How Important are Foreign Ownership Linkages for International Stock Returns?

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International Stock Price Co-Movement

- Cash-flow based view of the world
  - Common fundamentals as proxied by country or industry
    - Roll (1992), Heston and Rouwenhorst (1994), Griffin and Karolyi (1998), Brooks and Del Negro (2004), Carrieri, Errunza, and Sarkissian (2004), and Bekaert, Hodrick, and Zhang (2008)
  - Trade linkages
    - Forbes and Chinn (2004)
- What effects, if any, might common ownership by institutional investors have on stock price co-movement?

Objective

- We seek to quantify in a systematic way the importance of institutional ownership for international stock returns
  - Investigate several dimensions of institutional ownership
    - An explicit channel of ownership linkage
    - Foreign ownership levels and changes
  - Shed light on various theories of why ownership matters

Why Do Foreign Institutional Investors Matter?

- Traditional channel: market-wide integration
  - Bekaert and Harvey (1995, 2000), Henry (2000), Bekaert et al. (2008)
- Foreign investment flows drive market returns
  - Froot, O'Connell and Seasholes (2001)
- Empirical papers point to the potential importance of international trading location
  - Country of trading
    - Froot and Dabora (1999), Chan, Hameed, and Lau (2003)
  - ADRs
    - Foerster and Karolyi (1996), Errunza, Hogan, and Hung (1999), Lewis (WP)

Beyond Traditional Channel of Market Integration

- Theories suggest that common owners may induce co-movement of international stocks
- Coordinated Fund Buys/Sells Drive Returns
  - Goldstein and Pauzner (2005): strategic risk
  - Kyle and Xiong (2005): wealth effect
  - Broner, Gelos and Reinhardt (2006)
- Fund flows
  - Fund outflows causing fire sale (Coval and Stafford 2008)
- Others
  - Style or habitat investing (Barberis, Shleifer and Wurgler 2005)

Outline

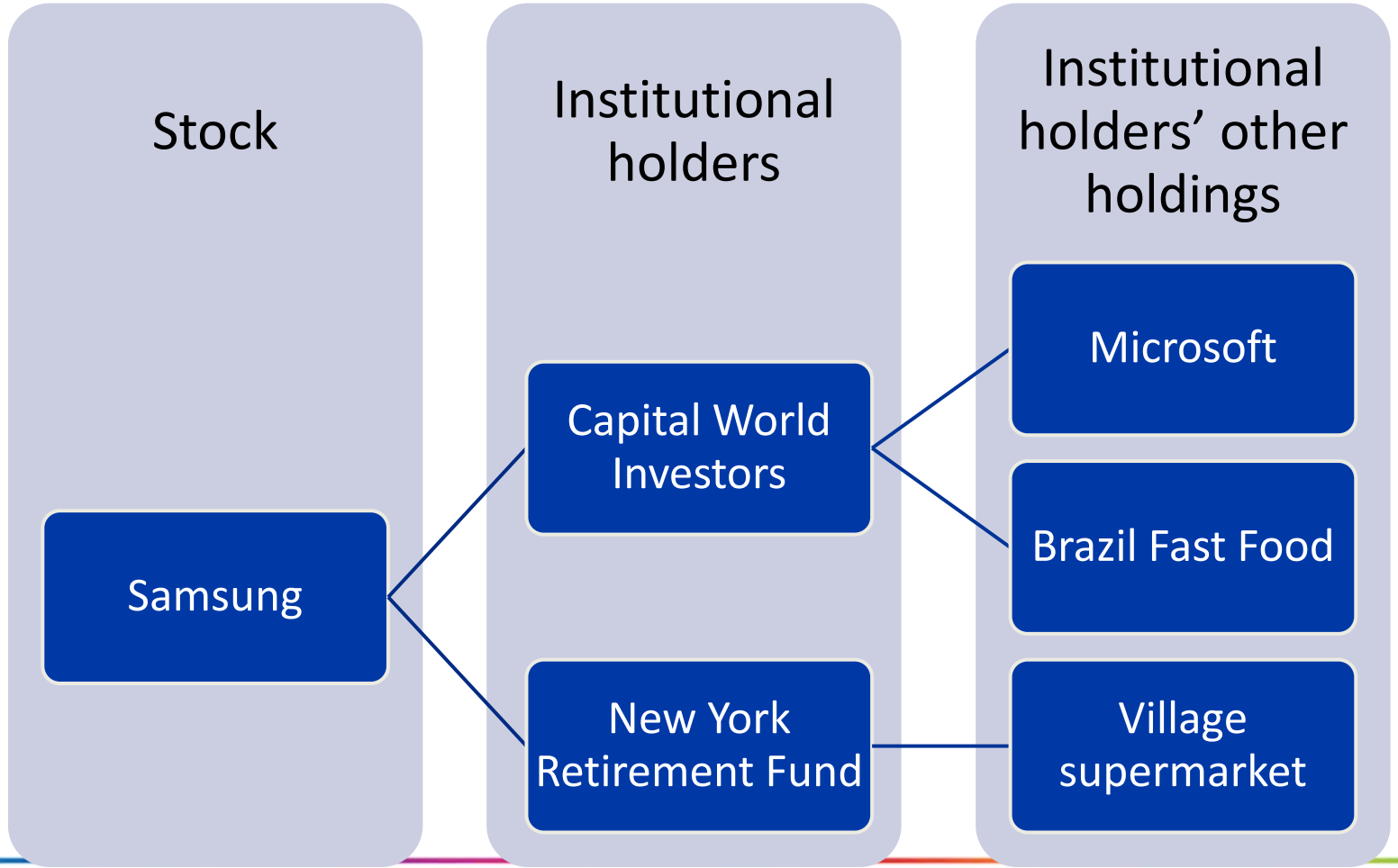
- Capturing ownership linkages
- Sample and Data
- Importance of ownership return
- Alternative explanations
- Investor Habitat and Wealth Effect
- Diversification implications
- Conclusions

