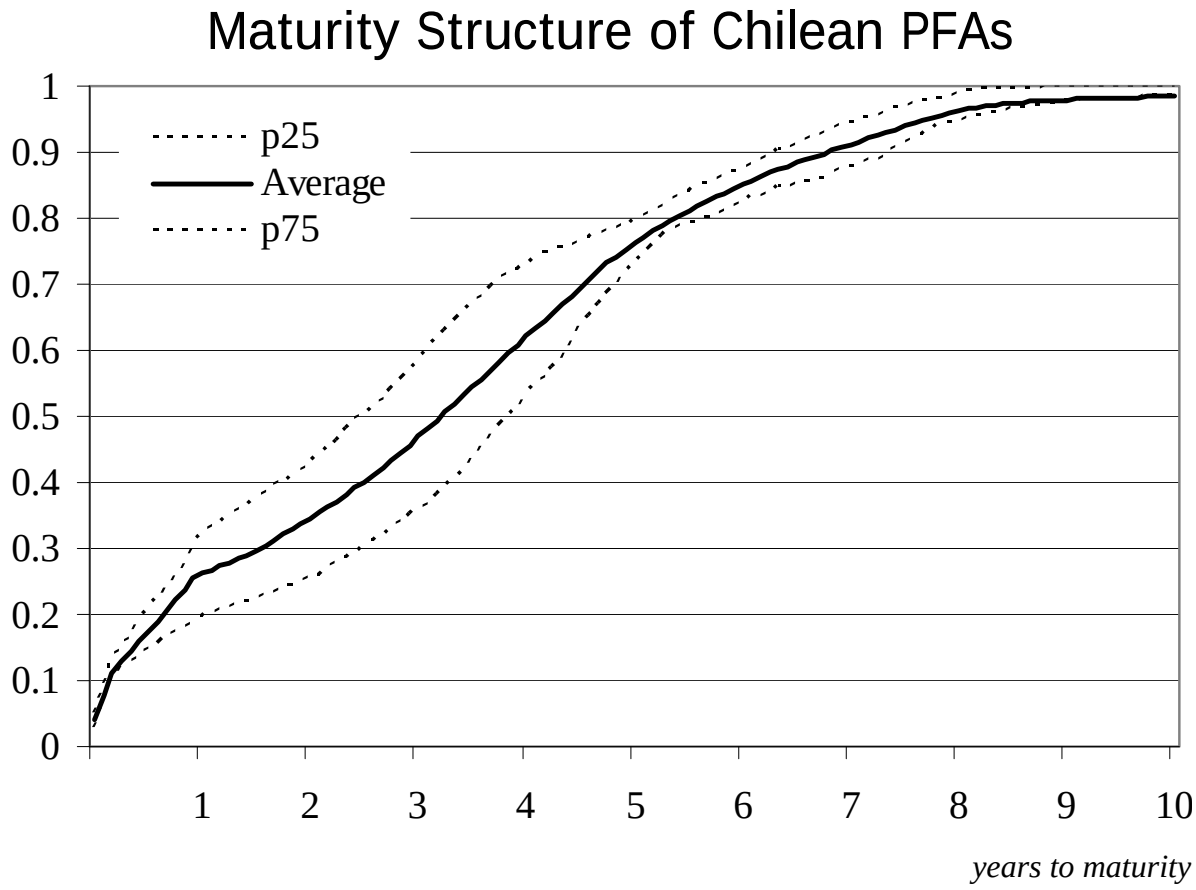
3. Maturity Structure

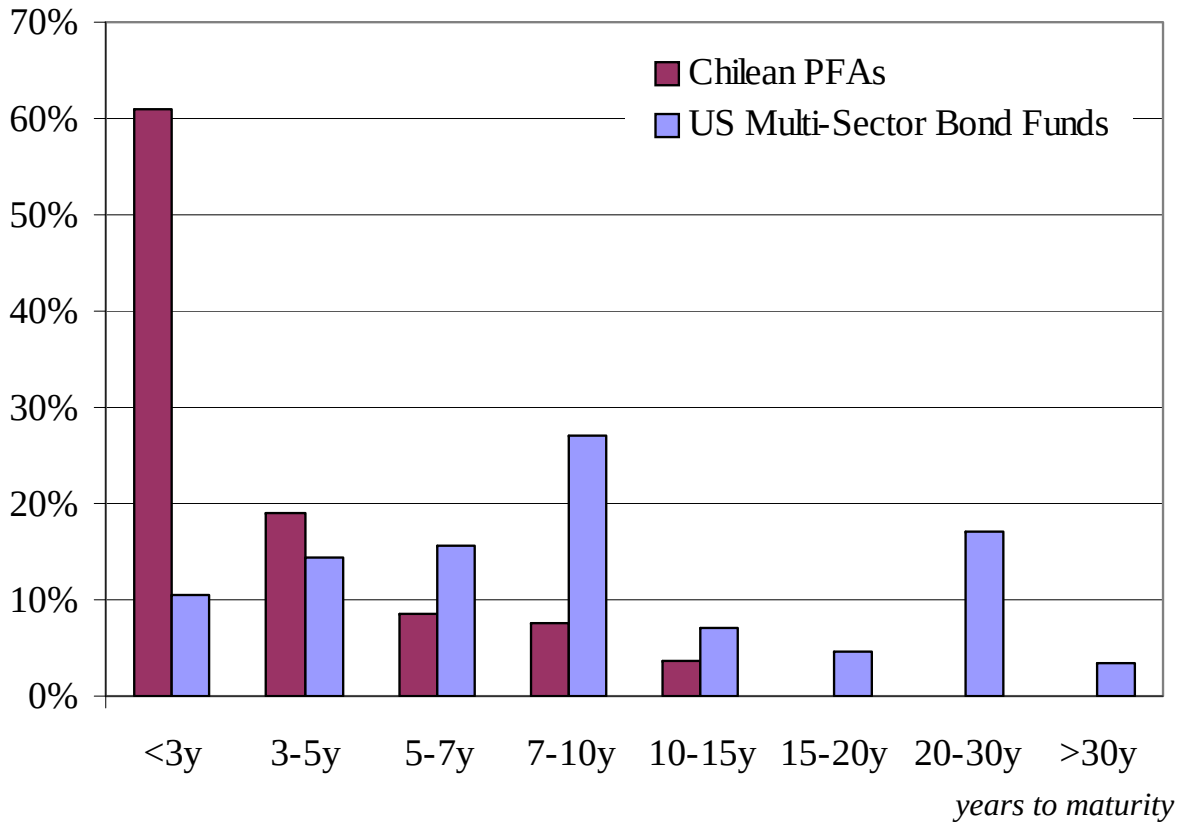
Important fraction of PFAs' Assets in Short-Term



