

Who is still listed on US stock markets?

New insights on international stock listings

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ABSTRACT: Although an extensive literature has focused on international cross-listings since the 80s, no consensus has yet emerged on their motivation and consequences. While some papers argue that the effects of cross-listings are weak and likely to disappear, others emphasize the different advantages of being listed on more than one stock market such as reduced market segmentation, improved visibility or governance. This paper provides descriptive statistics on non-US firms that are listed on a US stock market, and shows that they can be classified into three populations. The results offer a new perspective on the possible motives for a US listing.

Keywords: cross-listing, diversification, bonding, cost of capital, cluster analysis.

JEL classification: G15

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1. Introduction

Being listed on the NYSE or the Nasdaq was long supposed to give, even to non-US companies, access to prestige, visibility, and better growth opportunities through lower cost of capital. Nowadays however, practitioners tend to consider that the benefits of such a listing have been fading over time. While financial globalization and market computerization have enhanced world market integration, the superiority of US markets in assessing a firm's quality has also been seriously challenged by accounting scandals involving such US companies as Enron or Worldcom. Moreover, the Sarbanes-Oxley Act, which came in the aftermath of those scandals, has significantly increased cross-listing constraints. Consequently, many of those cross-listed firms, such as Danone, BASF or Metso Corporation, have chosen to withdraw from the US markets, seemingly confirming the idea that the benefits of such a listing no longer warrant the costs involved.

The decrease in the number of foreign firms listed on US stock markets is not as great, however, as the numerous delistings might have led us to suppose¹, which shows that the delisted companies have been partly replaced by other foreign firms. Additionally, some fifty US corporations recently cross-listed on the Euronext pan-European market. For those companies, that cross-listing would diversify their shareholder base, increase their market visibility in the euro zone, and allow them to benefit from trading in Euro². Those arguments contradict the idea that market globalization have decreased the benefits of

¹ According to the World Federation of Exchanges (WFE) data, 749 foreign companies were still listed on US markets in 2010, which is 80 % of the maximum of 921 foreign companies attained in 2000.

² InsideCounsel Magazine, May 2010.

cross-listings, and offers a puzzling contrast with the previous declarations of non-US firms delisting from US markets.

International listings have been the subject of an extraordinarily abundant literature for the last thirty years: The ScienceDirect Database reports almost 36,000 papers answering to the “cross-listing” keyword. Much of this literature, reviewed by Karolyi (1998, 2006, 2011), focuses on the listing of foreign companies on US markets, which has been found to exert a greater impact than listing on other stock exchanges. The most interesting element in all this extensive literature, however, is that no consensus has yet emerged as to the nature of the impact of international cross-listings on a firm’s value, and whether that impact is permanent or transitory.

In theory, international cross-listings could alleviate legal or informational barriers to foreign investment, thus offering new diversification opportunities (Alexander et al., 1987, Errunza and Losq, 1985, are at the origins of that segmentation hypothesis) and increasing demand, (that awareness hypothesis is introduced by Merton, 1987). Listing on a more stringent market than the domestic one could signal a firm’s better management (Cheung and Lee, 1995, Cantale, 1996, and Fuerst, 1998), and provide a more accurate valuation of a firm’s investments (Foucault and Gehrig, 2008). Moreover, submitting the company to a more stringent regulation should improve the protection of minority investors and reduce agency costs, as developed by the bonding hypothesis (Coffee, 2002). Alternatively, world market integration might have reduced the advantages of cross-listings over the years. Additionally, the costs and constraints entailed by the Sarbanes-Oxley Act may well have offset the positive effects of better investor protection, while non-US countries may well have improved their investor protection and market efficiency.

Empirical tests concerning the consequences of a US cross-listing usually report positive abnormal returns during the preceding months and during the cross-listing announcement, and negative abnormal returns during the period following the cross-listing. Empirical findings are thus consistent with most of the competing theories but suggest that, in the long run, cross-listings might destroy value. This post-listing decline in abnormal returns is also observed for domestic US listings. That tendency is frequently attributed to market timing, in which case, however, the observation of positive market reactions to the cross-listing announcement would constitute a market anomaly.

Interestingly, each theory has found as many empirical supporters as it has detractors, and the conclusions vary across samples. In three recent empirical studies aimed at differentiating among the different effects, Bris, Cantale and Nishiotis (2007) find, in a sample of dual-class shares, that the effect of cross-listing on market integration is twice the price effect of bonding to US rules for investor protection; Abdallah and Ioannidis (2009) find strong support for management timing, note that cross-listing reduces market segmentation but that this effect decreases over time, and find no support for the bonding hypothesis, while Bancel et al. (2009) report support for the bonding and the management timing hypotheses, but find little support for the segmentation hypothesis, using a European sample.

This paper provides descriptive statistics about foreign companies that are primarily listed or cross-listed on a US market. The high cross-sectional variations in empirical tests of the financial consequences of cross-listings suggests that the motives and the consequences of the operation could vary with the geographic location of the company, the development of its home market, its jurisdiction, or its industry. If so, companies considering a cross-listing

should value empirical results on a peer group rather than exhaustive empirical studies. However, peer groups might be too small to draw statistically significant conclusions. We identify homogenous groups of foreign companies that, presumably, list on US markets for similar reasons and provide descriptive statistics of those groups.

