

**Corporate Deleveraging and Financial Flexibility:
A Cross – Country Analysis**

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ABSTRACT

Most firms naturally tend to deleverage from their historical peak market-leverage (ML) ratios to near-zero ML while also insisting on growing and maintaining high cash balances. Among 424 publicly traded non-United States companies based in developed countries with five or more years post peak ML data, the median ML at the historical peak is 0.369 and 0.021 at the subsequent trough. The median cash/total assets ratio rises from 0.046 to 0.080, respectively, during the corresponding period. These findings universally support prevailing theories in which firms deleverage from peak ML to restore ample financial flexibility and rebuild cash balances to assure reliable and cost-efficient access to capital. There are only two considerable differences between developed and emerging market economy firms. ML ratios at the peak and trough are 9.1% and 7.6% higher, respectively, in the emerging markets when compared to the developed markets. Book leverage (BL) ratios at the peak and trough are 6.4% and 5.7% higher, respectively, in the emerging markets when compared to the developed markets. Net debt ratios (NDR) at the peak and trough are 11% and 6.6% higher, respectively, in the emerging markets when compared to the developed markets. The average annual changes of ML in the developed sample from the peak to trough are just about -7% while the changes are only -4% in the emerging markets sample. In addition, during the deleveraging period, the change in the NDR from ML peak to trough is 28% higher in developed countries than in emerging markets. These findings support theories in which there are key differences in the capital structure decisions of companies in developed countries and that of those in emerging market countries.

Table of Contents

<u>I. INTRODUCTION</u>	4
<u>II. LITERATURE REVIEW</u>	6
<u>III. HYPOTHESES</u>	12
<u>IV. DATA & METHODOLOGY</u>	12
A. SAMPLE CONSTRUCTION	13
B. METHODOLOGY	14
<u>V. DEVELOPED COUNTRY ANALYSIS AND RESULTS</u>	16
A. FREQUENCY DISTRIBUTION OF DEVELOPED COUNTRY SAMPLE	16
B. DECILES OF PEAK MARKET LEVERAGE FOR DEVELOPED COUNTRIES	18
C. ANNUAL DELEVERAGING TENDENCIES	21
D. DELEVERAGING WHILE RESTORING FINANCIAL FLEXIBILITY	22
<u>VI. EMERGING MARKET ANALYSIS AND RESULTS</u>	26
A. DEBT MARKETS IN EMERGING MARKETS	26
B. FREQUENCY DISTRIBUTION OF EMERGING MARKET SAMPLE	26
C. DECILES OF PEAK MARKET LEVERAGE FOR EMERGING COUNTRIES	29
D. ANNUAL DELEVERAGING TENDENCIES	31
E. DELEVERAGING WHILE RESTORING FINANCIAL FLEXIBILITY	32
<u>VII. KEY DIFFERENCES BETWEEN DEVELOPED AND EMERGING</u>	36
<u>VIII. FINDINGS</u>	39
A. ON DELEVERAGING AND CASH ACCRETION	39
B. ON DIFFERENCES BETWEEN DEVELOPED AND EMERGING COUNTRIES	39
<u>IX. CONCLUSION</u>	41
<u>X. REFERENCES</u>	42

I. Introduction

Traditional capital structure theories appeal to the tax benefit versus bankruptcy cost tradeoffs to justify firm managers maintaining a certain level of debt. These theories can be seen in Gilson (1997); Lintner (1956); Stiglitz (1973). On the other hand, the financial flexibility argument in capital structure theory says that most firms will set financial policies that allow them to have the easiest, most cost-effective access to capital. Under this argument, firms might choose debt in the short term, but their long-term preference will be for near-zero or very low levels of debt so that they retain the financial flexibility. This is shown in Denis (2011); DeAngelo et al. (2007); DeAngelo et al. (2011). However, the empirical evidence on this has been mixed in studies such as Hartford et al. (2009) and Skinner (2008).

DeAngelo et al. (2017) conduct a study on US public non-financial firms and show that firms deleverage to restore ample financial flexibility and that management of corporations carry out decisions with financial flexibility in mind. Their findings explain why most firms proactively deleverage from peak to near-zero ML. ML stands for Market Leverage and it is the book value of total debt divided by book debt plus the market value of equity. Their findings also explain why most firms deleverage to negative net debt as well after having similar conservative fiscal policies before the peak ML. They also show that firms treat financial flexibility and the option to borrow as valuable, with debt used for short-lived financing rather than permanent financing. They recognize the benefits of internally generated equity obtained through retained earnings. They show that firms have important financial flexibility-related dependencies among leverage, cash-balance, and retention versus payout decisions.

The purpose of this paper will be to expand on the work done by Deangelo et al. (2017) through a cross-country analysis by sparking this question to a sample of Non-US publicly traded

companies. The analysis is broken down further by comparing the results of developed countries to those of emerging market countries. The size of emerging markets, especially the debt markets in them have grown over the prior decade. While the increase in market size has been comprehensively documented, the fact that emerging market debt liquidity is presently on the same level as US investment grade liquidity is less widely known. In emerging market nations, the risks that accompany all debt issuances in developed nations are heightened due to the potential political and economic volatility. Emerging markets also face other cross-border risks, including exchange rate fluctuations and currency devaluations. Emerging market firms, like more external financing dependent, small or medium enterprises compared to larger firms in developed countries, or companies with limited collateral to post, would more likely disproportionately increase their leverage ratios relative to other types of firms. In addition, advantageous global monetary conditions can foster leverage growth by relaxing financial borrowing constraints, which is exacerbated in emerging market firms relative to those in developed markets. Vo (2017); Alter (2016). Furthering the work done by DeAngelo et al. (2017) is important to provide us a look into how other developed countries treat financial flexibility and how emerging market countries may differ.

II. Literature Review

The findings from DeAngelo et al. (2017) offer us insights into how managers think when it comes to capital structure decisions. They demonstrate to us that many firms view debt largely as a funding tool and do not see material (tax or agency) benefits from having debt permanently in the capital structure. A fundamental reason is that proactive deleveraging to near-zero ML and negative net debt is pervasive, and such deleveraging is incompatible with firms treating debt as a perpetual source of capital. Findings from Stiglitz (1973) show that Empirical studies of the effects of taxation on corporate financial structure suggest that taxation has not caused a very significant effect on corporate financial structure, let alone the drastic change that one might have anticipated given the exceptionally vast increases in the corporate tax rates in the last fifty years. Lang et al. (1995) show that the agency costs of owning debt over equity has no material value. Agency costs of equity arises when there are differences in the thoughts of management and shareholders of the firm. Agency cost of debt arises when there are differences of thought between the shareholders and debt holders, for instance the behavior seen in giving out cash dividends to shareholders.

Another issue that arises when management deals with financial flexibility is that there is a relationship between paying out dividends, retaining the earnings, or repurchasing shares. These change based on the capital structure of the company, what type of company it is, and how they sell themselves to the shareholders and debt holders. DeAngelo et al. (2017) show that many of the firms would prefer to increase dividends while deleveraging, forsaking paying down more debt or building cash balances, prioritizing financial flexibility considerations (future access to equity capital). After satisfying shareholders of the firm, the next priority would be to build cash balances to allow future financial flexibility resulting in easier access to funding needs.

Lintner (1956), shows that managers are extremely reluctant to cut dividends. Evidence from the study is consistent with a judgment that postwar dividends were undepressed (below normal expectations in terms of profits after tax and long-established policies) by the large tax bite out of pretax earnings. Even during a time of high PPE and capex expenditures caused by the war, many firms chose to keep the payouts. Skinner (2008) shows that the relation between overall firm payouts, defined as the sum of dividends and (net) repurchases, is stronger than the relation between earnings and dividends. Skinner adopts the Lintner model to analyze the relation between the payouts and earnings. He also shows managers of firms with long-standing dividend policies are increasingly conservative in setting their firms' dividend policies, reducing the strength of the link between dividends and earnings. On the other hand, there is an increasingly dynamic relation between repurchases and earnings, created in a more rapid speed of adjustment of repurchases to earnings. Because managers are not obliged to make the repurchases every year, they are likely to connect repurchases to earnings over longer periods. This shows that Lintner regressions of payouts on the earnings will have more significant coefficients and higher explanatory power.

In addition, DeAngelo et al. (2017) show that, contrary to widespread belief, many firms do not genuinely have positive leverage targets. Firms could avoid overshooting of deleveraging targets by buying back shares or paying dividends instead of accumulating cash balances. Such transitory payouts could keep the ML ratios higher. Alternatively, the firms choose to grow cash balances, pushing ML closer to zero and net debt negative, possibly to be able to obtain future debt more easily, therefore exhibiting their preference for financial flexibility.

Financial flexibility refers to the ability of a firm to answer in an apt and value-maximizing way to unexpected changes in the firm's cash flows or investment opportunity set. The concept of financial flexibility is not recent. However, until recently, flexibility considerations have not been

considered a first-order determinant of corporate financial policies. Denis (2011) notifies us that increasingly, academics have argued that the desire of firms to maintain flexibility remains a critical component of corporate financial policies. Several studies to date provide theory and evidence in support of the view that firms attain financial flexibility through the management of corporate liquidity, through capital structure policies, and through payout policy. Denis et al. (2012) indicates that firms that intentionally increase leverage through substantial debt issuances do so primarily as a response to operating needs and not a desire to make a large equity payout. In lieu, the growth of the firm's leverage ratio varies mostly on whether the company yields a financial excess. Companies that create subsequent shortfalls typically tend to finance these deficits principally with more debt even though they show leverage ratios that are well above normal estimated target levels.