<30d	<90d	<1y	<3y	<5y	<7y	<10y	<15y
4%	11%	25%	46%	75%	91%	98%	100%

3. Maturity Structure
Shorter maturities than US Mutual Funds

Maturity Structure of Chilean PFAs vs. US Multi-Sector Mutual Bond Funds

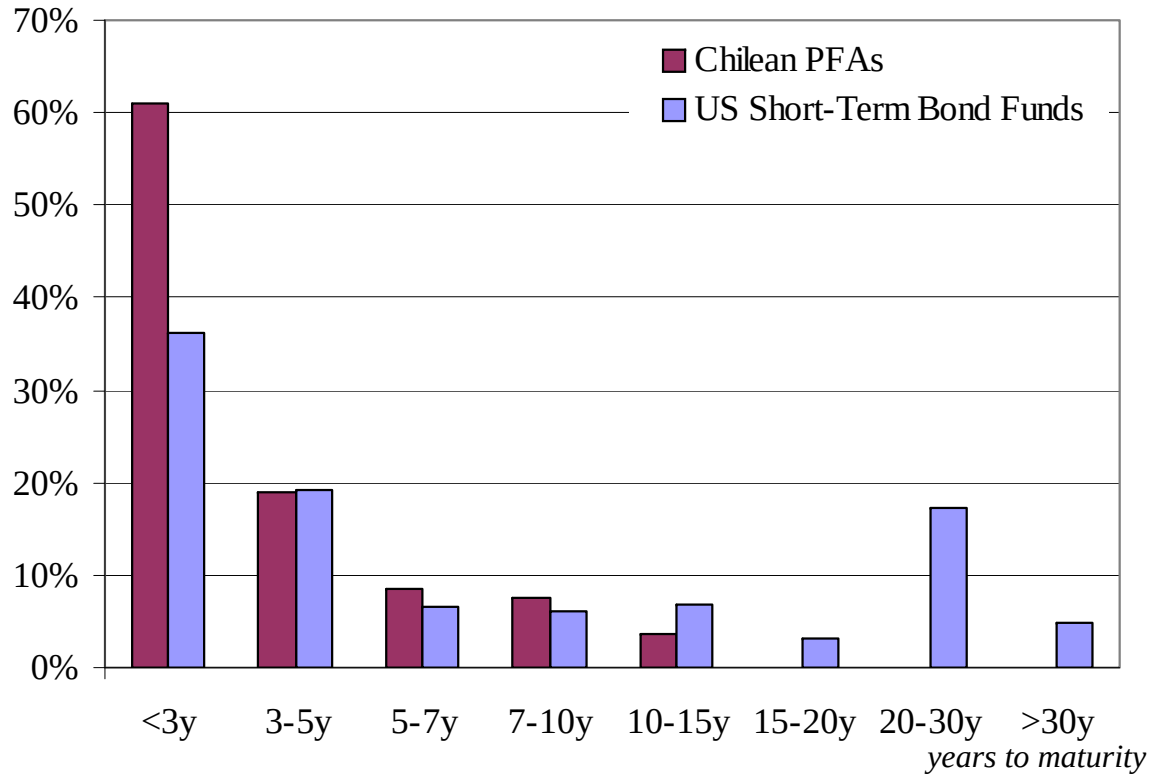


Kolmogorov-Smirnov Test of Equality of Distributions	Overall	% Rejections
Two sided test	<.01***	99%

3. Maturity Structure

Shorter maturities than *Short-Term* US Mutual Funds

Maturity Structure of Chilean PFAs vs. US Short-Term Mutual Bond Funds

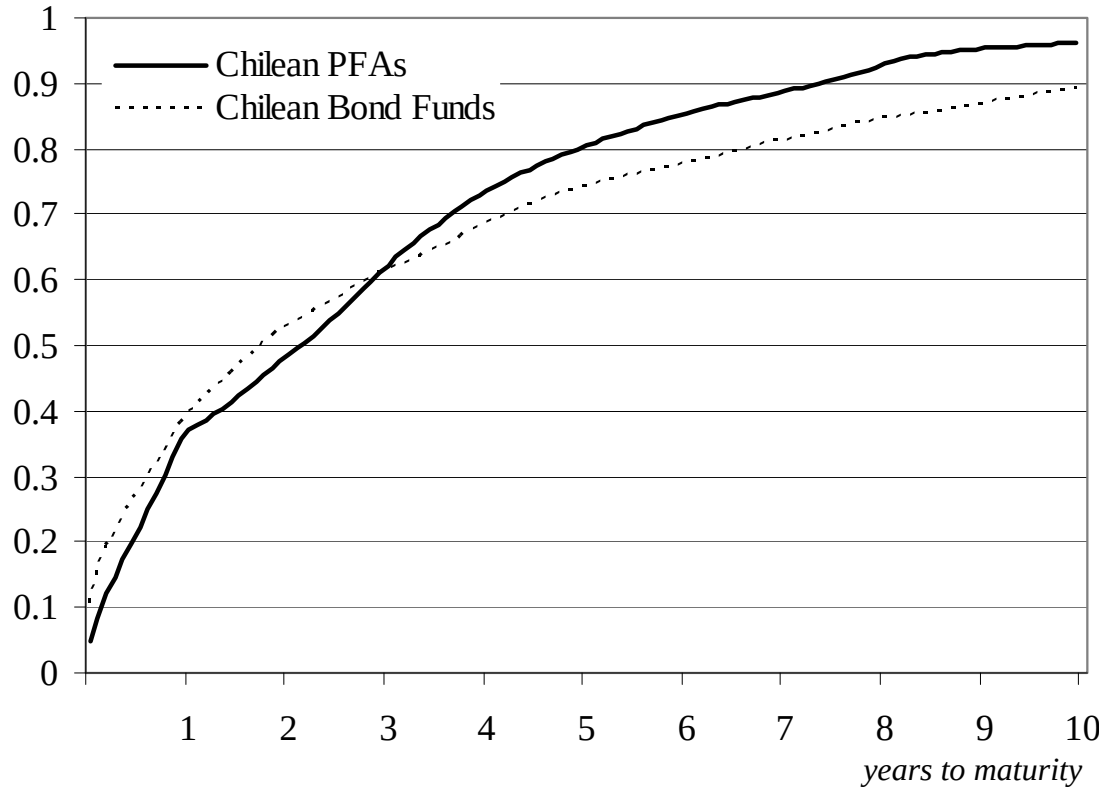


Kolmogorov-Smirnov Test of Equality of Distributions	Overall	% Rejections
Two sided test	<.01***	99%

3. Maturity Structure

PFAs no longer than MLT Chilean Mutual Funds

Maturity Structure of Chilean PFAs vs. Chilean Mutual Bond Funds



Kolmogorov-Smirnov Test of Equality of Distributions	Overall	% Rejections
Two sided test	0.58	77%