The paper proceeds as follows. Section 2 describes the data. In section 3, we conduct a Categorical Principal Components Analysis (CATPCA) and identify company clusters. We further characterize those groups with a two-step cluster analysis and an analysis of variance (ANOVA). We discuss our results in Section 4.

2. International Cross listing on US Markets: first descriptive statistics

Foreign companies cross-listed in the US usually report their annual accounting information through form 20-F, although some companies file form 10-K which is the annual report for US companies³. 850 forms 20-F were filed with the SEC in 2009. Among them, 507 companies reported equity securities listed on a US market and thus registered pursuant to section 12(b) of the Exchange Act. After excluding 1 guaranteed trust, 7 partnerships, 6 companies only traded on the OTCBB and 4 US companies incorporated abroad, we identify 489 foreign companies that were listed on the NYSE/AMEX or Nasdaq and filed a form 20-F under the SEC in 2009. Table 1 reports the distribution of US listings by country of jurisdiction and main executive office. The NYSE remains the first market for non-US

³ Mostly Canadian companies or Chinese companies incorporated in the United States.

companies, except for Israeli companies (and, in a lesser extent, Chinese companies), which mainly belong to the technological industry and list on the NASDAQ.

Table 1 leads to an interesting observation: while the United Kingdom accounts for 28 % of the foreign US listed companies in terms of country of jurisdiction, this influence lessens in terms of localization of headquarters. The reason for this is that a significant number of Chinese firms are domiciled in a British Overseas Territory⁴. Similarly, the share of Europe is higher in terms of localization of headquarters, due to a large number of Greek maritime transportation firms that are registered under a flag of convenience⁵.

Stock exchanges or financial databases do not distinguish between jurisdiction and executive office. Yet, this distinction is important because some theories about cross listing use differences of culture, distance from headquarters and expropriation risk as potential sources of market segmentation (Gehrig, 1993, Portes, Rey and Oh, 2005), while other, following La Porta et al. (1997), use the type of law as an explanatory variable, common law systems being considered more protective for investors than civil law systems. Sarkissian and Schill (2004) find that firms that cross-list abroad tend to choose markets that are geographically close to their domestic market. We do not observe the same pattern in 20-F publications: firms from Europe, Asia and Oceania represent 60% of US-listed foreign companies while Canada, Central and South America account for only 24%.

⁴ 53 Chinese companies are under the jurisdiction of the Cayman Islands, 19 Chinese companies are under the jurisdiction of the British Virgin Islands.

⁵ 18 Greek companies are registered under the jurisdiction of the Marshall Island.

Obviously, if we consider the country of jurisdiction, the picture is quite different due to Chinese companies domiciled in the Cayman or British Virgin Islands.

The large number of Chinese (21% of the sample if Hong Kong is included), and Israeli companies (12%) contrasts with the descriptive statistics provided by preceding empirical studies on the impact of the cross-listing decision (see for example, Karolyi, 1998, Miller, 1999, Bris et al., 2007, Errunza and Miller, 2000, Abdallah and Ioannidis, 2009). The Chinese companies do not appear in the preceding studies because most of them listed in the US after 2003. As to Israeli and Canadian companies, their shares are directly listed in the US, while most studies about US cross listing take their samples from American Depositary Receipts (ADR) issuers.

A more precise comparison of our sample with that of Karolyi (1998) also show that companies from Australia, Chile, Mexico, UK, Hungary, Denmark, Norway, Italy, South Africa, Turkey delisted from the US while the number of cross-listed companies from China, Korea, Japan, Argentina, Brazil, France, Greece, India, Ireland, Switzerland and the Netherlands increased from 1998 to 2009. This considerable variation in the nationality of cross-listed companies explains why the number of US cross-listed companies remains large even though many firms delisted from US markets after 2007. It might also give some insight on the discrepancy of the results of empirical studies about the impact of cross-listings.

Industries are identified with SIC codes as reported by EDGAR⁶. SIC codes group companies according to their type of industry (manufacturing, retail trade, services) but not to their business. Consequently, SIC codes are converted into businesses using ICB classification. Business is defined as the ICB supersector, except from the subsector “marine transportation” which is separated from other industrial goods and services due to its heavy representation in the sample. Consistently with Saudagaran (1990), 50% of the companies belong to four businesses, which are technology, telecommunication, basic resources, and health (see table 2). This could be due to the globalization of these specific industries, or to the fact that these industries would be better valued by US analysts as proposed by Allen and Gale (1999). Firms might also follow their industry peers (Pagano et al., 2002). Interestingly, those industries are identified by Grinold, Rudd and Stefek (1989) as the more correlated with the world market portfolio, which means that those cross-listed firms would have less to gain from diversification than non cross-listed firms and casts some doubt on the segmentation hypothesis. Moreover, industries are not independent⁷ from country of jurisdiction or executive office. Canada and South Africa concentrate on basic resources industries, while Chinese and Israeli cross-listed firms belong mostly to the technological industry and Greek cross-listed companies are almost exclusively marine transportation firms.

⁶ SIC codes reported to the SEC are fairly different than SIC codes recorded in WVB database for the same companies. This discrepancy could be due to changes in the main activity of the company over time. SIC codes reported to the SEC have been used for this table.