In addition, DeAngelo et al. (2017) talk about capital structure, payout policy and financial flexibility. They combine elements of the pecking order and trade-off theories of capital structure to develop a more influential and empirically descriptive theory. In this theory, firms have low long-run leverage targets; debt sales are temporary abnormalities from the target to meet unexpected capital needs, companies rebalance to target with a pause despite zero adjustment costs, and older firms pay big dividends to substitute access to external equity while restraining internal funds to mitigate agency costs and lower corporate taxes.

DeAngelo et al. (2011) demonstrate to us that firms deliberately deviate from permanent leverage targets by issuing transitory debt. They estimate a dynamic capital structure model with these features and find it replicates industry leverage very well, explains debt issuances/repayments better than existing tradeoff models, and accounts for the leverage changes accompanying investment spikes. They find that firms that issue debt incur no flotation or other

direct issuance costs, but nonetheless face an economically meaningful opportunity cost of borrowing. This is because a firm's decision to issue debt in a given period reduces the debt capacity available to meet its future funding needs or more generally, reduces the firm's ultimate ability to borrow at the terms it currently faces.

In summary, the findings around capital structure and financial flexibility policies of United States firms shows that firms prefer ample financial flexibility. They prefer it mainly to secure more extensive access to future capital needs, use debt only a transitory as there are no tax nor agency benefits to acquiring permanent long-term debt, and that firms from the sample, contrary to general belief, may not proactively target positive leverage ratios. As an alternative, the firms chose to grow cash balances, pushing ML closer to zero and net debt negative, possibly to be able to afford future debt, therefore indicating their preference for financial flexibility.

As a segue into what will be discussed regarding financial flexibility into non-US public companies and the differences between developed countries and emerging countries, this study will first present the research on financial flexibility and corporate structure strategy in the international marketplace. Bancel (2004) shows us financial flexibility and earnings per share dilution are primary concerns of managers in issuing debt and common stock, respectively. Managers equally value hedging considerations and use windows of opportunities when obtaining capital. They find that although a country's legal environment remains a principal cause of debt policy, it represents a minor role in common shareholder policy. They also find firms' financial policies are partial to both their environment and their overseas operations. Firms find their most optimal capital structures by tradeoff costs and welfares of financing. Dejong et al. (2008) study capital structure decisions around the world. They analyze important firm-specific and country-specific factors in the leverage choice of firms from 42 countries around the world. Their analysis

yields two new results. Primarily, they find that firm-specific determinants of leverage differ across countries, while more prior studies implicitly assume equal impact of these determinants. Second, although they agree with the conventional direct impact of country-specific factors on the capital structure of firms, they show there is an indirect impact because country-specific factors also affect the roles of company-specific factors of leverage. These findings are significant to the research that is going to be completed on a cross-country basis.

In addition, the present study will contribute to research that has been done in the emerging markets (EM) segment as the study will carry out research into the differences between them and the policies of established countries. Alter (2016) shows that corporate debt in emerging markets has risen significantly in recent years amid accommodative global financial conditions. Alter finds that accommodative U.S. financial circumstances are reliably related with faster EM debt growth during the past 10 years. In specific, a 1-percentage point decline in the U.S. policy rate agrees to a considerable increase in EM leverage growth of 9 bps on average (comparative to the sample mean debt growth of 35 bps per year). This impact is more marked for companies that are dependent on outside financing, for SMEs (small-scale and medium-sized enterprises), and for companies in more financially open emerging markets with less flexibility in exchange rates. These findings suggest that worldwide financial circumstances move EM firms' debt growth in part by changing domestic interest rates and by soothing corporate borrowing restrictions.

Vo (2017) studies capital structure in emerging markets, with evidence from Vietnam. Capital structure theory is more important in emerging markets due to their unique legal, cultural, and institutional characteristics. This paper sheds light on the question on whether determinants on capital structure policy are different in emerging markets. Results from the study show that the determinants of capital structure are different in emerging markets for long-term and short-term

indicators due to the unique differences involved. Given the increasing importance of emerging markets, investigation of financing decisions in emerging economies is a fascinating topic on its own merits. Despite a vast volume of research in the literature about capital structure determinants, there is, however, a gap in investigating this issue in emerging economies. This paper will shed more light into the emerging market aspects of capital structure theory. One should expect to identify a few key differences in the capital structure policies of emerging market firms and developed market firms. First, one should expect to see a marginally higher average ML ratio for the emerging market firms compared to the developed country firms due to increased dependence on external financing, less advantageous alternatives in the illiquid equity markets and historically higher propensities to use debt financing. One should also expect to see a higher cash buildup during the deleveraging period for the emerging market countries relative to the developed country firms. It is more important in the volatile emerging markets relative to the more stable developed markets to have the cash available to have better future access to capital and to mitigate future issues of liquidity, solvency, and other inherent risks.

III. Hypotheses

The hypotheses for this study are stated as follows.

H1: Publicly Traded Non-US firms that are a part of developed countries actively deleverage from their peak ML ratios

H_{Null}: Publicly traded Non – US firms do not actively deleverage from their peak ML ratios.

H_{Alt}: Publicly traded Non – US firms actively deleverage from their peak ML ratios.

H2: There are key differences in the capital structure decisions of companies in developed countries and that of those in emerging market countries

H_{Null}: There is no difference between developed countries and emerging market countries for firms' proactive deleveraging from their peak ML ratios.

H_{Alt}: There is a difference between developed countries and emerging market countries for firms' proactive deleveraging from their peak ML ratios.

IV. Data & Methodology

In order to test the above hypothesis, this study will use the following metrics.

Data Term	Defition
Market Leverage (ML)	$\frac{\text{Total Debt}}{\text{Total Debt} + \text{Total Equity}}$
Book Leverage (BL or Debt/TA)	$\frac{\text{Total Debt}}{\text{Total Assets}}$
Cash Ratio (Cash/TA)	$\frac{\text{Cash} + \text{Marketable Securities}}{\text{Total Assets}}$
Net Debt Ratio (NDR) or (Net Debt/TA)	$\frac{\text{Debt} - \text{Cash}}{\text{Total Assets}}$

Table 1: Total debt is the sum of all long term and short-term debt. The market value of equity (market capitalization) is the equity value of a firm or the share price times the shares outstanding. Total assets are the sum of all assets owned by the firm. Cash represents cash on hand at the given year. Marketable (equity) securities are to be sold within a year.

a. Sample Construction

The entire sample from Thomas Reuters Worldscope had 768,367 firm-year observations. A firm-year observation is a data point for a given year of a firm. The countries selected for either the developed or emerging market samples are derived from the “FTSE Classification of Equity Markets as of September 2018.” A firm will have as many firm-year observations as it has years of data available on Worldscope. The first step is to identify all publicly traded firms for the countries that are in each group. At that point, there is a need to take out firms that have no debt or less than one year of data available. Many of those firms with only one year of data are ordinarily the companies highly levered for mergers or acquisitions and possibly taken private or unlisted. Firms that were in the industries of either utilities or financials were removed. Next, if there were any missing data points or zeroes for debt, assets or ISIC code, they were removed from the sample. Finally, only firms with at least 5 years of post-peak ML data available were kept in the sample.

Line Item	Developed		Emerging	
	F-Y Obs.	# Firms	F-Y Obs.	# Firms
Total Number of Firms	350677	47702	180047	18137
- Utilities	5883	800	5450	549
- Financials	64162	8728	27289	2749
After Utilities and Financials Removed	280632	38174	147308	14839
- Missing or 0 Data for Debt	143209	19480	73527	7407
- Missing Firm Industry ID	74856	10183	38433	3872
After Firms with No Debt or Industry ID	62567	8511	35347	3561
- Firms with < 6 Years of Total Data Available	53407	7265	28438	2865
Firms with >= 6 Years of Total Data Available	9160	1246	6909	696
- Missing or 0 Value for Assets	1228	167	1340	135
- Firms without 5 years Post Peak Data	4815	655	2303	232
Final Sample of Firms	3117	424	3266	329

b. Methodology

This paper will consider two primary points. First, do the sample of Non – US developed country firms actively engage in deleveraging from their peak ML ratios while also increasing their cash balances for financial flexibility purposes? Second, do firms in emerging market countries have different capital structure propensities and do they differ from developed country firms in terms of deleveraging from peak ML and cash accretion policies?

The sample construction above shows how final sample was constructed. Financial and utility companies were removed due to their abnormal balance sheets. Data that was either null or zero for debt was removed because it would throw off the finished results for all of the ratios mentioned in the data section. If a firm was missing an ID, it was removed due to the chance that it was either a financial or a utility firm and that it would be unable to be categorized in the frequency diagrams. If a firm-year observation had a null or zero value for assets, it was removed from the sample altogether, due to the fact that a missing number for assets would make for an untrue value for equity, therefore throwing off the ratios mentioned in the data section. Ultimately, data is just needed for firms with over 5 years of post-peak data available. This is because it shows us firms that are unsuspected of being under a takeover or merger situation, and gives us a few years of sample size to have a great confidence in the final results.