Dimensions of Ownership

- Level of Foreign Ownership
  - As stocks become more integrated, their returns would be priced internationally
- Changes in Foreign Ownership
  - Foreign investors may move the price through information or price impact
- Ownership Linkage Measure
  - Beyond the level of foreign ownership, specific holders of a stock matter
  - Ownership linkage may induce co-movement

Samsung Example

- We examine ownership linkage by capturing the equity return to one's shareholders



Capturing Ownership Linkage

- Construction of Ownership Return
  - Compute the value-weighted return for all non-Korean stocks held by Capital World Investors
  - Do this for all funds holding Samsung
    - Weight them by their proportional holdings in Samsung
- Economics/Interpretation of Ownership Return
  - Return that the shareholders earn
  - Return of other stocks that are linked through common shareholders

Factor Models with Ownership

- Factor Model

$$R_i = \alpha + \beta_C R_C + \beta_I R_I + \beta_O R_{i,O} + e_i$$

  - Country Factor
    - $R_{C,i} = \sum_{j=1}^{N} w_{C,j}\left(1 - d_{C,i,j}\right)R_j$
  - Industry Factor
    - $R_{I,i} = \sum_{j=1}^{N} w_{I,j}\left(1 - d_{I,i,j}\right) R_j$
  - Ownership Factor
    - $R_{O,i} = \sum_{k=1}^{K}\sum_{j=1}^{N} v_{O,i,k} w_{O,j,k}\left(1 - d_{O,i,j}\right)R_j$

Data

- FactSet/Lionshares institutional ownership data
  - International stock holdings data from 2000 to 2009 Q1
  - Survivorship bias-free. Over 7,000 firms in 65 countries
  - Mutual funds or equivalent in other countries
  - Holdings by institutions and by funds
  - Institution level holdings as a base, supplemented by fund level
  - Holding weights on a date as constant until next reporting date
- Datastream & CRSP
  - Calculate weekly, monthly, quarterly returns on holdings
  - Use reversion/extreme filter on returns data
  - Require a stock to trade at least 30% of trading days
- CRSP mutual fund holdings dataset
  - Get fund flows, NAVs and fund returns

Importance of Ownership Return

- Cross-sectional regressions
  - FM regressions
- Time-series regressions
  - Bekaert, Hodrick and Zhang (2009) test
- Panel regressions
  - Fixed effects
  - Clustered standard errors
- Portfolio sorts
- ADR test
- Non-Ownership Return