⁷ Independency of country and industry has been tested with a Pearson's χ^2 of 1185.29, 672 degrees of freedom.

Most empirical studies are restricted to ADRs, while our sample covers all listings of foreign companies⁸ on a regulated US market, including direct listings. We observe that companies seeking a secondary listing use mostly ADRs (at 74%) while companies seeking a primary listing in the US use both ADRs and direct listings (respectively, at 43% and 57%). There is also a strong national factor influencing the choice of a direct listing over an ADR program: direct listings come mostly from Israel, Canada, and firms domiciled offshore (except Cayman).

Saudagaran (1990) and Pagano, Röell & Zechner (2002) report that cross-listed firms are significantly larger than average. Company size, proxied by the 2008 Total Assets in thousands of USD, is collected from Infinancials. Missing data are completed with Forms 20-F information. Total assets range from 477,393 USD to 2,702 billion USD, but financial companies are significantly larger than other companies (see table 2). Excluding the finance and insurance industry, the total assets range from 3.43 million USD to 327.5 billion USD. The ratio of the firm capitalization to its domestic market capitalization is superior to 5% for 49 companies and superior to 1% for 95 companies. Companies issuing ADR are almost six times larger, on average, than companies whose shares are directly listed (120 billion USD average total assets versus 18 billion), and this difference is statistically significant at the 5% level. Not surprisingly, firms listed on the NYSE are larger than Nasdaq-listed firms (112 billion average total assets versus 1.6 billion).

⁸ Except Canadian firms registering as a domestic company in the US and Chinese firms incorporated in the US.

3. Characterization of US-listed foreign companies

In order to visualize clusters among companies, we conduct a categorical principal component analysis (CATPCA) on our sample of 489 companies. Categorical principal component analysis includes nonlinear optimal scaling transformation of the variables, thus allowing quantitative procedures such as Principal Component Analysis (PCA) to be used with ordinal or nominal data⁹. CATPCA produces graphical displays that can be used to identify clusters among objects. We identify the descriptive variables to be used in the analysis in table 3. Size (proxied by total assets) is quite far from a Gaussian distribution with firms in the financial industry being significantly larger than other firms. In order to smooth this difference without excluding the financials from the analysis, we convert the variable Total Assets into size classes¹⁰.

A first CATCPA with supplementary variables revealed that FOREIGN, OFFSHORE, LISTDATE and a dummy variable indicating whether the US listing is a cross-listing or a primary listing are highly correlated and well represented in the first principal component, while the variable SIZEASSETS is better represented in the second principal component and correlated with ADS, a dummy indicating whether the stock is directly traded or listed through an American Depositary Share, and a nominal variable representing the listing market or segment (NYSE, NASDAQ NMS, NASDAQ or AMEX). As we reported above, the choice of an ADR issue over a direct listing has a strong nationality dimension: almost all

⁹ Optimal scaling techniques have been developed by the Data Theory Scaling System Group (DTSS) of Leiden University for the SPSS software. For a description of the methodology, refer to Meulman et al. (2004).

¹⁰ Automatic discretization in CATPCA leads to qualitatively similar results.

direct listings come from the Canada and Israel. Consequently, we exclude the type of listed asset (ADS, GDS or underlying stock) from the principal component determination. The market of listing and the cross-listing dummy were excluded for the same reason.

A CATPCA with a third dimension adds less than 1% of explained variance. Consequently we restrict the CATPCA to two dimensions. Since marine transportation companies are quite far away from other industries on both dimensions, the CATPCA is conducted successively with and without this specific business. The following results exclude marine transportation companies.

The year of listing is mostly reflected in Dimension 1 (Table 5). Dimension 1 also discriminates companies domiciled in offshore centers (with a low score on Dimension 1). Dimension 2 has a US market visibility component: companies listed on the AMEX and the NASDAQ present the lowest scores on factor 2, companies listed on the NYSE have the highest scores. Canada has the lowest score on Dimension 2, which may be explained by the fact that AMEX foreign companies come mostly from Canada. Size is reflected in both dimensions, large companies having a large score both in dimension 1 and dimension 2.

Plotting jurisdictions on axes representing the CATPCA two dimensions leads to interesting clusters (graph 1). Most countries, including Europe, Japan and Latin America are clustered on the right of the first axis, probably due to the long tradition of US cross-listings in those countries and the fact that those cross-listed companies are relatively large. On the opposite of the first dimension lay all offshore financial centers. Halfway from those two clusters lay China, Hong Kong, Singapore and Taiwan. Finally, Israel and Canada form a separate group with a neutral score on dimension 1 and a low score on dimension 2.

Industries are much less clustered than countries (graph 2), but reflect part of the country-industry specialization. We observe that the analysis opposes banks (with a high score in both dimensions) and technology (with a low score in both dimensions), probably due to the different mean size of the companies belonging to those industries.

Finally, the biplot of companies and characteristics allows us to identify three clusters. The first cluster has a positive score on both dimensions 1 and 2, and consists of large companies, legally domiciled in their domestic country, and listed mostly before 2003. This cluster groups most countries and various industries. The second cluster consists of companies with a negative score on dimension 2 and a neutral score on dimension 1, mostly from Canada and Israel, with a high concentration on the Health business (for Israel) and on the Basic Resources business (for Canada). Finally, the third cluster consists of companies domiciled offshore, and mainly in the technology business (with a high concentration on semiconductors).

