

Discussion of

“The U.S. Listing Gap”

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Overview of My Discussion

1. Summarize the paper's main findings
2. Highlight two additional patterns in the data
 - a. Total number of (public plus private) firms per capita also falls between 1996 and 2012
 - b. Listing gap is significantly smaller when we focus on number of foreign firms listing on U.S. exchanges
3. Discuss potential rationales for large number of mergers/delistings, which is the most intriguing finding

Summary of Main Findings

- Number of domestic firms traded on U.S. exchanges increased until 1996 and then decreased sharply... especially when number of U.S. public firms is measured on a per capita basis.
- Pattern differs from that of thirteen other developed countries.

Year	United States		Other Developed Countries
	Number of Public Firms	Number of Public Firms per Capita	Number of Public Firms per Capita
1975	4,775	22.11	23.89
1996	8,025	29.79	22.53
2012	4,102	13.08	31.23

- Cross-country regressions of the number of public firms per capita, imply there should have been 9,538 domestic firms trading on U.S. exchanges in 2012 → **“Listing Gap” of 5,436 firms!**
- **My within-U.S. estimate: 5,240 (= 4,102 × (29.79/13.08) – 4,102)**
which treats 1996 as baseline rather than outlier

Summary of Main Findings (2)

- **54%** of listing gap is due to **missing new listing**.

Foreshadowed by findings in Gao, Ritter, Zhu (2013) and Doidge, Karolyi, Stulz (2013).

- Remaining **46%** of gap is due to **excessive delistings**, largely due to **increased M&A** activity.

These are the novel findings.

- Based on a stylized model, in which the costs and benefits of being public both vary with firm size, they conclude that smaller firms are remaining private because net benefit of being public has fallen.
- *Random aside: The fact that the size distribution of public firms is shifting upward may have made it harder to be a small cap equity fund manager since 1996.*

Changes in Total Number of Firms?

- The authors (and existing literature) model trends in the number of public firms per capita.
- I would also consider trends in the total number of firms per capita.
 - *For example, Bresnehan and Reiss (1990) model how number of firms in an industry increases as a town's population increases.*
- Comparing 1977-1996 and 1997-2012, we see that the total number of firms per capita increased by 2.77%.

Year(s)	Total Number of Public and Private Firms (millions)	U.S. Population (millions)	Total Number of Firms per Capita (times 1000)	Expected Change in Number of Public Firms
1977-1996	4.01	241.37	16.59	
1997-2012	4.99	292.69	17.05	2.77%
Source	<i>Table 1</i>	<i>Census</i>	<i>Calc.</i>	<i>Calc.</i>

Changes in Total Number of Firms?

- However, the total number of firms per capita **increases 12.26%** during 1977-1996 and then **decreases 8.06%** during 1996-2012.

Year(s)	Total Number of Public and Private Firms (millions)	U.S. Population (millions)	Total Number of Firms per Capita (times 1000)	Expected Change in Number of Public Firms
1977	3.42	220.24	15.52	
1996	4.69	269.39	17.42	12.26%
2012	5.03	314.11	16.02	-8.06%
Source	<i>Table 1</i>	<i>Census</i>	<i>Calc.</i>	<i>Calc.</i>

- **Since ratio of large and small firms does not appear to change between 1996 and 2012 (see Figure 7), the decline in the total number of firms per capita likely contributed to the listing gap in 2012 measured relative to 1996.**
- *My within-U.S. listing gap estimate falls from 5,240 to 4,487.*

Listing Gap for Domestic Firms

- Because I was only able to obtain data on foreign listings for 2003-2012, I first estimate listing gap in 2012 relative to 2003.
- This (ad hoc) normalization implies a listing gap of **22.9%**.

Domestic Firms Traded on US Exchanges						
Year	Total Number of Public and Private Firms	Actual Number	Actual as % Total Number	Expected Number [in 2003]	Listing Gap [vs 2003]	Gap as % Expected Number
2003	5,007,771	5,295	0.106%	5,295	0	0.0%
2004	5,083,445	5,226	0.103%	5,375	149	2.8%
2005	5,184,869	5,145	0.099%	5,482	337	6.2%
2006	5,223,984	5,133	0.098%	5,524	391	7.1%
2007	5,284,371	5,109	0.097%	5,587	478	8.6%
2008	5,241,600	4,666	0.089%	5,542	876	15.8%
2009	5,068,343	4,401	0.087%	5,359	958	17.9%
2010	4,994,080	4,279	0.086%	5,281	1,002	19.0%
2011	4,953,866	4,171	0.084%	5,238	1,067	20.4%
2012	5,030,962	4,102	0.082%	5,320	1,218	22.9%
Source	<i>Table 1</i>	<i>WWE</i>	<i>Calc.</i>	<i>Calc.</i>	<i>Calc.</i>	<i>Calc.</i>

Listing Gap for Foreign Firms

- Then, I estimate listing gap for foreign firms in 2012 relative to 2003.