Some other alternatives could have been used instead of the above. For one, there could be a considerably larger sample size by removing the restraints on the number of years of post-peak data. This would have delivered a larger sample, but it would have led to less valid or indicative results. On the same note, keeping financial and utility companies could work to give a larger sample size, but as stated before it would deliver an impact on the ultimate results. Other possible

alternatives could involve using different countries, for instance using other resources than “FTSE” to originate a sample for developed and emerging that is different from the one used in this study. That could have a change on the results. Lastly, one may choose different filters that they find more or less appropriate to either keep, remove, or add in from this study.

This study focuses on the time-series impact of cumulative earnings retention on ML ratios as opposed to the cross-sectional relation between leverage and current earnings, which many earlier studies analyze. The longitudinal approach conducts robustness checks of the key findings when firms deleverage after their ML ratios increase markedly. In the robustness checks, the study examines deleveraging from leverage peaks measured in book-value terms and after book leverage increases markedly.

V. Developed Country Analysis and Results

a. Frequency Distribution of Developed Country Sample

The following section will present the breakdown of the final sample of 424 developed countries. Seventeen countries were selected for the developed countries sample. Australia, Austria, Canada, Finland, France, Germany, Hong Kong, Ireland, Italy, Japan, the Netherlands, New Zealand, Poland, Singapore, Sweden, Switzerland, and the United Kingdom exist in the sample size. Australia contains the most firms in this sample size, followed by the United Kingdom, Japan, France, and Singapore. The rest of the countries experience a more negligible impact on the sample as a whole. (Figure 1)

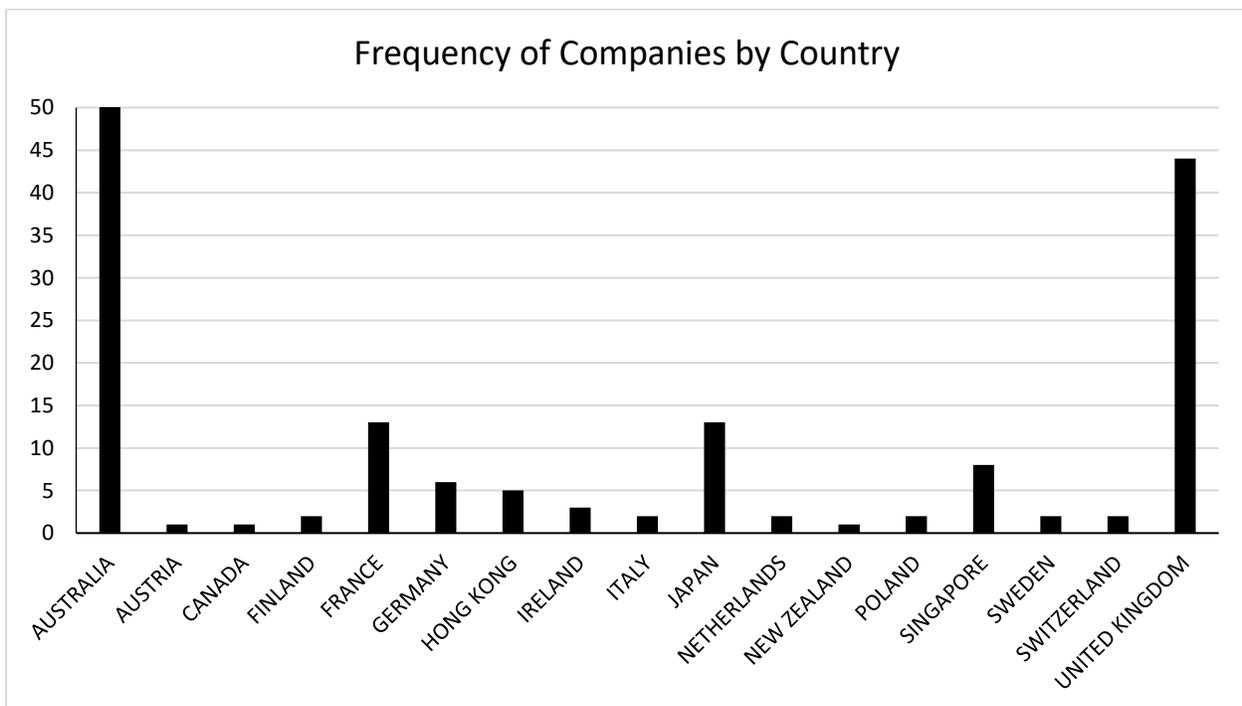


Figure 1: Frequency of Companies by Country

Australia final count totals 318 countries which is not shown completely on this chart. This chart is not indicative of all of the data on Worldscope, just the companies that arrived in the final sample size of data after using the necessary filters. As goes for the rest of the frequency distributions in this paper.

The following chart (Figure 2) reports the frequency of year observations. In total, there were 3117-year observations in the final developed countries sample. The concluding year of observation for this study is 2015. The first-year observation was in 1997. The years from 1997 – 2001 include only one observation and do not show on the graph. The heart of the year observations falls into the years of 2009-2010.

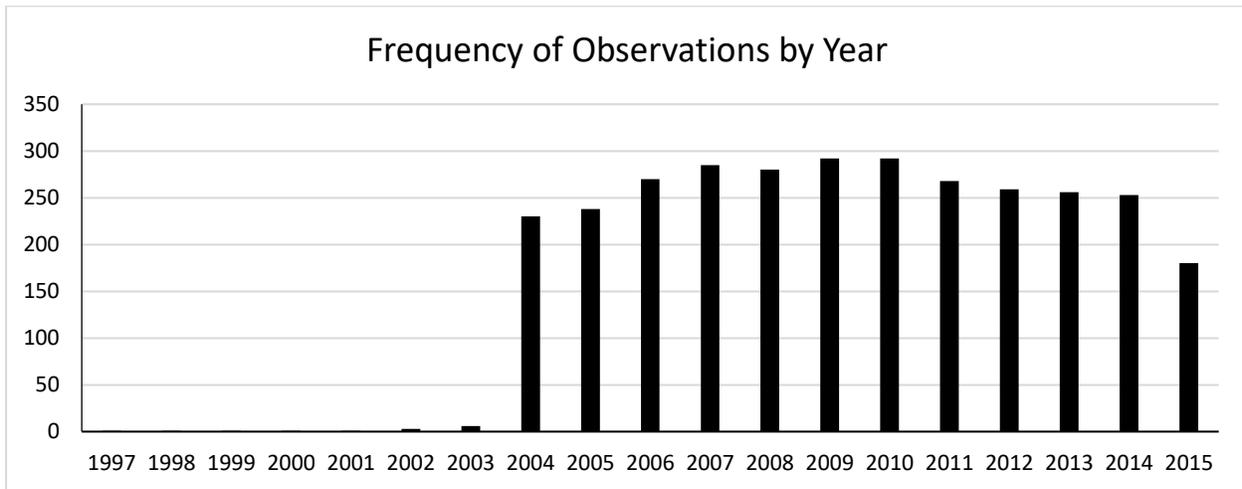


Figure 2: Frequency of Observations by Year

At the start, the final sample size of developed countries had over 100 different industry categories as defined by ISIC code. To better categorize it, the sectors were broken down into broader industries.

Code	Industry	Code	Industry
01-09	Agriculture, Forestry, Fishing	50-51	Wholesale Trade
10-14	Mining	52-59	Retail Trade
15-17	Construction	60-67	Finance, Insurance, Real Estate
20-39	Manufacturing	70-89	Services
40-49	Transportation	91-99	Public Administration

Table 2: Industry Classifications

The international codes are comprised of a four-digit code. As for grouping, only the first two digits of the code are needed to be able to classify the companies. The main two categories for the developed countries sample are manufacturing and mining. Services, wholesale trade, transportation, construction and agriculture, respectively follow those primary categories.