In order to further analyze those clusters, a two-step clustering analysis is conducted on the same sample. The two-stage technique allows both continuous and categorical variables, and is considered superior to other alternative methods because it combines the advantage of hierarchical approaches with that of nonhierarchical approaches. However, variables in a two-step cluster analysis are assumed independent, which is not the case in our analysis even after excluding highly correlated variables. The variables used in the cluster analysis are similar to those of the CATPCA (Table 3), except from JURI and FOREIGN which are excluded due to their high correlation with OFFICE and OFFSHORE. The X^2 statistics indicate that none of these variables is independent from the others. Yet, the procedure is considered fairly robust to violations of these hypotheses. Due to the

presence of categorical variables, the distance measure selected is log-likelihood and the clustering criterion is the Schwarz's Bayesian criterion (Schwarz, 1978).

Consistently with the CATCPA, the cluster analysis identifies 3 classes of companies. Cluster 1 regroups 51.4% of US-listed foreign companies, Cluster 2 groups 21.7% of the firms and Cluster 3 the remaining 26.4%. The more discriminating variable is the offshore dummy, which separates firms domiciled in an offshore financial center or flag of convenience (all clustered in group 3) from other companies. The next discriminating variable is the size (measured by total assets). Cluster 1 groups the largest companies, Cluster 2 the smallest of companies and Cluster 3 is made of medium companies. Those two variables are almost sufficient to explain the clustering (table 6).

Companies in each class are characterized in table 7. We observe that Cluster 1 consists mostly of large European and Latin American companies, of diverse industries, most of them listed before 2000. Cluster 2 consists of small Canadian and Israelian companies mostly in Technology, Health and Basic Resources, and have conducted a direct listing rather than issuing ADRs; and Cluster 3 consists of Chinese, Greek and offshore companies, mostly listed after 2003¹¹, and in the technology or marine transportation business. Those companies use both ADR and direct listings, but are usually not listed domestically (that is, the US listing is the first and main listing for the company). Additional statistics show that companies belonging to a stock index are almost all in the first cluster (92%), and half of the Cluster 1 companies belong to a stock index.

¹¹ This statistic is to be taken with caution, since there may be a survivorship bias in the sample (recent date of listings on a specific country could be due to high turnover)

In order to better understand differences among classes, financial data are collected from Infinancials. An analysis of variance (ANOVA) reveals that variance across groups is significantly higher than intra-group variance for all variables except ROCE, which means that the cluster analysis well discriminates companies according to size, leverage, R&D intensity, growth, risk and return. Results suggest that Cluster 1 consists of larger firms, with high leverage and a lower than average ratio of R&D to sales, the highest ROE, and a low risk compared to their international peers. Clusters 2 and 3 consist of firms that rely more on research and development, with higher growth and lower leverage (Table 8)

4. Conclusion and discussion

While the capacity to attract international listings and investors has never been so crucial for stock exchanges, the numerous theories about the impact of international listings still require a more solid consensus. Many empirical tests have been conducted, using large international samples and different time periods, but the results are heterogeneous and the reason why a non-US company should list on a secondary market, such as the NYSE or the NASDAQ, remains an open question.

In this paper, we identify all foreign companies that were listed on a US regulated market and filed form 20-F with the SEC in 2009. We observe that those companies can be clustered into three groups, which differ in terms of their nationality, business, listing market, age and financial characteristics. Thus, the results suggest that companies from different groups might each find specific advantages to that cross-listing.

Most empirical tests of the impact of a cross-listing in the US, especially those focusing on listings prior to 2003, deal with the first cluster, mostly comprised of big European, Japanese and Latin American companies, with relatively low risk and low growth, but high

leverage. That group, however, accounts for only half of the companies listed on US regulated markets. Empirical studies usually exclude direct listings (concentrated in the Cluster 2), and most of those studies do not report results on very recent listings (concentrated in Cluster 3). Yet, we show that Clusters 2 and 3 essentially consist of companies that are significantly smaller, riskier and younger than companies concentrated in Cluster 1.

Canadian and Israelian companies (Cluster 2) are characterized by a large R&D to sales ratio and may well have initially selected the US markets to benefit from a higher and more precise valuation of their investments and growth opportunities. Moreover, due to their cultural proximity with the United States, they may well find the cost of adjusting to US regulation and information constraints relative to local constraints lower than for firms from other groups¹². They also massively choose direct listings of their shares over ADR issuing. It would still be interesting, however, to understand why the Israelian cross-listed companies, in particular, are so poorly diversified in other sectors than the computer industry. Blass and Yafeh (2001) note that that peculiarity is consistent with the proposition by Allen and Gale (1999) that the US markets are more efficient for financing new technologies; however, that does not explain why that heavy concentration of foreign US-listed firms in the technology industry is not observed for other countries (except, to a lesser extent, for China).

¹² Blass and Yafeh (2010) report that listing requirements and administrative costs in the US and in Israel are fairly similar.