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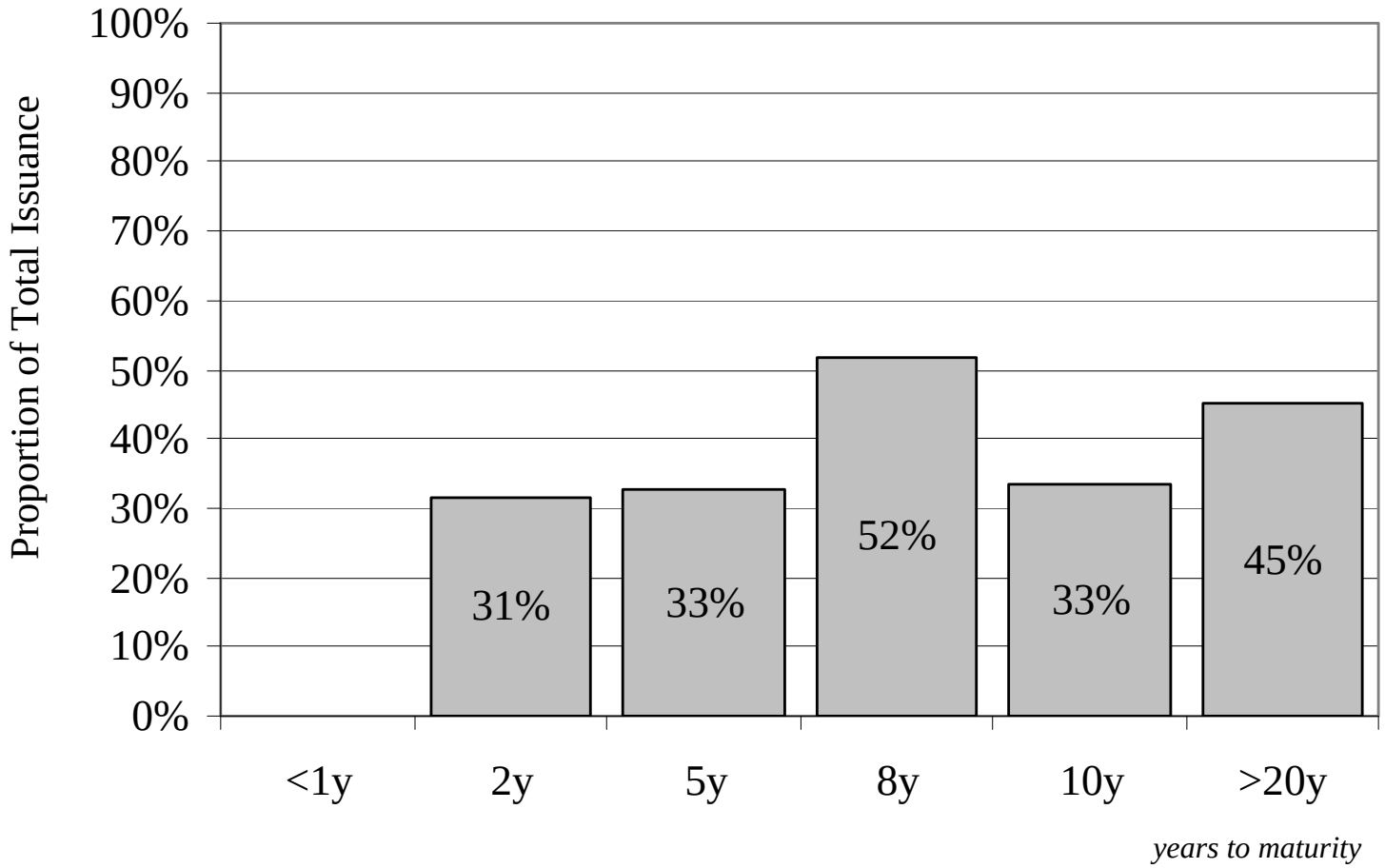
4. What Drives Maturity Structure