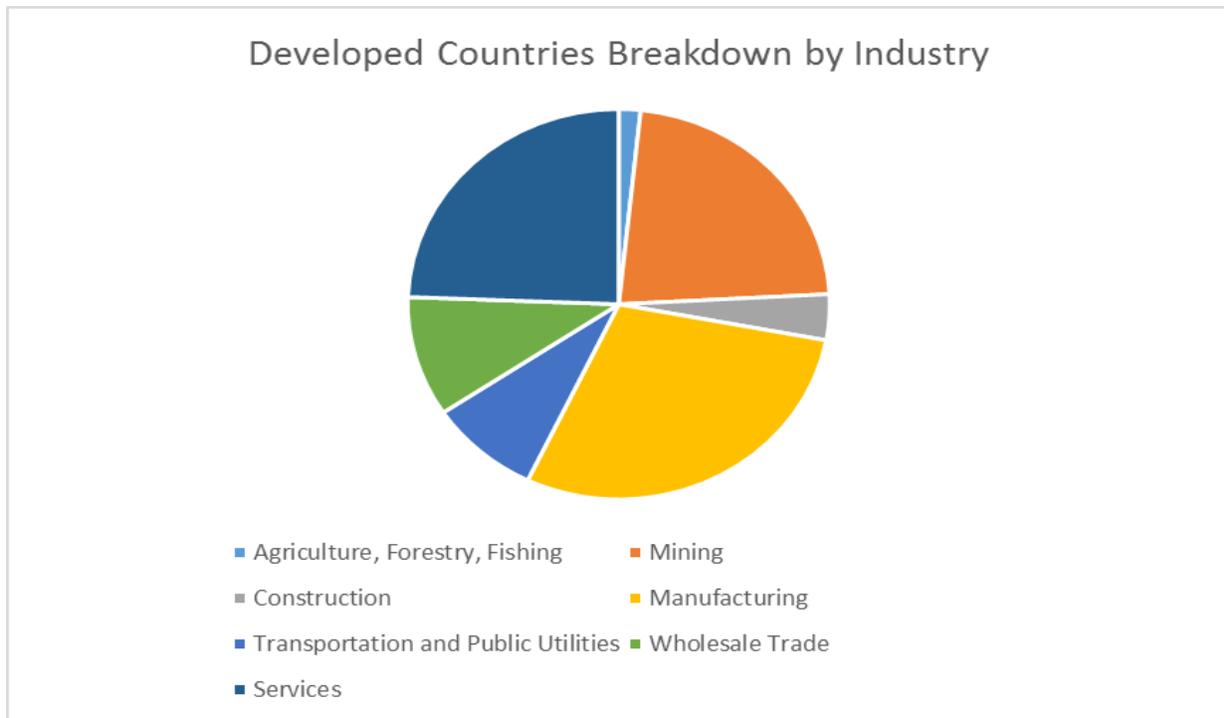


Figure 3: Developed Countries Sample – By Industry

b. Deciles of Peak Market Leverage for Developed Countries

Market leverage is .369 at the all-time high and .021 at the following trough for the sample of 424 firms. (Figure 4) Roughly, 36% of the firms pay off all of their debt following the peak and nearly 68% of the firms deleverage to negative net debt (NDR). (Figure 5) For each decile, even the highest, the companies end up at a median ML ratio of below 20% showing a clear desire to achieve lower levels of debt regardless of how leveraged they were at their respective peaks.

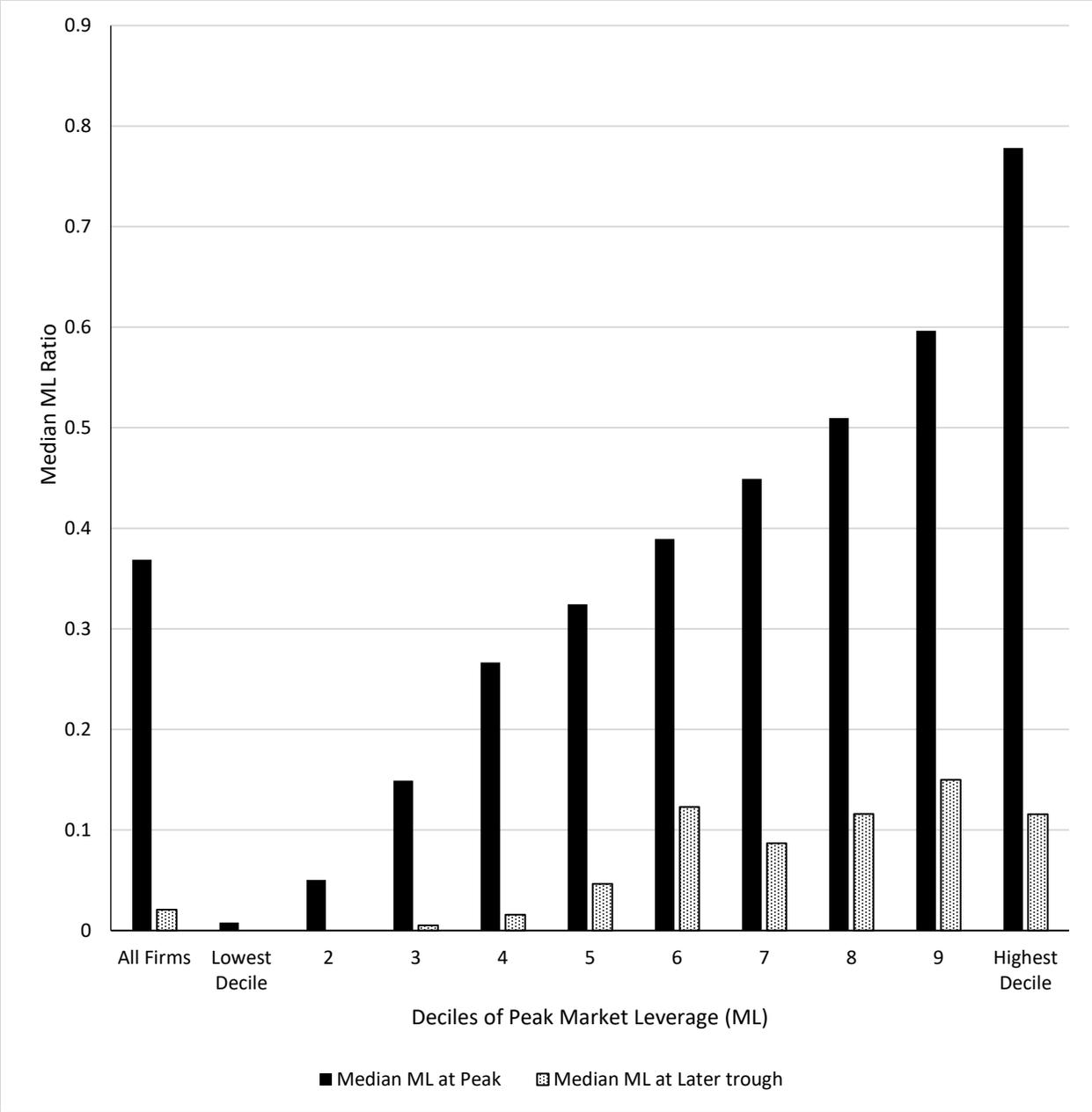


Figure 4: Levels of deleveraging from peak market leverage (ML) to following trough: Sorted by deciles of peak ML

Market leverage (ML) is debt divided by the total of book debt and equity. Peak leverage is the top ML over a company’s time in the sample. The following trough is the lowest value of ML after the peak. The sample contains 424 nonfinancial firms that have more than 5 years of post-peak data on Worldscope. The firms in this group are from one of seventeen “Developed Countries” that were outlined. Each of the ten decile groups contain 38 or 39 firms. For deciles 1 and 2, the median firm has zero debt at the post-peak trough, and so the figure only shows a positive value for the median ML at the trough after peak for deciles 3 to 10.

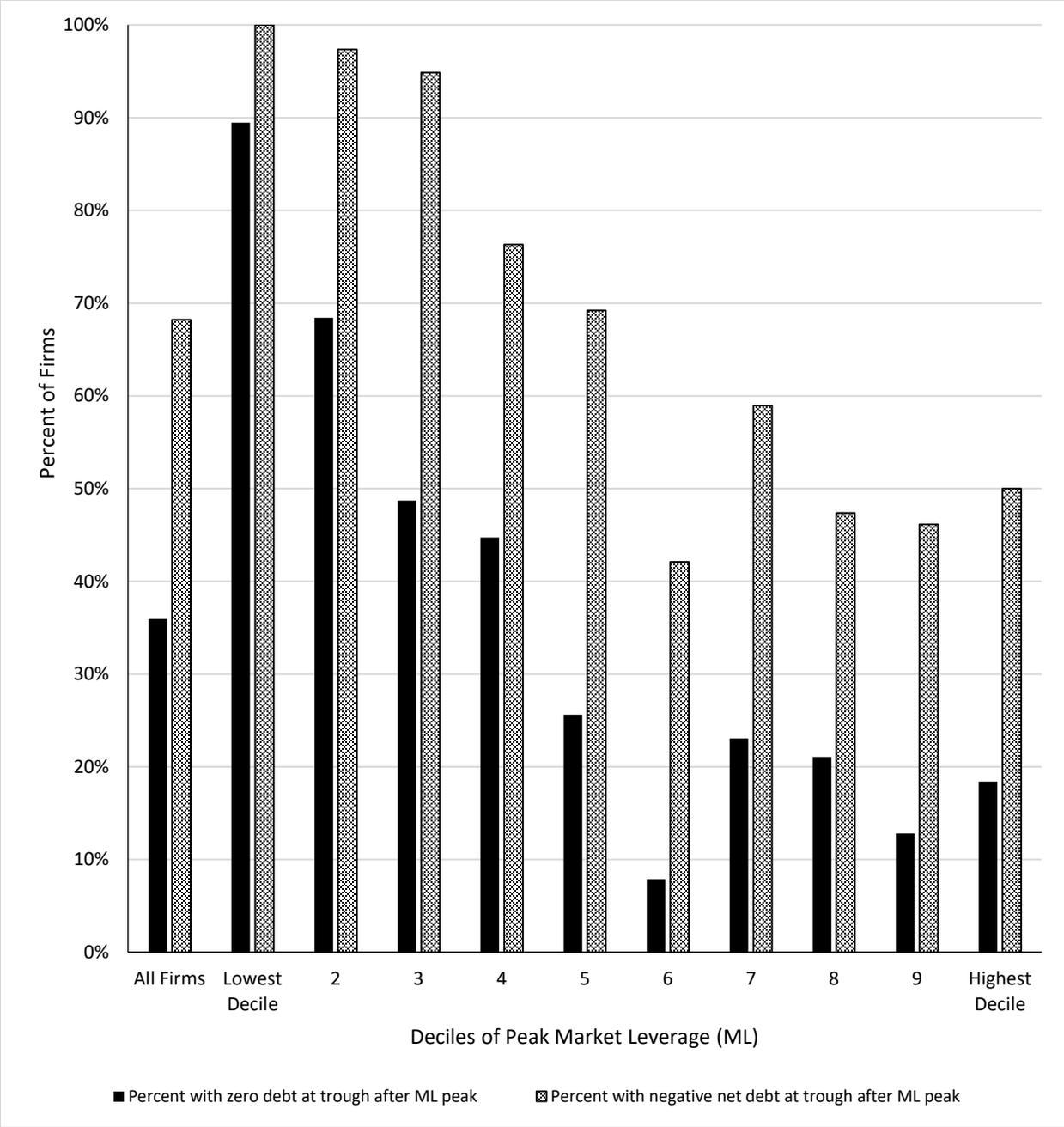


Figure 5: Percentage of firms that deleverage to zero debt and negative net debt capital structures: Sample sorted by deciles of peak market leverage