Cross-sectional Regressions

	Foreign Ownership					
	Low		Medium		High	
	0-1%		1%-5%		>=5%	
	(1)	(2)	(1)	(2)	(1)	(2)
Ownership Return	**0.217**	**0.090**	**0.259**	**0.223**	**0.710**	**0.395**
	(5.40)	**(2.43)**	**(6.29)**	**(3.54)**	**(7.11)**	**(4.76)**
Ownership Change		2.150		1.028		0.455
		(2.65)		(4.45)		(6.66)
Local Beta*Local Market		0.795		0.792		0.764
		(10.1)		(11.0)		(15.3)
World Beta*World Market		0.181		-0.153		0.209
		(0.40)		(-0.35)		(0.42)
Industry		0.235		0.270		0.399
		(4.98)		(8.23)		(10.0)
Adjusted R^2	0.006	0.091	0.006	0.126	0.015	0.137
Average Number of Firms per Quar	2,020	1,091	3,627	1,226	1,981	1,524

Time-series Regressions

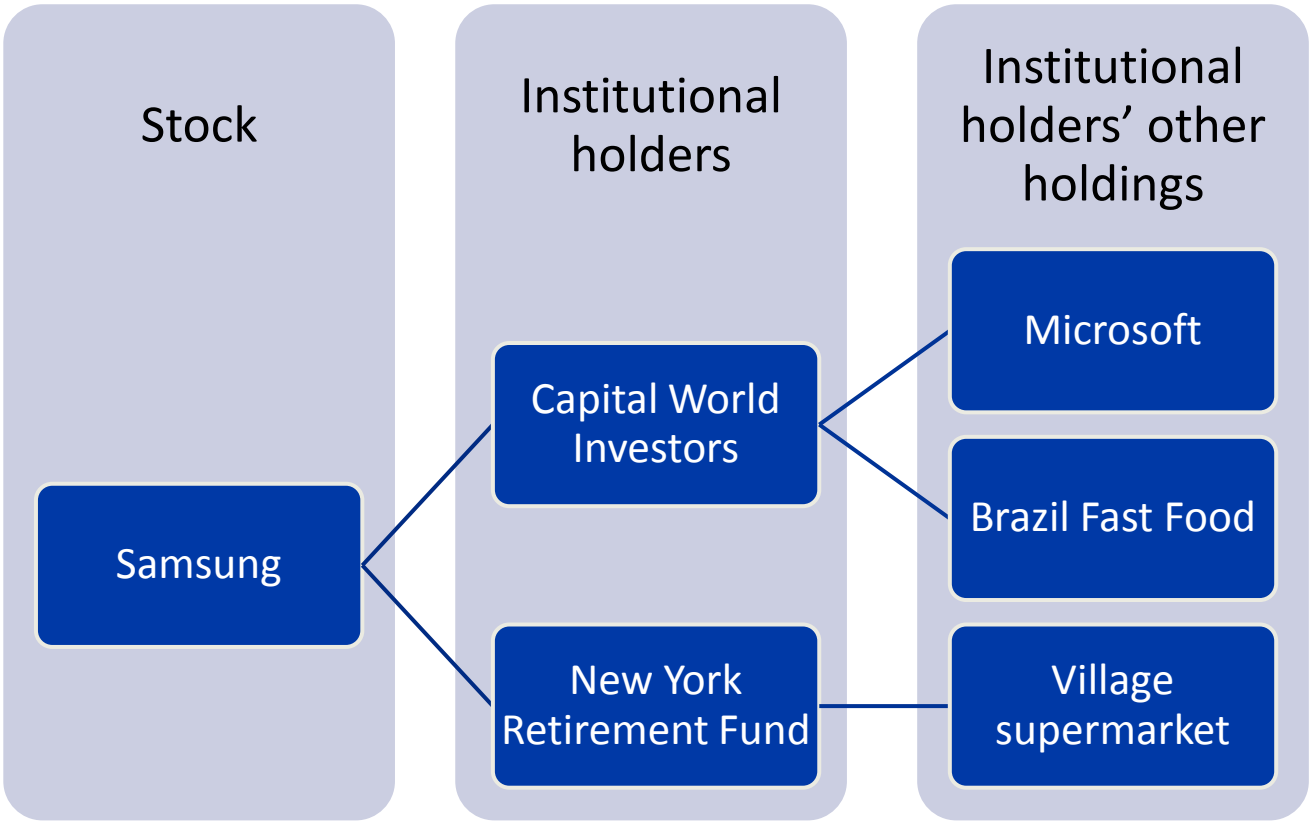
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ownership Return			**0.208**			**0.364**	**0.315**
Local Market	0.985	0.874	0.818	0.815	0.850	0.818	0.805
World Market		0.171			-0.174	-0.186	-0.482
Industry				0.237	0.339		0.339
Adjusted R^2	0.339	0.349	0.351	0.355	0.362	0.356	0.368
Number of Firms	3,126	3,126	3,126	3,126	3,126	3,126	3,126