Instrument Availability Does Not Constraint Maturities

Proportion of Total Issuance of Government Bonds Purchased by PFAs

Indexed Pesos

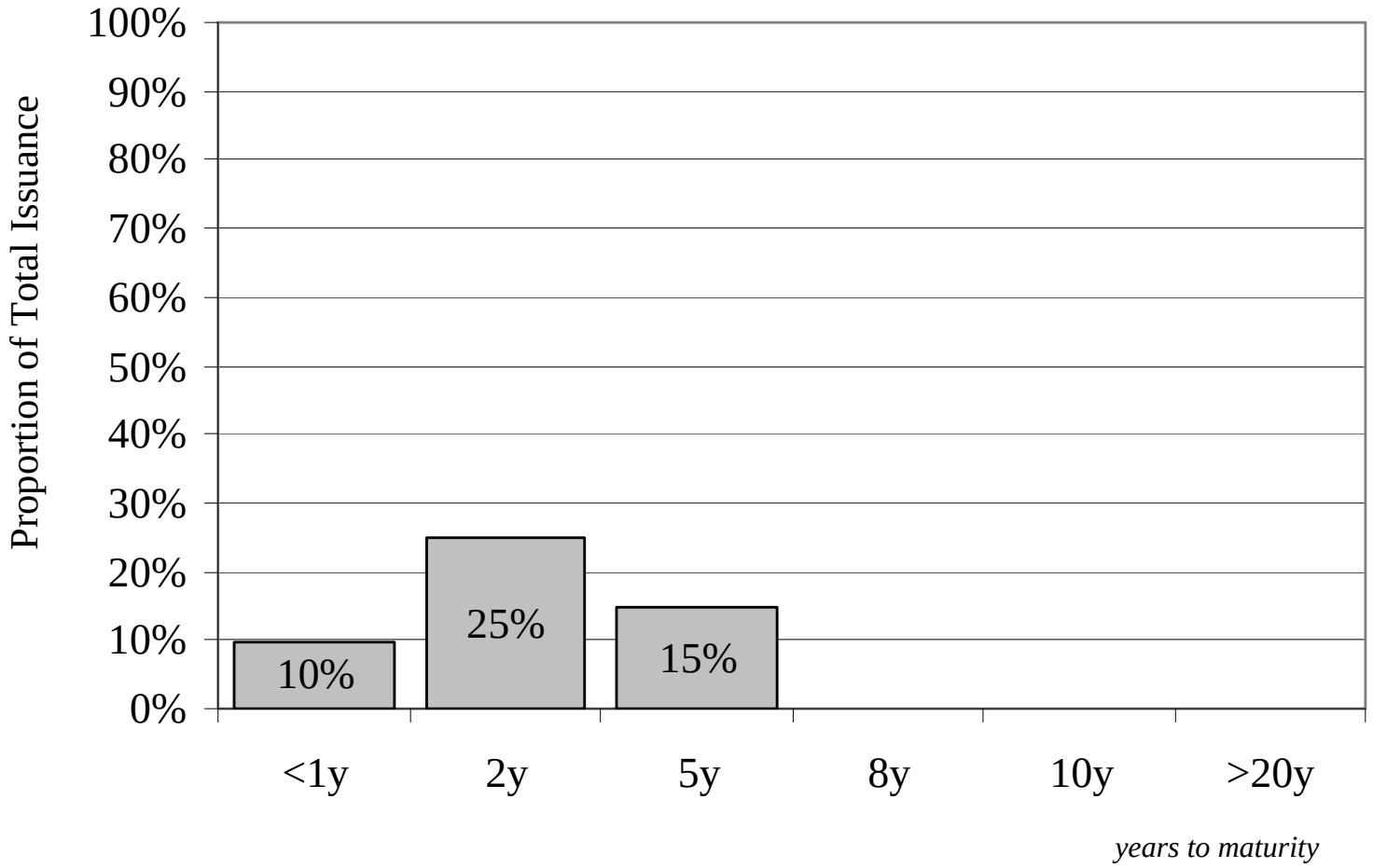


4. What Drives Maturity Structure

Instrument Availability Does Not Constraint Maturities

Proportion of Total Issuance of Government Bonds Purchased by PFAs

US Dollars

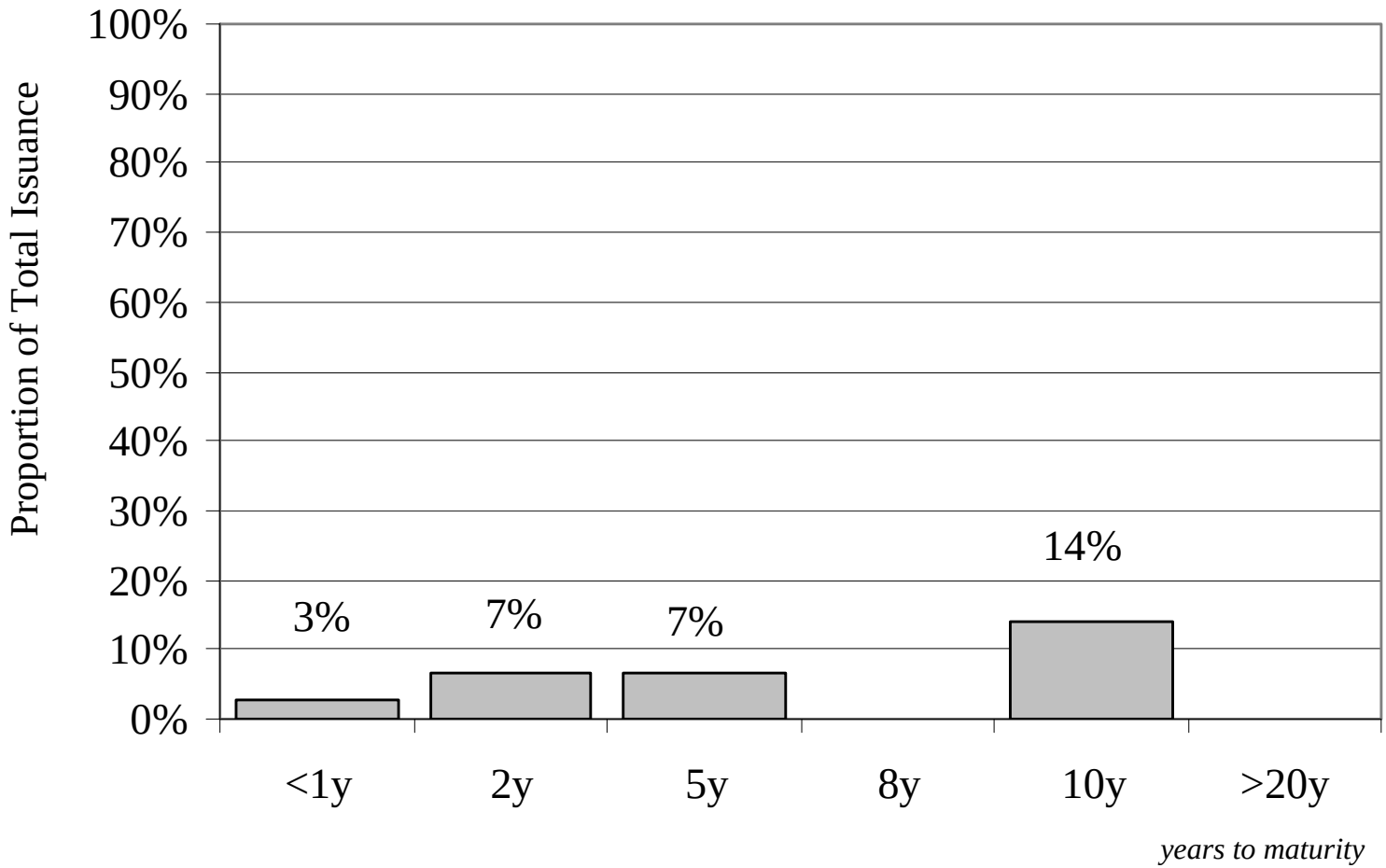


4. What Drives Maturity Structure

Instrument Availability Does Not Constraint Maturities

Proportion of Total Issuance of Government Bonds Purchased by PFAs

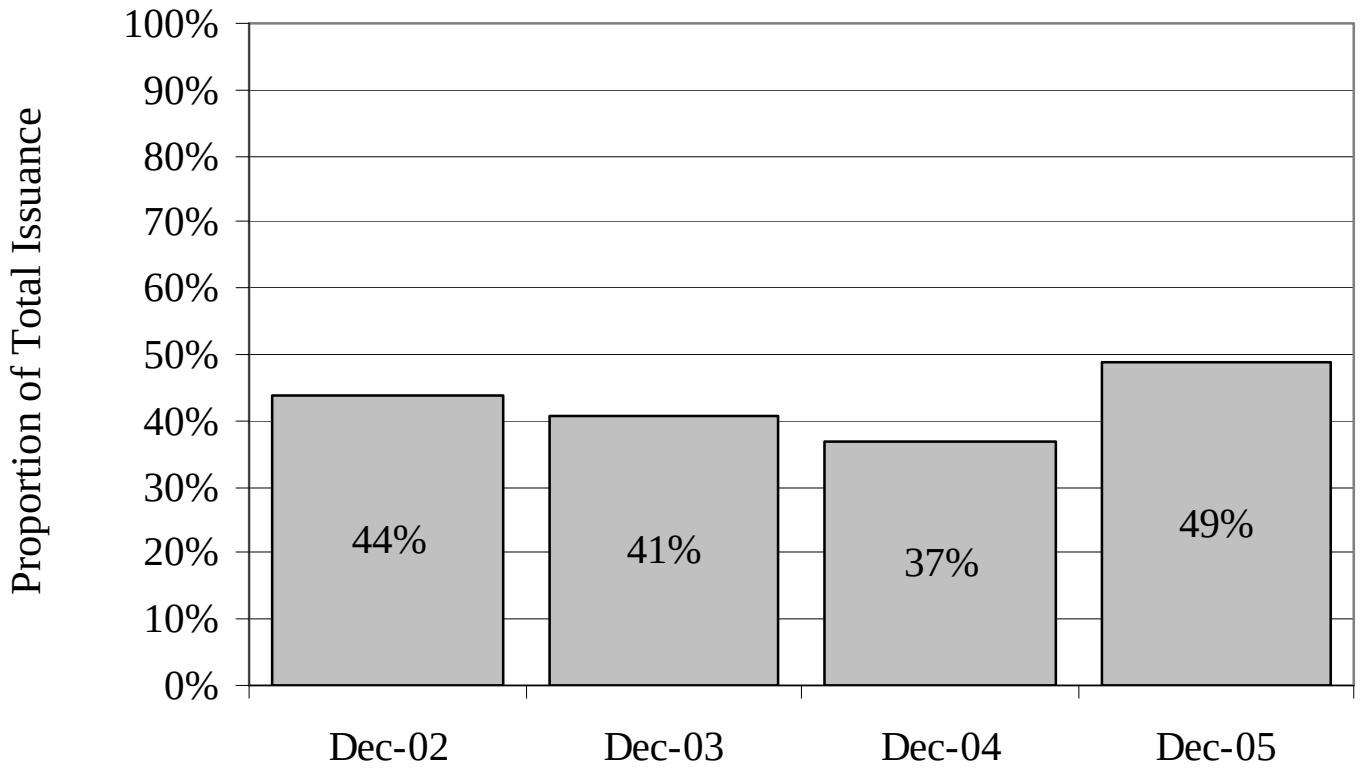
Nominal Pesos



4. What Drives Maturity Structure