The motives of the companies from the third group to conduct a US listing are more difficult to assess. Most of them are Chinese companies and the Chinese market is still partially segmented; since these companies seek mostly a primary listing in the US, this choice could be attributed to the lack of development of the domestic market. Chan, Menkveld and Yang (2008) report that the significant information asymmetry between Chinese and foreign investors negatively affects stock prices. Thus, cross-listing in the US might contribute to alleviate the effects of market segmentation and information asymmetry. However, some recent events seem to contradict this hypothesis: more than 24 China-based companies have disclosed auditor resignations, accounting problems or both in March 2011, and the procedure against Longtop Financial Technologies that was excluded from the NYSE in 2011 highlighted the fact that China is the only large emerging market that hasn't reach an agreement with the SEC for information sharing¹³. Moreover, the bonding hypothesis seems all the more difficult to sustain for that sub-sample due to their offshore regulation.

Finally, our empirical findings suggest that the geography and motives of international cross-listings could vary with time: while European and large Canadian companies, for example, tend to delist from US markets, referring to the better market integration and to the high burden of complying with the Sarbanes-Oxley rules as the main reason for their delisting, a new generation of companies still seek a US listing. This evolution might explain the parallel evolution of the theories about the reasons and consequences of cross-listings.

¹³ US and China Play Chicken Over Accounting, Jim MacTague, Barron's, October 3rd, 2011.

While the role of a cross-listing in market integration or even bonding becomes more difficult to sustain, new explanations emerge concerning the role of the stock exchange as an information and reputation monitor (Beladi, Oladi and Tay, 2012), the impact of cross-listing on market efficiency (Liu, 2007, Kumar et al., 2011) or explaining the multiplication of exchange by trader heterogeneity or technical factors (Cantillon and Yin, 2011).

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Table 1: Origin of foreign US companies

Number of companies listed on US regulated markets (NYSE/AMEX or Nasdaq) by Jurisdiction country and country of the main executive office, as reported to the Securities and Exchange Commission.

Country	Jurisdiction		Executive office	
	NYSE	Nasdaq	Nyse	Nasdaq
<i>Canada</i>	22	9	21	8
<i>Central and South America</i>	78	5	80	4
Antigua	1	0	0	0
Argentina	11	4	12	3
Brazil	29	0	30	0
Chile	13	0	13	0
Colombia	2	0	2	0
Mexico	19	1	19	1
Panama	2	0	2	0
Peru	1	0	2	0
<i>Continental Europe</i>	56	13	65	23
Bahamas	0	1	0	1
Belgium	1	0	1	0
France	9	2	9	2
Germany	8	1	8	1
Greece	3	0	11	11
Hungary	1	0	2	0
Italy	4	1	4	1
Luxembourg	3	1	3	0
Portugal	1	0	1	0
Russia	5	0	5	0
Spain	4	1	4	1
Switzerland	6	0	7	0
The Netherlands	10	5	9	5
Netherlands Antilles	0	1	0	1
Turkey	1	0	1	0
<i>UK</i>	71	64	41	13
England, Scotland, Ireland	28	4	31	8
Overseas Territories	43	60	10	5
<i>North Europe</i>	5	0	4	0
Denmark	2	0	1	0
Finland	1	0	1	0
Sweden	1	0	1	0
Norway	1	0	1	0
<i>Oceania</i>	18	11	7	1
Australia	6	1	6	1
New Zealand	1	0	1	0
Marshall Islands	11	10	0	0
<i>Asia</i>	52	15	79	64
China	17	1	38	42
China SEZ or SEA	2	2	13	14
Japan	17	4	17	4
Korea	8	3	9	3
Philippines	8	3	1	0
Singapore	0	2	1	1
<i>India and Middle Asia</i>	14	58	15	58
India	9	2	10	2
Indonesia	2	0	2	0
Israel	3	56	3	56
<i>Africa</i>	7	1	5	1
Liberia	2	0	0	0
South Africa	5	1	5	1
Total	316	173		

Sources : Securities and Exchange Commission, NYSE, Nasdaq.