	Regression #	MSE	Regression #	MSE	Regression #	MSE
Incremental Contribution of the Ownership Return						
Base Model	(1)	0.038	(2)	0.025	(5)	0.021
Base Model with Ownership Return	(3)	0.026	(6)	0.023	(7)	0.019
Difference		*0.012*		*0.002*		*0.002*
p-value		*<.0001*		*<.0001*		*<.0001*
Incremental Contribution of the Industry Return						
Base Model	(1)	0.038	(2)	0.025	(6)	0.023
Base Model with Industry Return	(4)	0.026	(5)	0.021	(7)	0.019
Difference		*0.012*		*0.004*		*0.004*
p-value		*<.0001*		*<.0001*		*<.0001*
Incremental Contribution of the World Return						
Base Model	(1)	0.038	(4)	0.026	(3)	0.026
Base Model with World Return	(2)	0.025	(5)	0.021	(6)	0.023
Difference		*0.013*		*0.005*		*0.003*
p-value		*<.0001*		*<.0001*		*<.0001*

ADR Test

	All Firms			Firms with Increased Foreign Ownership			Firms with increased foreign ownership by 5%		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Ownership Return		0.083	0.117		0.093	0.164		0.086	0.138
		(3.16)	(2.88)		(2.88)	(2.96)		(2.24)	(1.92)
Ownership Return * ADR-Dummy		**0.042**	**0.069**		**0.101**	**0.159**		**0.108**	**0.255**
		(1.22)	**(1.30)**		**(2.41)**	**(2.26)**		**(2.19)**	**(2.81)**
Local Market	1.032	1.016	1.016	1.060	1.040	1.039	1.056	1.042	1.039
	(61.1)	(56.7)	(56.7)	(51.4)	(46.9)	(46.8)	(46.7)	(42.3)	(41.9)
Local Market * ADR-Dummy	0.025	0.000	-0.001	0.015	-0.018	-0.020	0.006	-0.032	-0.043
	(1.11)	(0.01)	(-0.05)	(0.54)	(-0.59)	(-0.69)	(0.21)	(-0.97)	(-1.29)
U.S. Market	0.043		-0.040	0.040		-0.076	0.046		-0.051
	(1.8)		(-1.10)	(1.4)		(-1.57)	(1.4)		(-0.85)
U.S. Market * ADR-Dummy	0.018		-0.043	0.056		-0.090	0.042		-0.184
	(0.55)		(-0.84)	(1.41)		(-1.37)	(0.95)		(-2.25)
Adjusted R^2	0.250	0.252	0.252	0.275	0.276	0.276	0.277	0.278	0.278
Number of Observations	35,430			22,576			18,356		
Number of Firms	358			232			191		