Instrument Availability Does Not Constraint Maturities

PFAs' Holdings of Total Corporate Debt Issuance

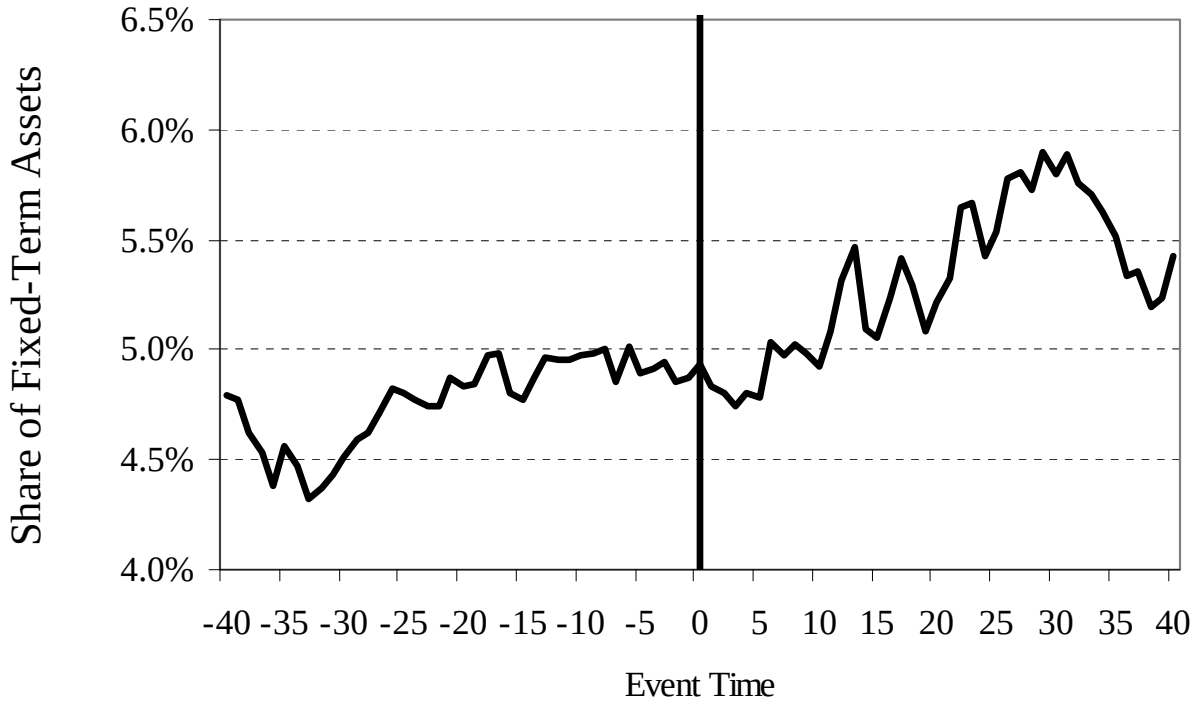


Maturity in years	Dec-02	Dec-03	Dec-04	Dec-05
PFAs	4.9	5	5.8	6.1
Total Debt	12.2	12.7	14	14.7

4. What Drives Maturity Structure?
Liquidity is not Held to Rebalance Portfolios

Average Share of Short-Term Domestic Fixed Income Assets

Event: Relaxation of Regulatory Constraints to Foreign Investment

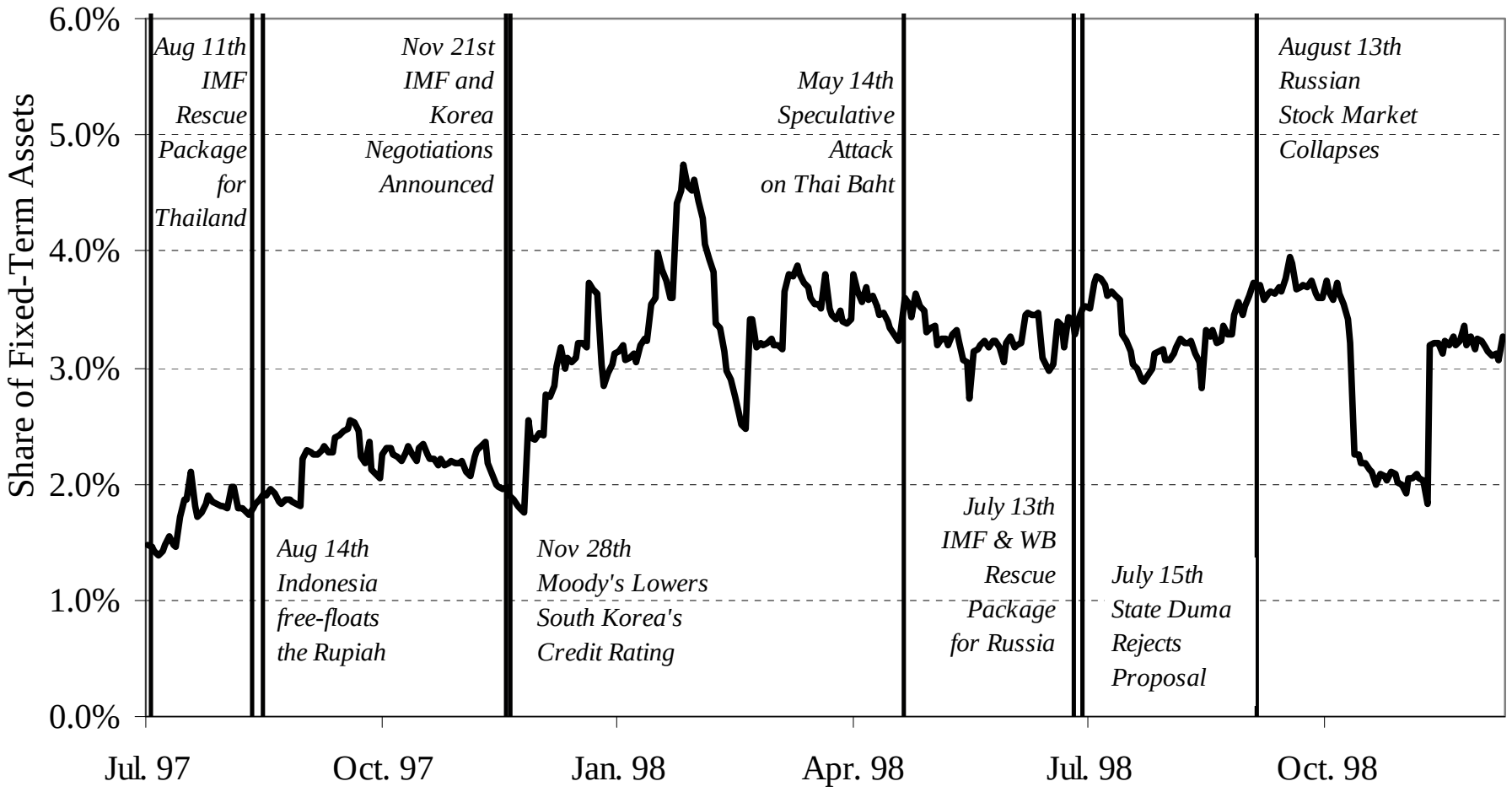


30-day window			15-day window		
Pre-event Mean	Post-Event Mean	Mean Diff	Pre-event Mean	Post-Event Mean	Mean Diff
0.049	0.053	0.004***	0.049	0.050	0.001