Market leverage (ML) is book debt divided by the sum of book debt and the market value of equity. Peak leverage is the maximum ML over a firm’s time in the sample. The subsequent trough is the lowest value of ML after the peak. A negative-net-debt capital structure has a level of debt that is lower than the firm’s cash holdings. The sample contains 424 nonfinancial non-utility firms that have five or more years of post-peak data on Worldscope. The firms in this group are from one of seventeen “Developed Countries” that were have outlined. Each of the ten decile groups accordingly contains 38 or 39 firms.

c. Annual Deleveraging Tendencies

Beginning-of-year ratio	Market Leverage		Book Leverage		Net Debt / TA	
	Probability of Annual Decrease	Median Annual Change	Probability of Annual Decrease	Median Annual Change	Probability of Annual Decrease	Median Annual Change
.5 < Leverage	71.20%	-0.139	71.69%	-0.222	64.96%	-0.212
.4 < Leverage <= .5	68.42%	-0.110	69.46%	-0.082	70.18%	-0.106
.3 < Leverage <= .4	63.33%	-0.072	64.35%	-0.072	60.56%	-0.080
.2 < Leverage <= .3	56.81%	-0.051	61.39%	-0.089	56.68%	-0.048
.1 < Leverage <= .2	52.33%	-0.044	56.06%	-0.060	45.60%	0.050
.0 < Leverage <= .1	56.14%	-0.062	54.83%	-0.065	26.13%	0.591
All Leverage >= 0	59.92%	-0.074	59.30%	-0.080	-	-
All Net Debt/TA >=0	-	-	-	-	47.01%	0.144
All Net Debt/TA <0	-	-	-	-	38.98%	0.197

Figure 6: Deleveraging propensities: Annual changes in leverage as a function of the beginning-of-year level of leverage

Market leverage (ML) is the ratio of the book value of debt to the sum of the book value of debt and the market value of equity. Book leverage (BL or Debt/TA) is the ratio of the book value of total (short-term plus long-term) debt to the book value of total assets. The net-debt ratio (NDR or Net Debt/TA) equals debt minus cash, divided by total assets. The full sample contains 424 nonfinancial firms with a total 3117 firm-year observations in the Worldscope file over 1997-2015.

Figure six above reports annual leverage changes of all of the firms in the developed countries sample. The most significant thing to note about this figure is that when leverage is high in one year it tends to decrease in the subsequent year, which is seen in the median annual change. The probability of annual decrease was calculated by taking the year observation, categorizing it by the beginning of year ML ratio, and noting the direction of the leverage of the firm from that year to the next. Specifically, when either market or book leverage ratios exceed 50% leverage at the beginning of any given year, there is a 65% to 71% chance of an annual decrease in leverage with a mean annual median change of about --19%. This pattern follows suit as all of the median ML ratios above zero, which is 100% of the sample size, have a negative median annual change.

	Market Leverage		Book Leverage		Net Debt / TA	
	% of Sample	Firm Yr. Obs.	% of Sample	Firm Yr. Obs.	% of Sample	Firm Yr. Obs.
.5 < Leverage	14.2%	382	6.2%	166	5.1%	137
.4 < Leverage <= .5	9.2%	247	6.2%	167	4.2%	114
.3 < Leverage <= .4	13.4%	360	12.3%	331	9.3%	251
.2 < Leverage <= .3	14.5%	389	17.6%	474	13.9%	374
.1 < Leverage <= .2	14.3%	386	18.1%	487	16.5%	443
.0 < Leverage <= .1	34.5%	928	39.7%	1067	20.5%	551
All Leverage >= 0	100%	2692	100%	2692	69.5%	1870
All Leverage < 0	-	-	-	-	30.5%	821

Figure 7: Deleveraging propensities – Year observations breakdown

d. Deleveraging While Restoring Financial Flexibility

Figure 8 shows that during the deleveraging period from the all-time peak ML to the following trough, a typical firm converts from one that has elevated levels of debt relative to cash to one that demonstrates ample financial flexibility in terms of reduced debt and high cash amounts on hand. The table is broken down as follows. The first column all the way to the left reports all of the companies in the data set. The second column wholly contains the companies in the set that have greater than or equal to two years of post-peak to later trough data on Worldscope. This pattern continues until the last column, which represents nothing but firms that have 10+ years post peak to trough data on Worldscope. Taking a more comprehensive look at figure 8 shows a few more interesting patterns. Taking out the firms with only a few years post peak to trough data yields a slightly broader decline in median ML from the peak to the trough. In addition, the universal deleveraging to a negative net debt ratio demonstrates to us that firms are markedly increasing cash balances as well.

Minimum number of years of data available after the market leverage (ML) peak:

	>=1	>=2	>=3	>=4	>=5	>=6	>=7	>=8	>=9	>=10
Median ML at peak	0.382	0.370	0.380	0.379	0.371	0.393	0.406	0.401	0.418	0.431
Median ML at trough after peak	0.036	0.032	0.034	0.037	0.043	0.047	0.055	0.060	0.084	0.025
Median Cash / TA at ML peak	0.046	0.048	0.048	0.050	0.052	0.050	0.048	0.051	0.035	0.034
Median Cash / TA at trough after peak	0.085	0.083	0.078	0.081	0.080	0.076	0.078	0.080	0.068	0.097
Median Net Debt / TA at ML peak	0.212	0.197	0.199	0.200	0.205	0.217	0.229	0.226	0.282	0.314
Median Net Debt / TA at trough after peak	-0.033	-0.031	-0.024	-0.021	-0.022	-0.016	-0.008	-0.010	0.023	-0.034
Median BL at ML peak	0.284	0.269	0.277	0.277	0.277	0.294	0.308	0.306	0.325	0.350
Median BL at trough after peak	0.027	0.024	0.025	0.028	0.032	0.035	0.041	0.048	0.067	0.020
Median peak-to-trough decline	-0.346	-0.339	-0.347	-0.341	-0.328	-0.346	-0.351	-0.341	-0.334	-0.405

Figure 8: Deleveraging episodes: Market leverage (ML) and related financial ratios at the ML peak and subsequent ML trough, with the baseline sample partitioned by the minimum number of years of post-peak data available on Worldscope

Market leverage (ML) is the ratio of the book value of debt to the sum of the book value of debt and the market value of equity. Peak leverage is the maximum value of ML over a firm's entire time in the sample. The trough after peak is the lowest value of a firm's ML that comes subsequent to its peak. When a firm has multiple post-peak years with the same minimum value of ML, The earliest such year to be the date of the post-peak trough is taken. Book leverage (BL) is the ratio of the book value of debt to the book value of total assets. Net Debt/TA is the book value of debt minus the sum of cash and marketable securities, divided by total assets.