Returns of Stocks Without Common Ownership

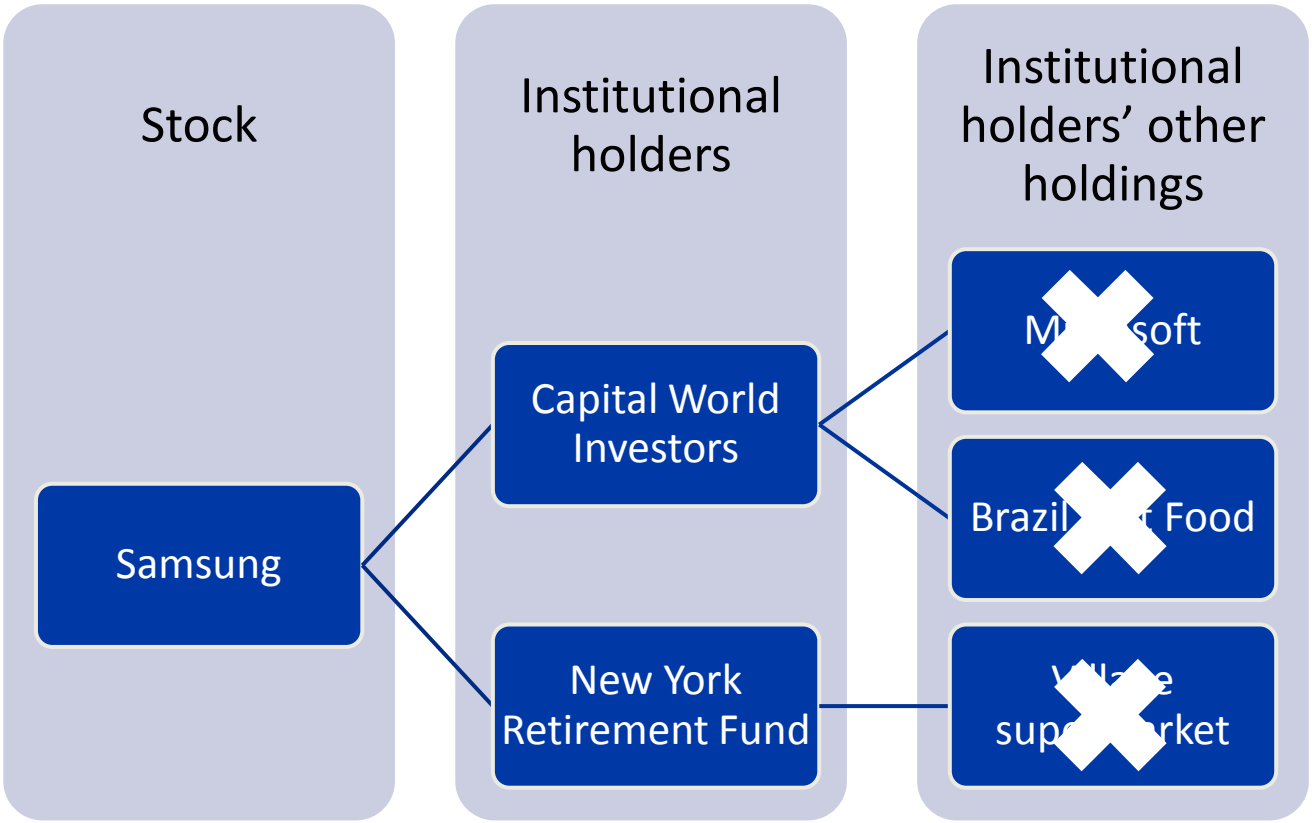


Large computer stock in US

Similar size food stock in Brazil

Similar size retail stock in US

Returns of Stocks Without Common Ownership



Alternative Explanations

- Ownership Return is important for international stock returns
  - Beyond the change in the level of foreign ownership
  - Similar economic significance as traditional drivers of returns
- However, it could possibly capture other effects:
  - Investor recognition?
  - Exchange rate effects?
  - Foreign Sales?
  - Global investment styles?
  - Global vs. Local CAPM?

Market Development, Size and Liquidity

		Market Development		Market Capitalization			Trading	
	All	Emerging	Developed	Small	Medium	Large	Illiquid	Liquid
Ownership Return	**0.395**	**0.150**	**0.436**	**0.115**	**0.334**	**0.413**	**0.184**	**0.629**
	(4.76)	**(1.26)**	**(4.44)**	**(0.66)**	**(3.38)**	**(4.24)**	**(2.19)**	**(6.78)**
Ownership Change	0.455	0.457	0.463	0.579	0.504	0.536	0.325	0.588
	(6.66)	(4.21)	(5.96)	(2.45)	(4.73)	(5.28)	(4.04)	(5.80)
Local Beta*Local Market	0.764	0.813	0.676	0.761	0.779	0.783	0.693	0.785
	(15.3)	(21.3)	(8.32)	(5.94)	(14.2)	(20.6)	(10.5)	(15.5)
World Beta*World Market	0.209	-0.634	0.245	0.270	0.160	0.168	0.397	-0.009
	(0.42)	(-1.56)	(0.47)	(0.53)	(0.30)	(0.31)	(0.71)	(-0.02)
Industry	0.399	0.471	0.398	0.658	0.285	0.394	0.442	0.386
	(10.0)	(5.88)	(9.92)	(5.13)	(5.47)	(8.75)	(8.16)	(10.06)
Adjusted R^2	0.137	0.221	0.113	0.081	0.130	0.188	0.098	0.172
Average Number of Firms per Quarter	1,607	272	1,335	192	427	988	706	901

Why Does Ownership Matter?