4. What Drives Maturity Structure?
Liquidity is not Held to Rebalance Portfolios

Average Share of Short-Term Domestic Fixed Income Assets

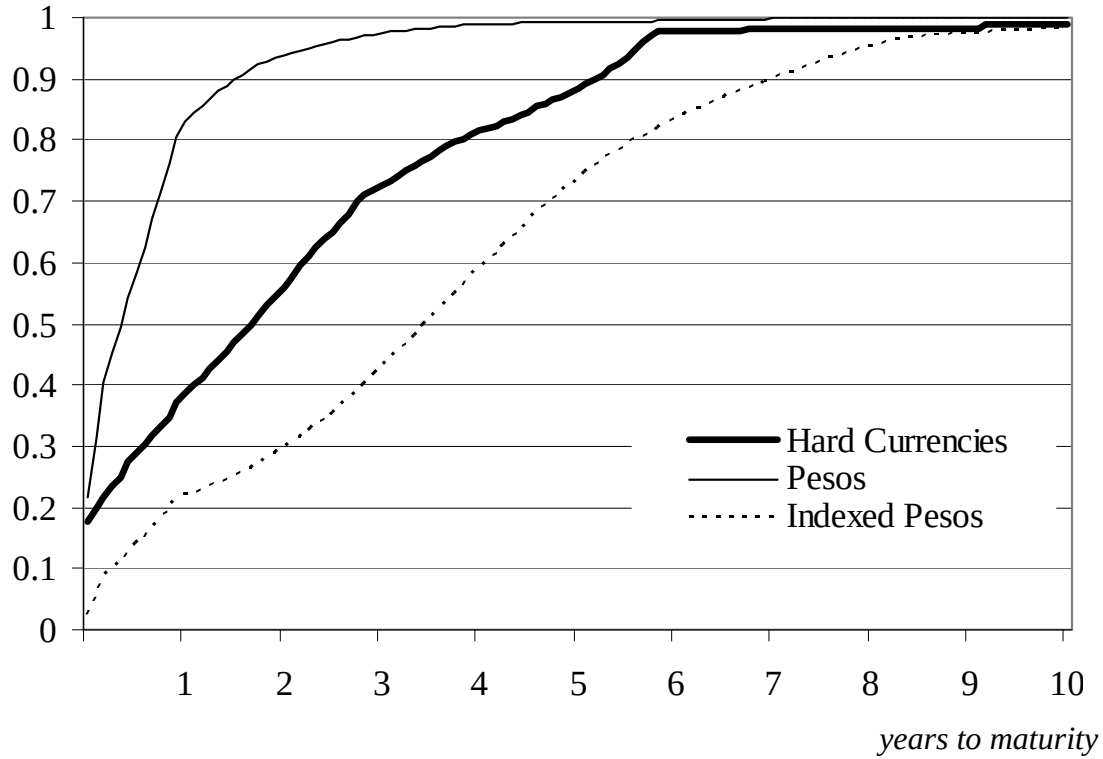
Events: Asian and Russian Crises



4. What Drives Maturity Structure?

Inflation Risk Explains the Profile Across Currencies

Maturity Structure of Chilean PFAs by Currency (1996-2005)

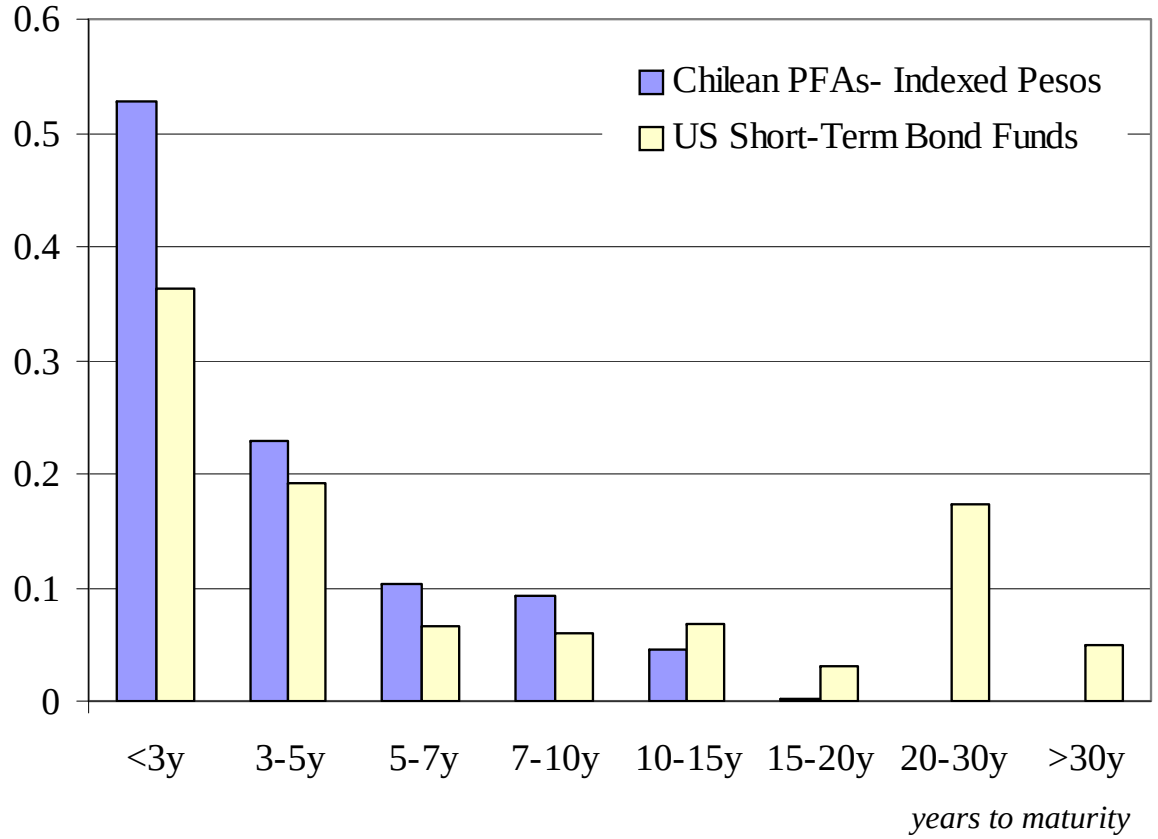


Kolmogorov-Smirnov Test of Equality of Distributions	Overall	% Rejections
i) Hard vs Pesos	<.01***	100%
ii) Hard vs Indexed Pesos	<.01***	100%
iii) Pesos vs Indexed Pesos	<.01***	100%