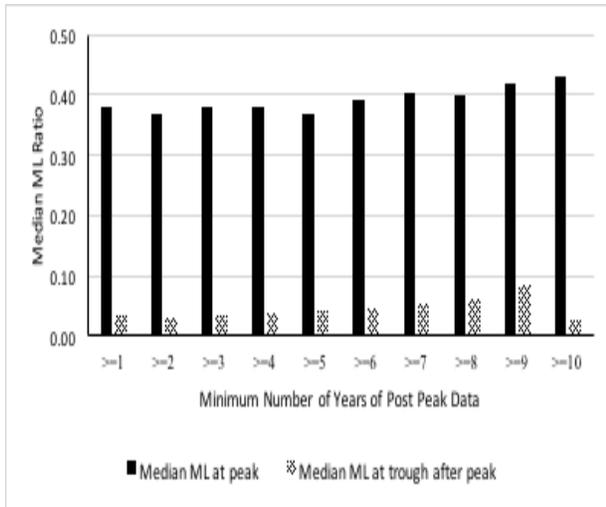


Figure 8

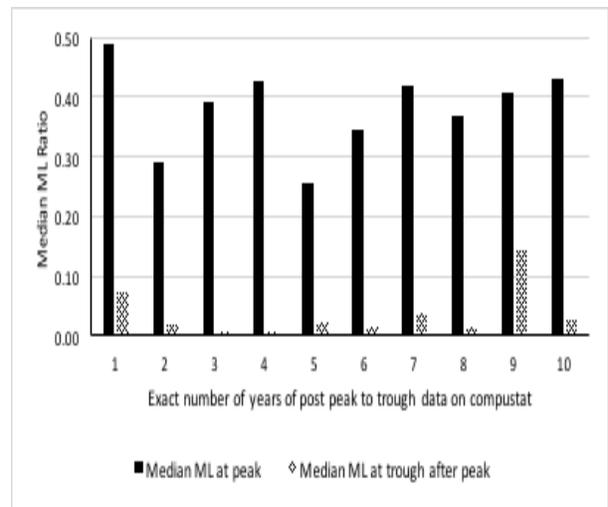


Figure 9

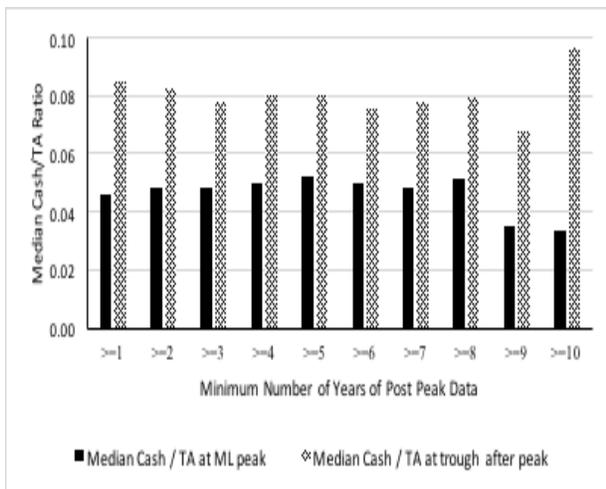


Figure 10

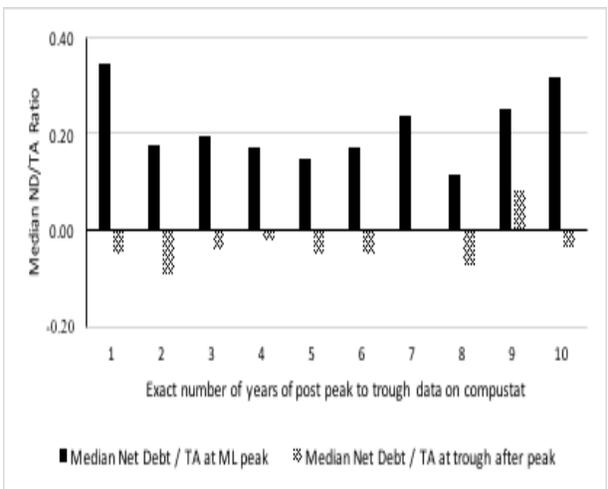


Figure 11

Figure 8: Median ML ratio at peak and trough grouped by minimum number of years post peak data

Figure 9: Median ML ratio at peak and trough grouped by exact number of years post peak data

Figure 10: Median Cash/TA ratio at peak and trough grouped by minimum number of years post peak data

Figure 11: Median Cash / TA ratio at peak and trough grouped by exact number of years post peak data

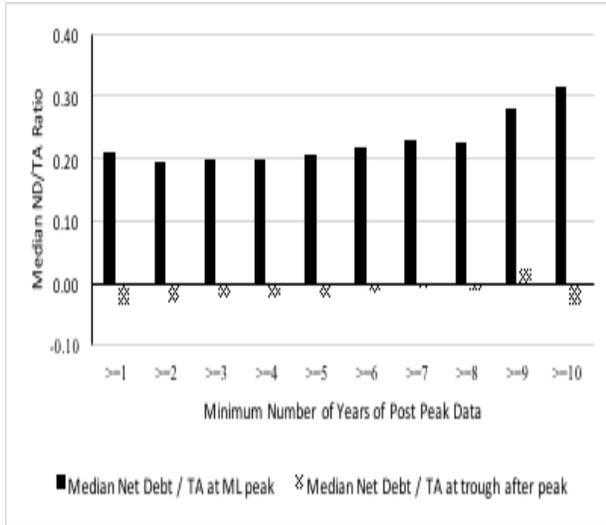


Figure 12

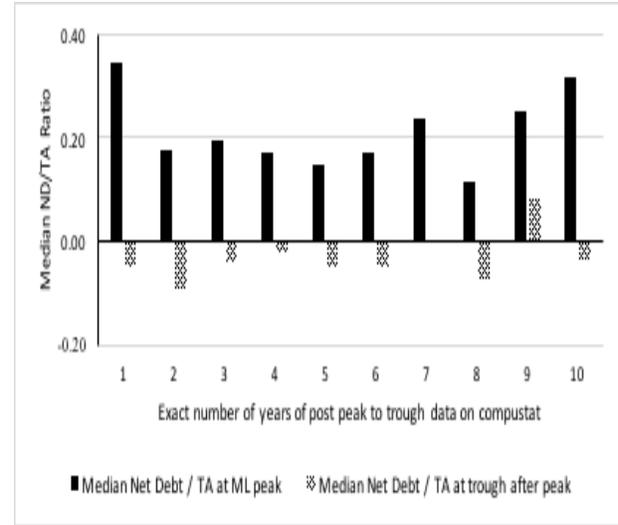


Figure 13

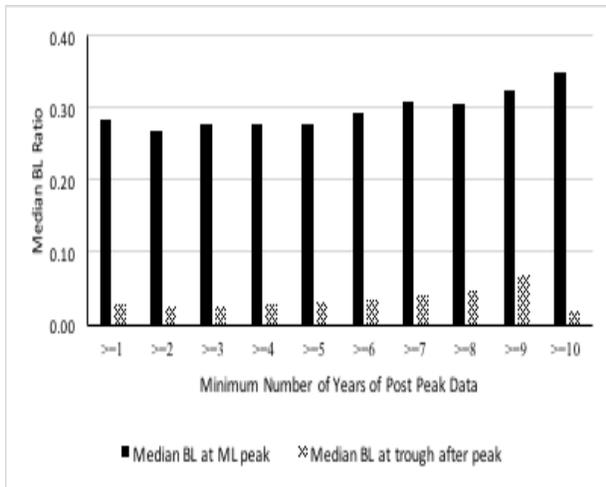


Figure 14

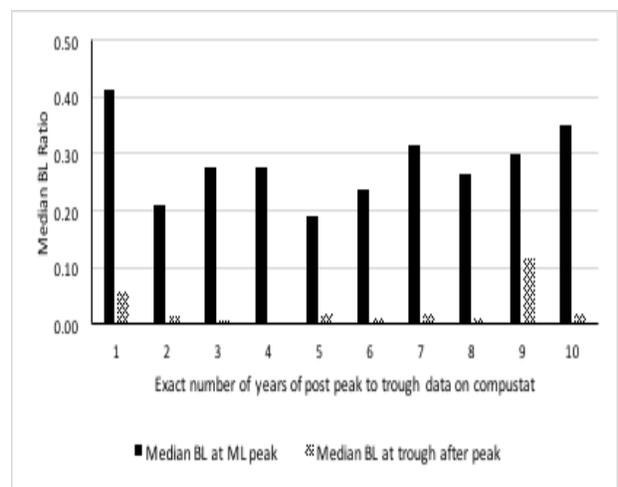


Figure 15

Figure 12: Median NDR ratio at peak and trough grouped by minimum number of years post peak data

Figure 13: Median NDR ratio at peak and trough grouped by exact number of years post peak data

Figure 14: Median BL ratio at peak and trough grouped by minimum number of years post peak data

Figure 15: Median BL ratio at peak and trough grouped by exact number of years post peak data

VI. Emerging Market Analysis and Results

a. Debt Markets in Emerging Markets

The corporate debt of nonfinancial firms across major emerging market economies quadrupled between 2004 and 2014. Simultaneously, the structure of that corporate debt has been flowing away from loans and toward bonds. Although more considerable leverage can be used for investment, thus boosting growth, the rising trend in recent years certainly raises alarms because many financial crises in emerging markets have been headed by quick leverage growth.