- Theory suggests that the ownership return might matter due to
  - Wealth Effects/Portfolio Rebalancing
    - Portfolio appreciation
    - Kyle and Xiong (2001)
  - Habitat investing
    - Construct habitat variable
      - Similar to ownership return, but based on changes in holdings of investors
      - Captures net change in investments in and out of other stocks that investors hold
    - Barberis, Shleifer and Wurgler 2005

Investor Habitat

	Change in Holdings							Returns	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Habitat	**0.241**	**0.291**							
	(3.24)	**(2.72)**							
Change in Holdings of Foreign Stocks (High Common Holders)			**0.236**			**0.233**	**0.273**		
			(4.49)			**(4.47)**	**(4.05)**		
Change in Holdings of Foreign Stocks (Medium Common Holders)				0.086		0.118	0.144		
				(1.00)		(1.35)	(1.51)		
Change in Holdings of Foreign Stocks (Low Common Holders)					-0.109	-0.084	-0.215		
					(-1.43)	(-1.23)	(-2.74)		
Returns of Foreign Stocks (High Common Holders)								**0.741**	**0.338**
								(6.75)	**(6.48)**
Returns of Foreign Stocks (Medium Common Holders)								-0.410	-0.036
								(-1.86)	(-0.17)
Returns of Foreign Stocks (Low Common Holders)								-0.230	-0.319
								(-2.87)	(-3.23)
Returns of Foreign Stocks (No Common Holders)								-1.701	-0.550
								(-8.73)	(-2.71)
Local Beta*Local Market		0.005					0.005		0.728
		(1.75)					(1.81)		(15.21)
World Beta*World Market		-0.004					-0.011		0.165
		(-0.40)					(-0.91)		(0.34)
Industry		0.006					0.006		0.410
		(1.27)					(1.28)		(9.67)
Adjusted R^2	0.003	0.009	0.003	0.002	0.001	0.005	0.010	0.040	0.143
Number of Firms	1,991	1,582	1,991	1,991	1,991	1,991	1,582	2,053	1,598