4. What Drives Maturity Structure?

Inflation Risk does not Explain Differences with the US

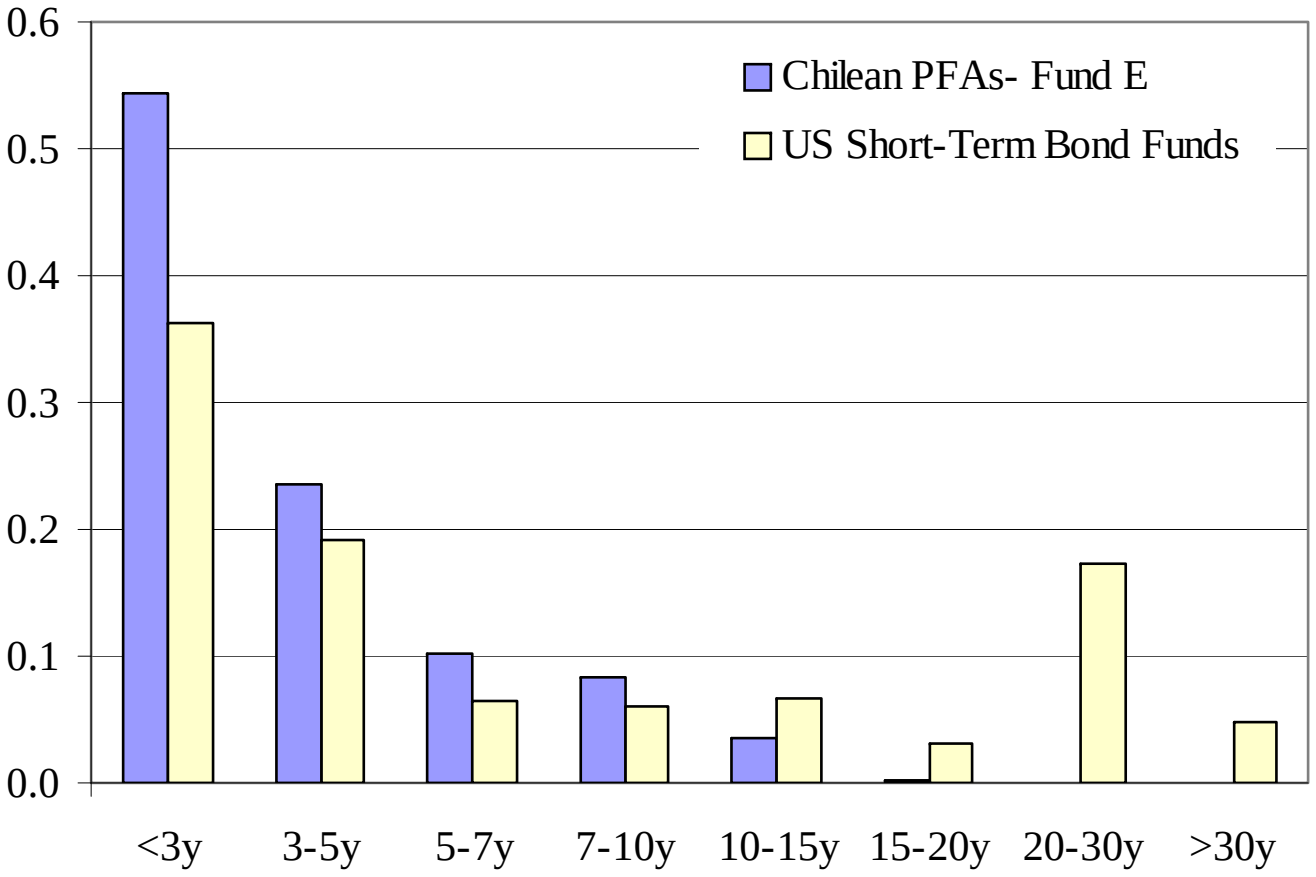
Maturity Structure of Chilean PFAs in Indexed Pesos vs. US Short-Term Bond Funds



Kolmogorov-Smirnov Test of Equality of Distributions	Indexed Pesos	% Rejections
Two sided test	<.01***	100%

4. What Drives Maturity Structure?
Investment in Equities is not the Explanation

Maturity Structure of Chilean PFAs Fund E vs. US Short-Term Bond Funds



4. What Drives Maturity Structure?

Risk Return Profiles at Different Maturities

Sharpe Ratio in Emerging Markets by Maturity

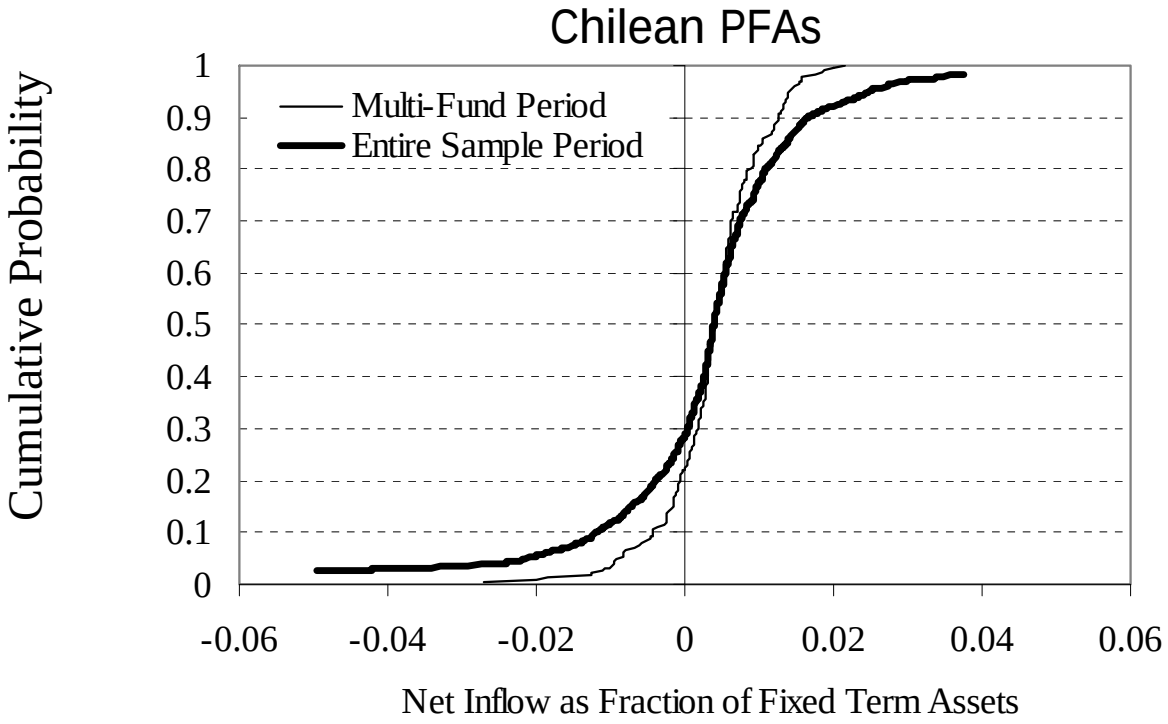
Broner, Lorenzoni, and Schmukler (2007)