b. Frequency Distribution of Emerging Market Sample

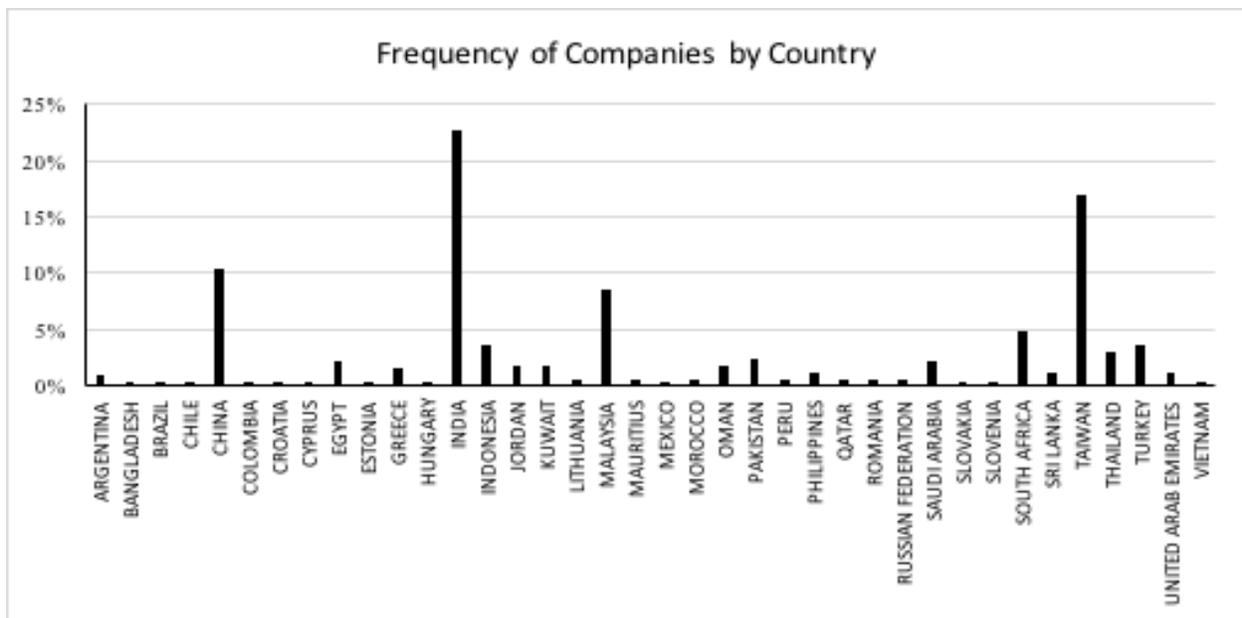


Figure 16: Frequency of Companies by Country

This chart is not indicative of all of the data on Worldscope, just the companies that arrived in the final sample size of data after using the necessary filters.

The following section will present the breakdown of the final sample of 329 emerging countries. Thirty-eight countries were selected for the developed countries' sample. The most

prevalent countries in this sample are India, Taiwan, China, Malaysia, and South Africa, respectively. The other 33 countries have a smaller impact on the sample as a whole. (Figure 16) The following chart (Figure 17) reports the frequency of year observations. In total, there were 3266-year observations in the final developed countries sample. The concluding year of observation for this study is 2015. The first-year observation was in 1991. The years from 1991 – 2001 have only a few observations and slightly show on the graph. The heart of the year observations falls into the years of 2008-2009.

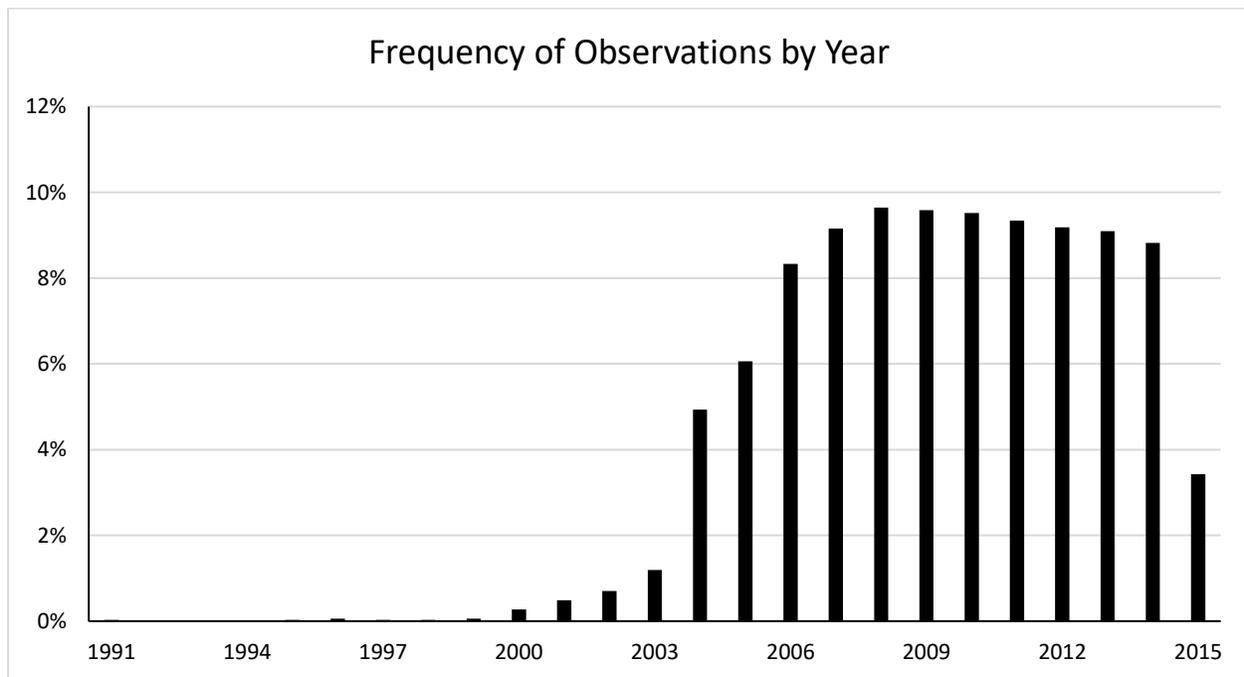


Figure 17: Frequency of Observations by Year

Initially, the final sample size of developed countries had over 100 different industry categories as defined by ISIC code. In order to better categorize it, the sectors were broken down into more general industries. It is the same categorization used as the developed countries earlier in the paper. The principal difference between the developed and the emerging is that

manufacturing takes up a considerably more significant percentage of the companies in the sample size.

Code	Industry	Code	Industry
01-09	Agriculture, Forestry, Fishing	50-51	Wholesale Trade
10-14	Mining	52-59	Retail Trade
15-17	Construction	60-67	Finance, Insurance, Real Estate
20-39	Manufacturing	70-89	Services
40-49	Transportation	91-99	Public Administration

Table 3: Industry Classifications

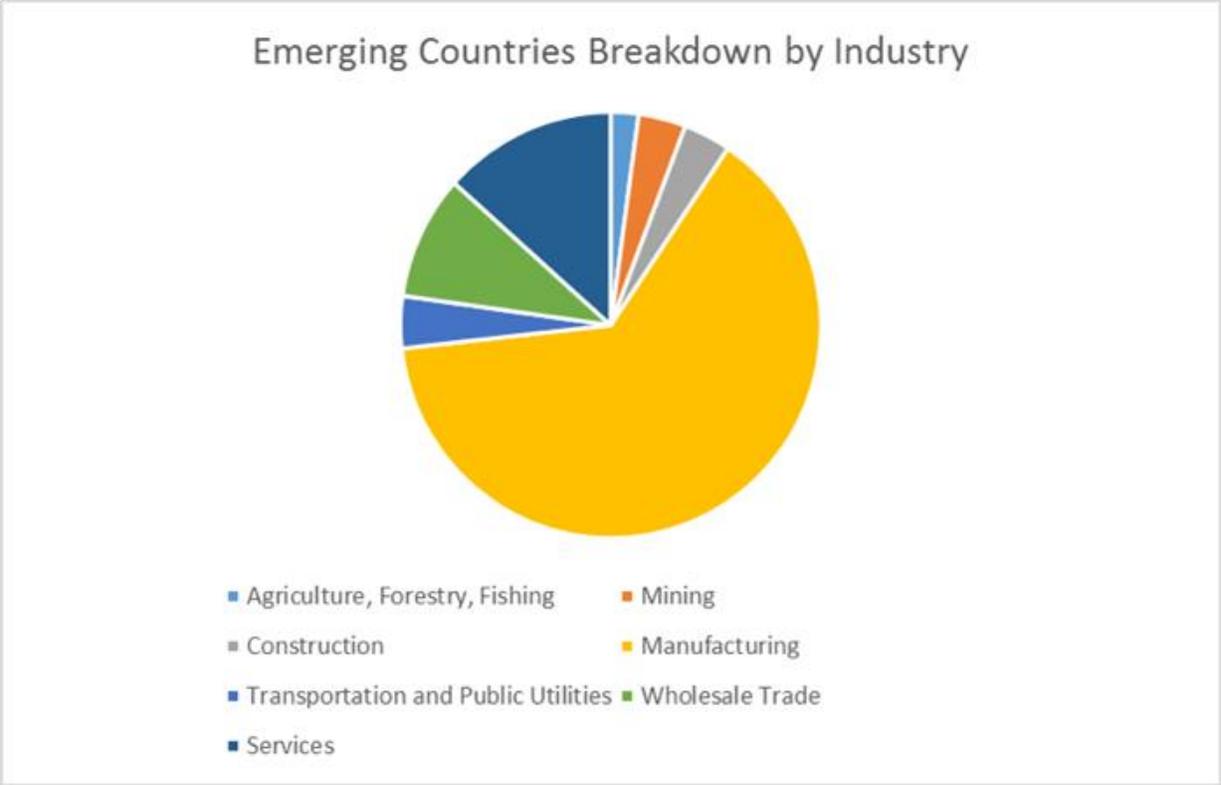


Figure 18: Emerging Countries Sample – By Industry

c. Deciles of Peak Market Leverage for Emerging Countries

Market leverage is .468 at the all-time high and .103 at the following trough for the sample of 329 firms. (Figure 19) Roughly 12% of the firms pay off all of their debt following the peak and nearly 35% of the firms deleverage to negative net debt (NDR). (Figure 20). There are some significant differences between the peak and trough ML ratios of the developed countries and the emerging market countries. For the entire sample, there is a 10% higher ML ratio at the peak and a 5% higher ML ratio at the trough when comparing it to the developed country sample. Another observation is that even though there is a higher median ML ratio for the emerging market data set, there is a great peak to trough decline in ML ratio, which shows that there is still a clear propensity for companies to deleverage to restore financial flexibility.