Table 2 – Foreign US companies – business and size

<i>ICB</i>	<i>Supersector</i>	<i>NYSE</i>	<i>Nasdaq</i>	<i>Mean</i>	<i>Std</i>	<i>Min</i>	<i>Max</i>
500	OIL&GAS	24	3	78,850,460	93,752,195	39,570	292,181,000
1300	CHEMICALS	4	2	5,736,714	7,254,712	107,899	16,696,000
1700	BASIC RESOURCES	43	4	18,014,650	33,168,942	6,927	127,697,000
2300	CONSTRUCTION	9	1	18,291,021	31,290,845	109,913	96,598,464
2700	INDUSTRIAL G & S	10	13	7,181,695	16,297,607	9,630	71,402,276
2773	MARINE TRANSPORTATION	13	12	1,935,516	2,141,688	297,321	9,510,916
3300	AUTOMOBILE	6	1	94,682,064	125,654,334	166,303	327,499,156
3500	FOOD & BEVERAGES	16	4	12,248,512	16,166,311	4,477	53,055,033
3700	PERSONAL & HOUSEHOLD	4	3	27,389,107	51,368,485	111,087	138,838,236
4500	HEALTH	21	23	9,866,182	25,223,354	3,430	114,734,232
5300	RETAIL	11	3	2,357,089	4,293,529	62,861	13,971,808
5500	MEDIA	12	14	12,773,915	28,835,007	25,190	123,523,227
5700	TRAVEL & LEISURE	12	3	5,287,805	3,893,037	506,841	13,899,825
6500	TELECOMMUNICATIONS	43	13	28,097,053	53,503,912	9,555	236,607,792
7500	UTILITIES	13	2	15,125,794	21,215,416	195,179	64,344,066
8300	BANKS	31	1	680,843,876	873,586,103	3,878,771	2,702,162,901
8500	INSURANCE	10	3	389,410,648	516,999,784	373,493	1,667,849,512
8700	FINANCIAL SERVICES	2	1	447,477,177	504,014,113	749,925	993,883,057
9500	TECHNOLOGY	29	66	4,727,107	17,578,227	7,866	138,516,019
	BLANK CHECKS	3	1	101,704	110,926	477	251,636
<i>TOTAL</i>		<i>489</i>		<i>73,264,100</i>	<i>297,265,177</i>		
<i>FINANCIALS</i>		<i>48</i>		<i>587,328,625</i>	<i>774,885,129</i>		
<i>OTHER</i>		<i>441</i>		<i>17,311,499</i>	<i>43,606,152</i>		

Source: Infinancials – Total Assets 2008 in USD Thousands ; forms 20-F; ICB classification.

Table 3. Variables used in the categorical Principal Components Analysis

<i>Name</i>	<i>Scale</i>	<i>Categories</i>
LISTDATE	Numeric	Year of listing in the US
OFFICE	Multiple Nominal	Country of the principal executive office
JURI	Multiple Nominal	Country of jurisdiction
ICB	Multiple Nominal	ICB supersector
FOREIGN	Nominal	1: Foreign to its country of jurisdiction 2: Executive office and country of jurisdiction are identical
OFFSHORE	Nominal	1: Domiciled in an offshore financial center 2: Non domiciled in an offshore financial center
SIZEASSETS	Ordinal	1: Total Assets 2008 > \$10,000,000 2: \$1,000,000 > Total Assets 2008 > \$10,000,000 3: \$100,000 > Total Assets 2008 > \$1,000,000 4: Total Assets 2008 < \$100,000

Note : Nominal variables are coded 1 and 2 because the 0 value is treated as a missing value by the CATPCA procedure.

Table 4. CATPCA summary

<i>Dimension</i>	<i>Cronbach's alpha</i>	<i>multiple nominal</i>		<i>non multiple nominal</i>		<i>Total (eigenvalue)</i>
		<i>Total</i>	<i>% of variance</i>	<i>Total</i>	<i>% of variance</i>	
1	0.902	2.004	66.786	2.403	60.064	4.406
2	0.741	2.249	74.965	0.495	12.365	2.744
Total	0.934	2.126	70.876	2.897	72.429	5.023

Blank checks and marine transportation are excluded from the analysis.

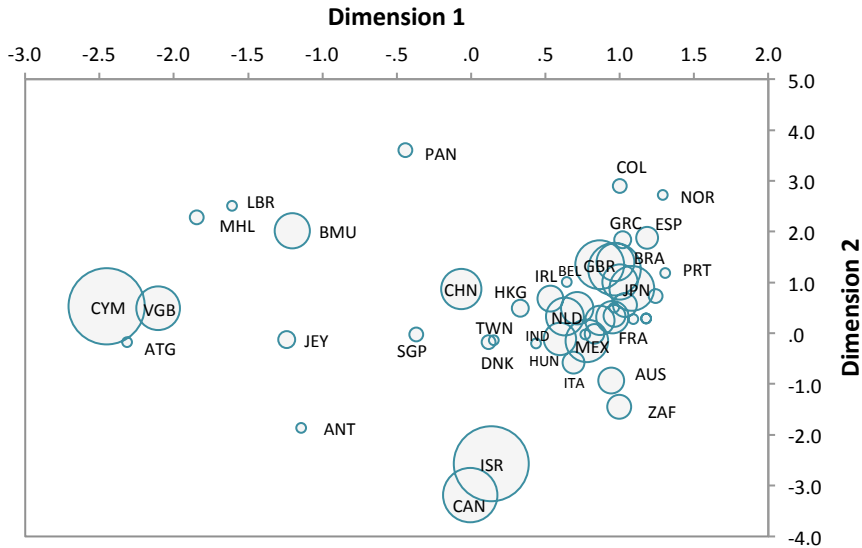
Due to the presence of multiple nominal variables, the total percent of variance accounted for differs from the sum of the two dimensions.