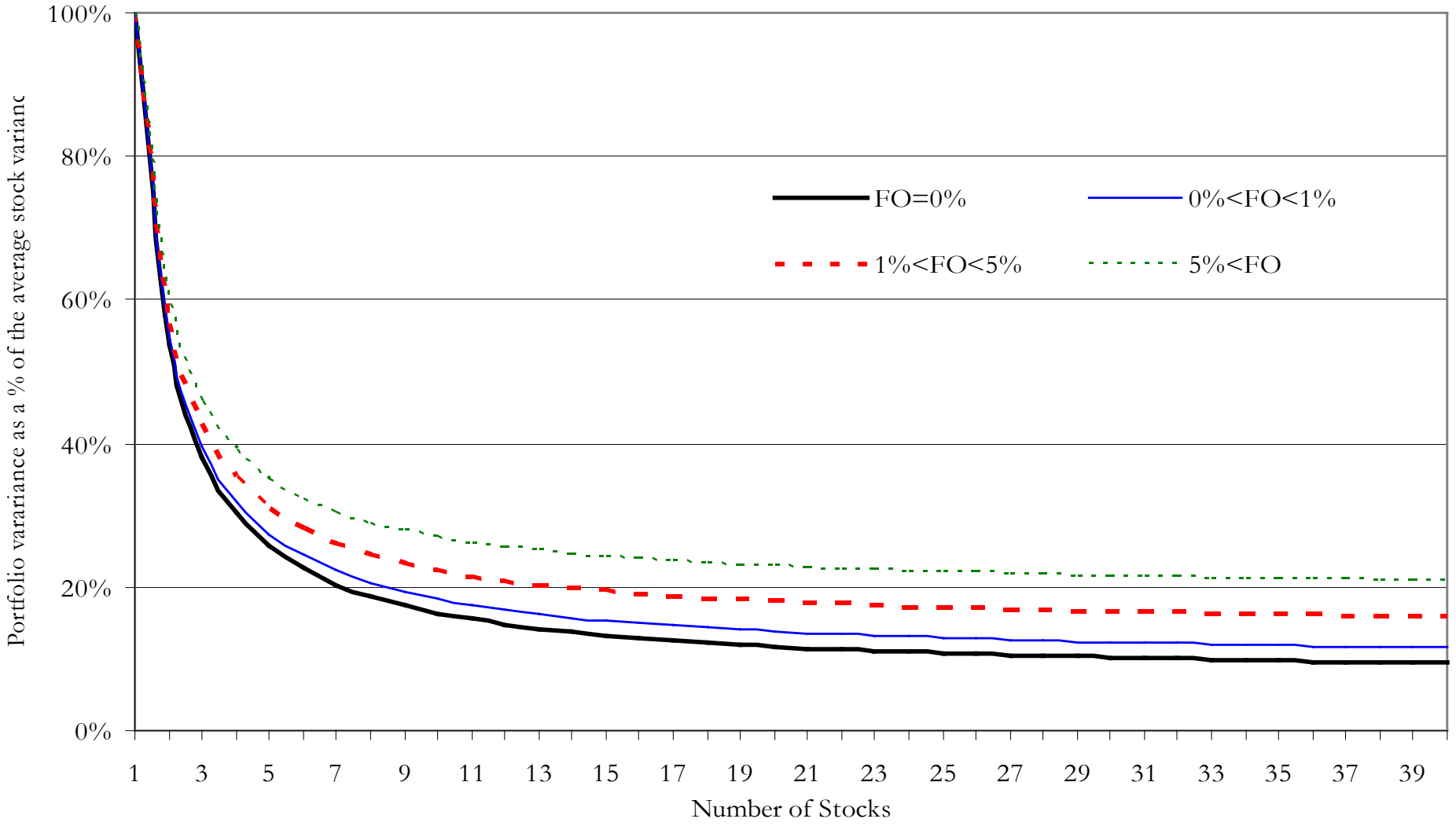
Wealth Effects

	New and Existing Holders			Existing Holders		
	(1)	(2)	(3)	(4)	(5)	(6)
Owner Fund Foreign Return	**0.050**			**0.062**		
	(0.64)			**(0.72)**		
Owner Fund Foreign Return (lagged)	0.136			0.141		
	(1.50)			(1.39)		
Owner Fund Return		**-0.005**	**-0.027**		**0.000**	**-0.024**
		(-0.06)	**(-0.28)**		**(0.00)**	**(-0.24)**
Owner Fund Return (lagged)		0.080	0.054		0.081	0.065
		(0.80)	(0.51)		(0.73)	(0.58)
Percentage Change in Holdings (lagged)			0.035			0.036
			(6.89)			(6.99)
Stock Holdings (lagged) - Average Stock Holdings (l						0.024
						(2.50)
Adjusted R^2	0.000	0.001	0.006	0.000	0.001	0.006
Average Number of Firm-Fund per Quarter	2,150	2,184	2,150	2,150	2,184	2,184

Implications for Portfolio Diversification

- Diversification across countries and industries
  - A purely cash-flow based view of the world
- Role of ownership
  - Level of foreign ownership
  - Foreign ownership beta

Diversification Implications: Foreign Ownership Level



Diversification Implications

Panel A	FO=0%	0%<FO<1%	1%<FO<5%	5%<FO
Average Covariance	0.00058	0.00053	0.00062	0.00077
Average Correlation	0.103	0.128	0.162	0.210

Panel B	Ownership Beta bin					
	<0.5 (Low)	0.5-0.75	0.75-1	>1 (High)	High-Low	t-stat
Average Ownership Beta	0.380	0.648	0.867	1.080	0.699	
Average Fund Beta	0.471	0.635	0.765	0.864	0.394	5.4

Diversification Implications

FO Level	Ownership Beta bins <0.5 (Low)	0.5-0.75	0.75-1	>1 (High)	Average	High FO – Low FO	t-stat
			Fund Betas				
0%	0.34	0.45	0.53	0.58	0.48	0.24	4.1
0%-1%	0.39	0.51	0.57	0.61	0.52	0.22	4.4
1%-5%	0.45	0.56	0.66	0.75	0.6	0.3	4.4
5%-15%	0.46	0.58	0.70	0.81	0.64	0.35	6.0
>15%	0.47	0.67	0.83	0.98	0.74	0.5	5.4
Average	0.42	0.56	0.66	0.74		0.31	9.9
High FO-Low FO	0.12	0.21	0.27	0.34	0.23		
t-stat	9.75	6.26	14.2	6.87	11.3		

Summary and Conclusion

- Foreign ownership by institutional investors matters for international stock returns
  - Similar importance as country and industry fundamentals
  - Not explained by omitted country/industry variations, wealth effects or other explanations like liquidity, investment style, or fund flows
- Ownership linkages
  - Summary measure of investment locale/habitat that links investor capital around the world
  - Beyond the level of foreign ownership, the specific ownership composition of a stock matters
  - Important diversification implications
- <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2022129>

WBS - we look at things differently

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