Year	Total Number of Public and Private Firms	Foreign Firms Traded on US Exchanges				
		Actual Number	Actual as % Total Number	Expected Number [in 2003]	Listing Gap [vs 2003]	Gap as % Expected Number
2003	5,007,771	864	0.017%	864	0	0.0%
2004	5,083,445	871	0.017%	877	6	0.7%
2005	5,184,869	884	0.017%	895	11	1.2%
2006	5,223,984	872	0.017%	901	29	3.3%
2007	5,284,371	832	0.016%	912	80	8.7%
2008	5,241,600	806	0.015%	904	98	10.9%
2009	5,068,343	778	0.015%	874	96	11.0%
2010	4,994,080	816	0.016%	862	46	5.3%
2011	4,953,866	817	0.016%	855	38	4.4%
2012	5,030,962	814	0.016%	868	54	6.2%
Source	<i>Table 1</i>	<i>WWE</i>	<i>Calc.</i>	<i>Calc.</i>	<i>Calc.</i>	<i>Calc.</i>

- Smaller listing gap of 6.2% for foreign firms suggests the net benefit of listing declines differentially for U.S. firms. Why?**

Changing Economic Conditions?

- Authors estimate VAR at quarterly frequency:
 - New listing rate in quarter $t-4$ predicts delisting rate in quarter t
 - IPO return in quarter $t-1$ predicts new listing rate in quarter t
- How long should it take new listings to delist? How long should it take new firms to list? I would have expected slower moving processes.
- **Re-estimate VAR at annual frequency with one or two lagged annual rates?**
- **Control for change in total number of public and private firms?** Can filter sample to exclude firms with less than 100 workers.

Motivation for Mergers?

- Conclude that listing gap reflects fact that “an exchange listing is not as important as it used to be [in the U.S.]”
- I would like to know more about the nature of mergers.
- **Increased acquisitions of U.S. public firms by non-U.S. public firms?**
 - Inversions? Increased competition between multinationals (e.g., Fiat and Chrysler)?
- Has there been a shift in the bargaining power of small firms? Increased PE? Increased investments by MFs?
If so, we might expect to find more favorable merger terms everything else equal post 1996.
 - Alternatively: Include post-1996 interaction terms in Table 8?

Decline of U.S.? Rise of P.E.?

- U.S. market cap is declining % of total market cap (*while average market cap of public firm is increasing*). Mergers of smaller U.S. firms into non-U.S. firms (inversions) would contribute to trend.
- Private equity AUM of \$3.0 trillion in 2011 could absorb 809 firms with average U.S. market cap of \$3.7B. These are large firms but this is global AUM and 809 firms is a modest fraction of total gap.

Year	U.S. Mkt Cap (trillion)	Total Mkt Cap (trillion)	U.S. as % Total	Total Number of Public U.S. Firms	Average Mkt Cap (billion)	Total PE AUM (billion)	Implied PE Capacity @ Average Mkt Cap
2003	14.3	28.1	50.8%	5,295	2.7	870.0	322.9
2004	16.3	33.9	48.2%	5,226	3.1	963.0	308.3
2005	17.0	38.3	44.4%	5,145	3.3	1,238.0	374.7
2006	19.6	47.4	41.3%	5,133	3.8	1,704.0	447.0
2007	19.9	57.7	34.5%	5,109	3.9	2,276.0	583.7
2008	11.6	30.1	38.5%	4,666	2.5	2,279.0	917.5
2009	15.1	44.1	34.2%	4,401	3.4	2,480.0	723.9
2010	17.3	51.1	33.8%	4,279	4.0	2,776.0	687.3
2011	15.6	44.1	35.5%	4,171	3.7	3,036.0	809.6
Source	WWE	WWE	Calc.	WWE	Calc.	Preqin	Calc.

Conclusion

- Provocative paper in a literature in which I have a significant publishing gap
 - *1 publication in 2006 and 0 publications since*
- I would like to see the authors control for changes in total number of firms per capita... which will matter on the margin with respect to magnitudes.
- I would also like to see them interpret the differential patterns for listings of domestic and foreign firms on U.S. exchanges into light of their model.
- Happy New Year!