Table 5. Item coordinates

	<i>Centroid coordinates</i>			<i>Vector coordinates</i>			<i>Total</i>		
	<i>Dimension</i>		<i>Mean</i>	<i>Dimension</i>		<i>Total</i>	<i>Dimension</i>		<i>Total</i>
	<i>1</i>	<i>2</i>		<i>1</i>	<i>2</i>		<i>1</i>	<i>2</i>	
JURI	.951	.921	.936				.951	.921	.936
OFFSHORE	.830	.068	.449	.830	.068	.898	.830	.068	.898
ICB	.256	.412	.334				.256	.412	.334
SIZEASSETS	.446	.463	.455	.352	.375	.727	.352	.375	.727
OFFICE	.796	.916	.856				.796	.916	.856
FOREIGN	.776	.051	.414	.776	.051	.827	.776	.051	.827
LISTDATE	.477	.101	.289	.444	.000	.444	.444	.000	.444
Total active	4.533	2.932	3.733	2.403	.495	2.897	4.406	2.744	5.023
% variance accounted for	64.761	41.885	53.323	60.064	12.365	72.429	62.945	39.193	71.763

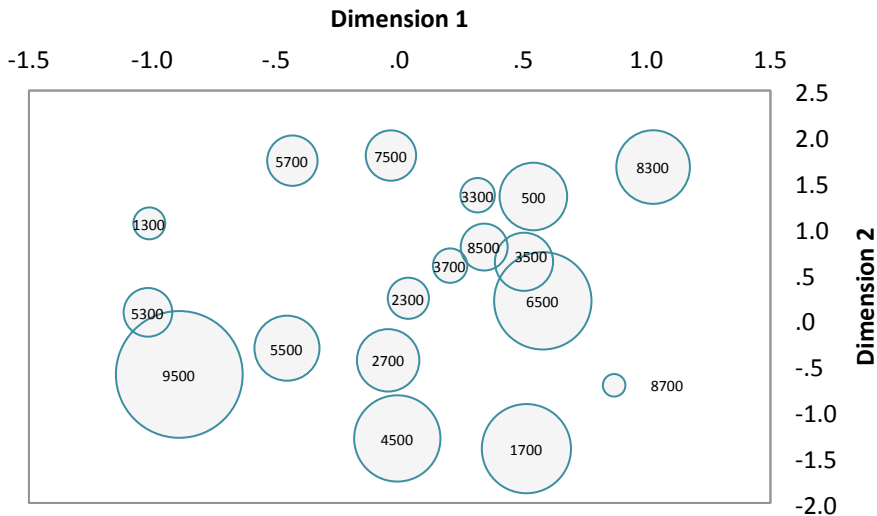
Graph 1. Centroid of Jurisdiction countries

Jurisdiction centroid coordinates provided by the CATPCA are drawn on the two dimensions space. Jurisdiction is identified by its 3-Alpha ISO country code. Centroid size is proportional to the number of companies in the sample. Dimension 1 reflects mostly the date of listing, and the offshore status (offshore companies recently listed have a low score on dimension 1). Dimension 2 reflects a market dimension (companies listed on the NYSE have a high score on dimension 2). Large companies have a high score on both dimensions.



Graph 2. Business Centroid Coordinates

Business centroid coordinates provided by the CATPCA are drawn on the two dimensions space. Centroid size is proportional to the number of companies in the sample. Dimension 1 reflects mostly the date of listing, and the offshore status (offshore companies recently listed have a low score on dimension 1). Dimension 2 reflects a market dimension (companies listed on the NYSE have a high score on dimension 2). Large companies have a high score on both dimensions.



- | | | | |
|-----------------------|----------------------------|-------------------------|-------------------------|
| 500 OIL&GAS | 2773 MARINE TRANSPORTATION | 5300 RETAIL | 8300 BANKS |
| 1300 CHEMICALS | 3300 AUTOMOBILE | 5500 MEDIA | 8500 INSURANCE |
| 1700 BASIC RESOURCES | 3500 FOOD & BEVERAGES | 5700 TRAVEL & LEISURE | 8600 FINANCIALS |
| 2300 CONSTRUCTION | 3700 PERSONAL & HOUSEHOLD | 6500 TELECOMMUNICATIONS | 8700 FINANCIAL SERVICES |
| 2700 INDUSTRIAL G & S | 4500 HEALTH | 7500 UTILITIES | 9500 TECHNOLOGY |

Graph 3. Biplot – Objects and component loadings

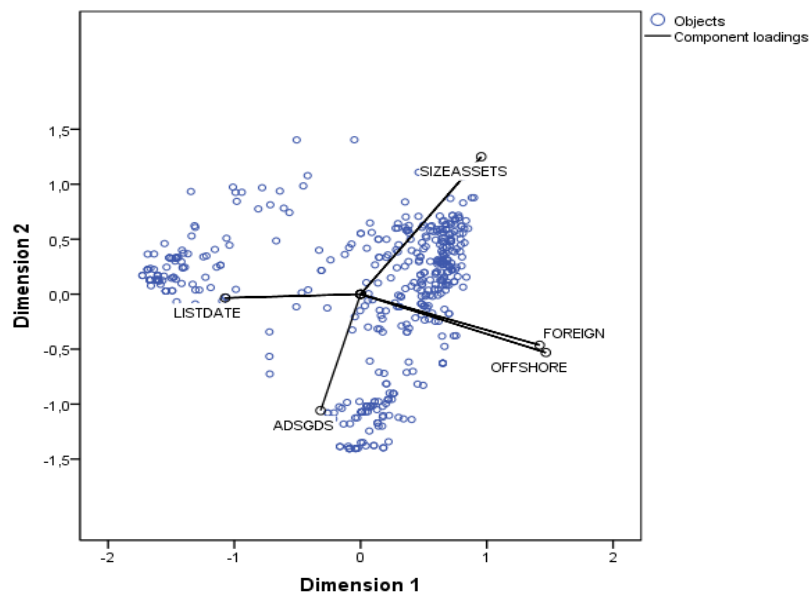


Table 6 – Crosstabulation table. Class versus size and legal status

Class	Offshore		Total Assets (USD Million)	
	0	1	< 1,000	> 1,000
1	251		2	249
2	105		105	
3	0	128		