Maturity	Excess Return	Standard Deviation	Sharpe Ratio
3 years	0.058	2.507	0.023
6 years	0.065	2.624	0.025
9 years	0.111	3.649	0.030
12 years	0.129	4.224	0.031

4. What Drives Maturity Structure?

Outflows (Redemption Risk) Requires Extreme Conservatism

Cumulative Distribution of Net Inflows as a Fraction of Fixed-Term Assets



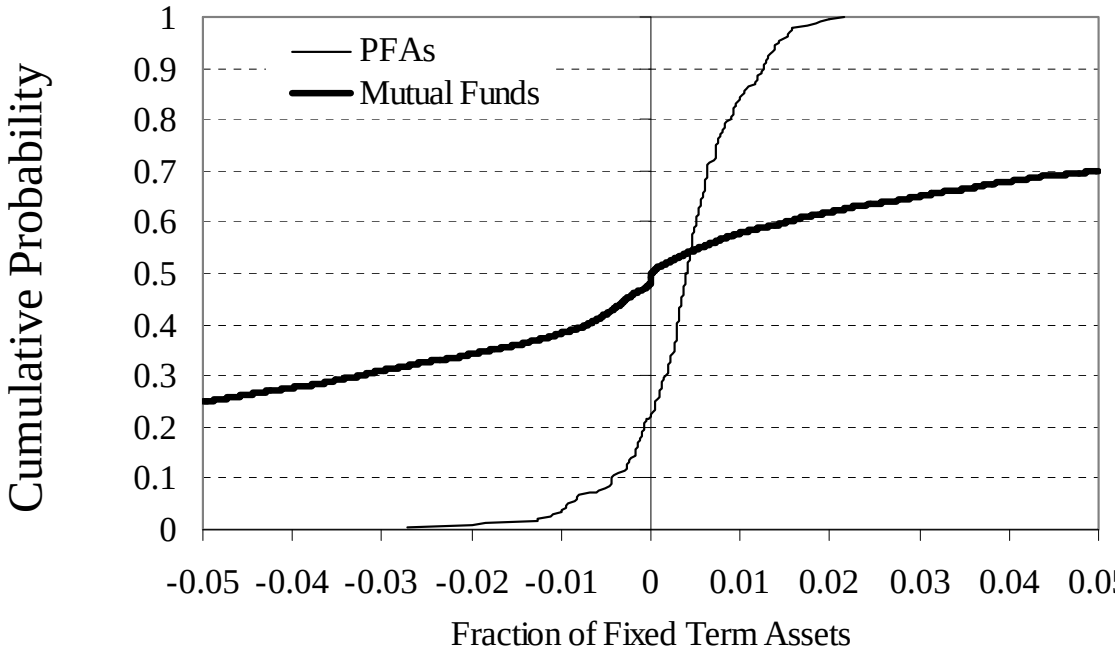
	% < 1mo	Prob. Out. > % 1mo	Prob. Out. > %1 mo*	% < 3mo	Prob. Out. > % 3mo	Prob. Out. > %3 mo*
Entire Sample Period	4.0%	3.1%	--	11.2%	0.3%	--
Multi-Fund Period	4.7%	<0.4%	2.5%	12.0%	<0.4%	0.2%

4. What Drives Maturity Structure?

PFA Conservative Respect to Chilean Mutual Funds

Cumulative Distribution of Net Inflows as a Fraction of Fixed-Term Assets

Chilean PFAs vs. Chilean Mutual Bond Funds



	% < 1 mo	Prob. Out. > % 1mo	% < 3 mo	Prob. Out. > % 3mo
PFAs	4.7%	<0.4%	12.0%	<0.4%
Mutual Funds	10.8%	16.0%	19.5%	9.0%

4. What Drives Maturity Structure?
Managerial Incentives?

- Standard portfolio allocation theories do not consider conflict of interests/incentives
- Recent literature explores role of managerial incentives in risk taking
  - High powered incentives may reduce risk taking and lead to herding
- Can these incentives explain Chilean short termism?
  - Do PFA face incentives for short term performance?
  - Can they bias their portfolios toward short term relative to US managers?
- Highly Speculative

4. What Drives Maturity Structure?

Chilean PF managers face incentives to perform in the ST

- Market discipline:
  - Outflows (or the threat of)
  - Based on short term returns?
    - Some evidence that return ranking matters
  - Puzzle: Much more important for MF
- Regulatory discipline:
  - PFA penalized when deviating from average
  - Changes in regulatory bands do not map into longer term

4. What Drives Maturity Structure?

Chilean PF managers face incentives to perform in the ST

- Relative Performance Evaluation:
  - Widely believed and some evidence that PFA follow tracking error investment model (tracking the mean)
- Fee structure does not incentive value creation
  - PFAs paid upfront
  - Could explain differences with Mutual Funds

4. What Drives Maturity Structure?

Incentives Could Interact with Risk-Return Profiles

- Incentives to produce stable returns in short run
  - Bias against long term instruments
- Why more biased than US Funds?
  - Long term instruments relatively more volatile in Emerging Markets

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5. Conclusions: Main stylized facts

- Pension funds hold large amount of short-term instruments, easy to liquidate
  - Bank deposits, government and corporate debt, & cash
- Much shorter than US mutual funds
  - Both Chilean pension and mutual funds
  - Short even compared to US *short-term* mutual funds
- Pension funds not longer than Chilean mutual funds
- Investors expected to be long are short!

5. Conclusions: Potential Explanations

- Do not exhaust available long-term instruments
  - Demand well below government bonds offered
- Not short term to anticipate buying opportunities
- Longer term in inflation-linked and US dollar assets
  - To hedge inflation and currency risks
  - But still short-term compared with US
- Not driven by redemption risks
  - Pension funds have received large net inflows (not outflows), from new and existing pensioners
  - Only small outflows for individual administrators
  - Much smaller than outflows of mutual funds

5. Conclusions: What Then?

- Our conjecture: Interaction of two factors
  - Managerial incentives
  - Risk-return profile of long- and short-term instruments in emerging economies
- Managerial Incentives: Be constantly with peers
  - Market discipline
  - Regulatory discipline
  - Other factors (like pay structure)

  } Monitoring
- To be aligned with incentives, invest short term
  - Long-term instruments much more volatile (riskier)
  - Thus, more short term in emerging markets

5. Conclusions: Final Thoughts

- Despite benefits of long-term debt …
- Despite all efforts to extend maturities …
- Uphill battle to achieve long-term investments in emerging economies
  - Forces so strong that push to short term
  - And no difference between pension and mutual funds
- Strong tradeoff between monitoring managers and obtaining higher returns (with higher risks)
  - Frequent monitoring leads to short-term investments

5. Conclusions: Final Thoughts

- What is the socially optimal design to balance this tradeoff?
- Very difficult to answer
- Much more research required
  - Cost to pensioners of investing short term
  - How managers respond to incentives
  - Compare pension and mutual funds with insurance (annuity) companies

Thank you