Table 7 - Classes description

Class	Characteristics	% of companies with the characteristic belonging to the class	% of companies in the class with the characteristic
1	Large companies (Total Assets > USD 1 billion)	87.37%	99.2%
	ADR	71.70%	88.85%
	Europe, Latin America, Japan	81.85%	77.29%
2	Direct listings	46.24%	76.19%
	Canada, Israel	88.64%	74.29%
	Basic Resources, Health, Technology	38.7%	68.6%
3	Offshore companies	100%	100%
	Chinese, Greek	73.19%	78.9%
	Technology, Marine Transportation	52.5%	49.22%
	Listed after 2003	59.76%	78.9%

Table 8 – Descriptive statistics

Descriptive statistics are: Total Assets, Enterprise Value (market value of equity + Debt value), Net Debt (Total interest bearing debt + Redeemable preferred shares + Preferred shares - Cash & Equivalents - Short Term Investments), Financial Leverage ($[(\text{Total Interest bearing debt} + \text{Redeemable preferred shares} + \text{Preferred shares}) / (\text{Total equity} - \text{Redeemable preferred shares} - \text{Preferred shares})]$), Debt To Capital At Book ($\text{Interest Bearing Debt} / \text{total Assets}$), Return on Capital Employed (EBIT / Average invested capital for the year in %), Return on Equity (Net profit after preferred dividends / Average total equity for the last 2 years in %), Growth of Total Assets (Growth in Total Assets over the last 5 years). G, P, R, V scores measures the stock's attractiveness compared to the company's international peers in terms of growth (of sales, income, and earnings per shares), profitability (EBIT margin, ROCE, ROE, dividend yield), risk (Beta, Volatility, Transaction Volume, Market Capitalization, Net Debt/Market Capitalization) and value (ratios price to earnings, enterprise value to net sales, Enterprise value to EBITDA, Enterprise value to EBIT, Price-to-book value, Price to Cash Flow).

Panel A – All sample

	Class 1			Class 2			Class 3		
	N	Mean	Std	N	Mean	Std	N	Mean	Std
USD Total Assets (all sample)**	251	141,864,083	403,454,272	105	213,300	257,270	128	1,233,375	2,393,182
USD Total Assets (financial excluded)**	209	35,623,484	58,084,415	103	203,427	249,585	124	1,049,352	1,516,724
Net Debt**	197	7,945,131	27,402,684	102	-12,962	113,158	116	175,336	769,311
Financial Leverage**	179	1.55	4.62	100	.11	2.31	85	.62	1.03
Debt To Capital At Book**	179	.26	.18	100	.12	.178	85	.20	.23
RD To Sales**	176	2.58	5.72	86	112.59	526.80	84	4.74	8.98
RD to sales (zero and > 100% excl.)**	76	5.98	7.47	55	17.05	14,98	40	9.85	10.89
Return on Capital Employed (ROCE)**	178	.01	1.40	100	.29	8.78	84	-4.32	40.24
Return On Equity (ROE)**	178	.17	.48	100	-.19	.77	84	.08	.62
Growth of Total Assets**	175	.11	.13	87	.04	.24	42	.38	.41
G**	192	4.75	1.49	60	5.03	1.97	87	5.61	2.02
P**	192	5.99	1.85	60	3.74	1.87	87	5.19	1.99
R**	192	7.46	1.26	60	5.35	1.19	87	5.69	1.58
V**	191	5.44	1.96	59	4.62	2.32	85	4.45	2.37

Panel B - Excluding financials :

	Class 1			Class 2			Class 3		
	N	Mean	Std	N	Mean	Std	N	Mean	Std
Enterprise value**	167	44,255,364	63,187,456	86	257,362	436,775	108	1,765,615	2,888,910
NET_DEBT**	186	6,672,906	14,703,558	100	13,009	113,771	114	185,508	771,762
R&D to sales **	172	2.58	5.74	84	115.28	532.81	82	4.85	9.06
ROCE	174	0.01	1.41	98	0.28	8.87	82	4.43	40.73
ROE**	174	0.17	0.48	98	-0.20	0.78	82	0.08	0.63
Growth 5Yr Total Assets**	171	0.11	0.13	85	0.04	0.24	42	0.38	0.41
Financial Leverage**	175	1.51	4.65	98	0.11	2.33	83	0.64	1.03
Debt To Capital At Book**	175	0.26	0.17	98	0.13	0.18	83	0.20	0.23
G**	164	4.60	1.41	58	4.96	1.93	83	5.54	2.03
P**	164	6.05	1.87	58	3.65	1.83	83	5.13	2.01
R**	164	7.53	1.29	58	5.30	1.17	83	5.65	1.60
V**	163	5.31	1.93	57	4.67	2.32	81	4.48	2.38

** Inter group variance significantly higher than intra-group variance, 1 % level (F-Test)