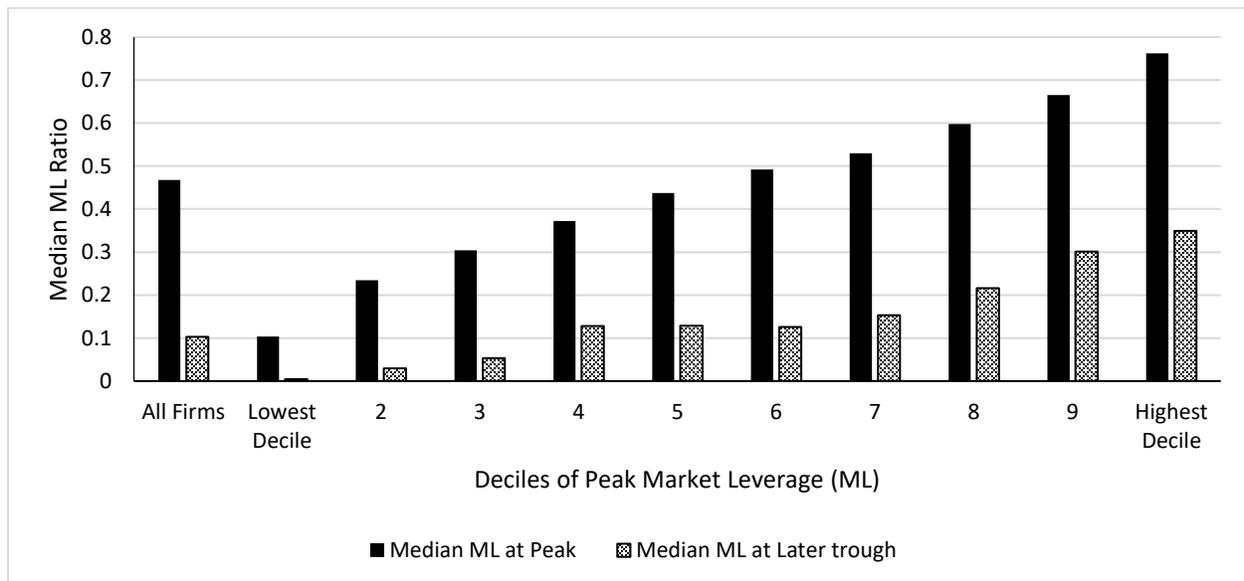


Figure 19: Scale of deleveraging from peak market leverage (ML) to subsequent trough: Sample sorted by deciles of peak ML

Market leverage (ML) is book debt divided by the sum of book debt and the market value of equity. Peak leverage is the maximum ML over a firm's time in the sample. The subsequent trough is the lowest value of ML after the peak. The sample contains 329 nonfinancial firms that have five or more years of post-peak data on Worldscope. Each of the ten decile groups accordingly contains 32 or 31 firms.

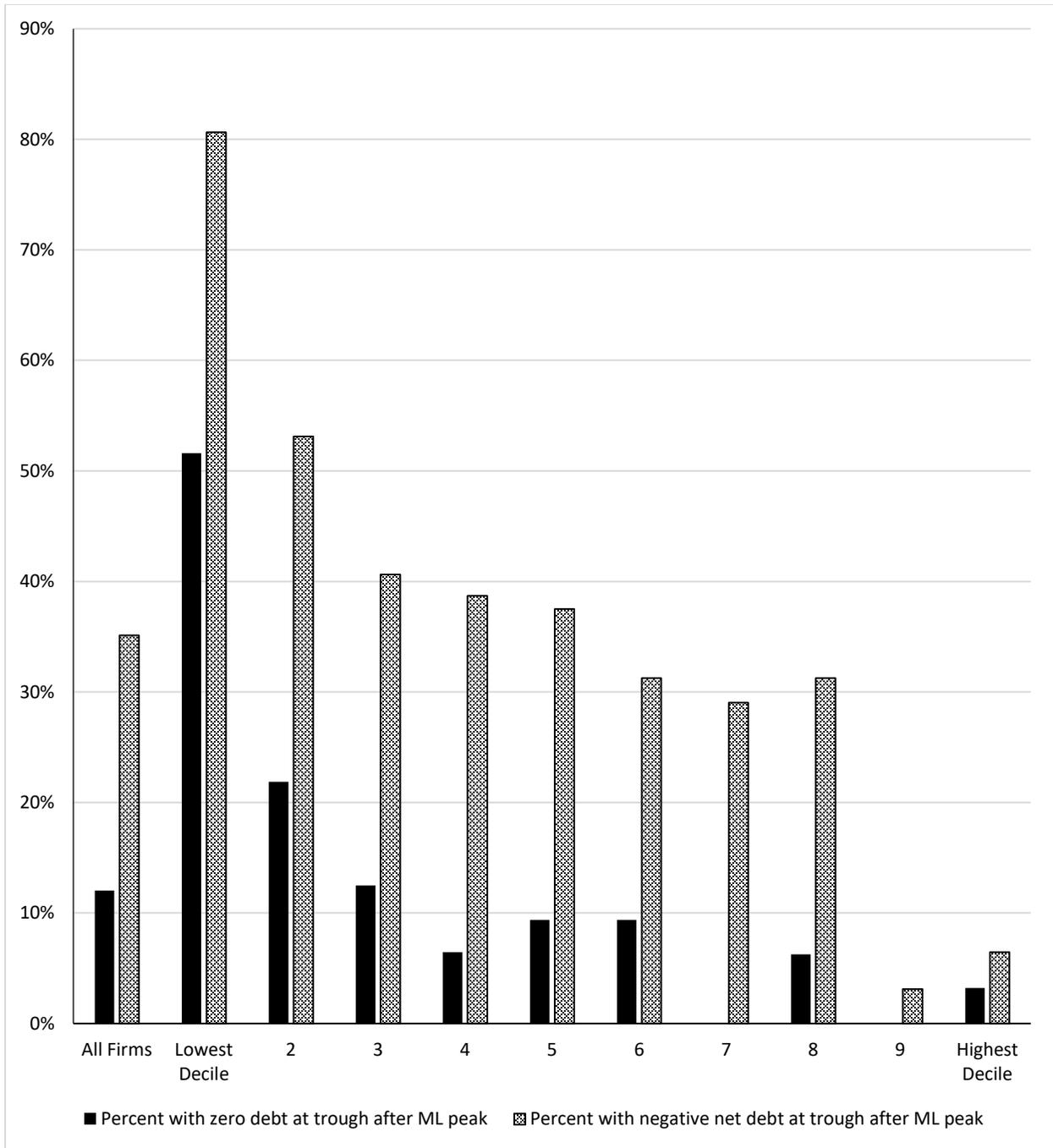


Figure 20: Percentage of firms that deleverage to zero debt and negative net debt capital structures: Sample sorted by deciles of peak ML

Market leverage (ML) is book debt divided by the sum of book debt and the market value of equity. Peak leverage is the maximum ML over a firm’s time in the sample. The subsequent trough is the lowest value of ML after the peak. A negative-net-debt capital structure has a level of debt that is lower than the firm’s cash holdings. The sample contains 329 nonfinancial non-utility firms that have five or more years of post-peak data on Worldscope. Each of the ten decile groups accordingly contains 32 or 31 firms.

d. Annual Deleveraging Tendencies

	Market Leverage		Book Leverage		Net Debt / TA	
	Probability of Annual Decrease	Median Annual Change	Probability of Annual Decrease	Median Annual Change	Probability of Annual Decrease	Median Annual Change
Beginning-of-year ratio						
.5 < Leverage	68.09%	-0.047	67.86%	-0.059	68.75%	-0.068
.4 < Leverage <= .5	58.70%	-0.040	62.94%	-0.054	60.57%	-0.034
.3 < Leverage <= .4	64.51%	-0.065	62.50%	-0.056	65.21%	-0.086
.2 < Leverage <= .3	56.74%	-0.041	61.35%	-0.072	59.27%	-0.081
.1 < Leverage <= .2	57.51%	-0.064	55.90%	-0.052	52.54%	-0.021
.0 < Leverage <= .1	49.43%	0.002	50.45%	-0.007	29.62%	0.416
All Leverage >= 0	59.28%	-0.042	58.60%	-0.047	-	-
All Net Debt/TA >=0	-	-	-	-	45.62%	0.037
All Net Debt/TA <0	-	-	-	-	34.50%	0.329

Figure 21 Deleveraging propensities: Annual changes in leverage as a function of the beginning-of-year level of leverage

Market leverage (ML) is the ratio of the book value of debt to the sum of the book value of debt and the market value of equity. Book leverage (BL or Debt/TA) is the ratio of the book value of total (short-term plus long-term) debt to the book value of total assets. The net-debt ratio (NDR or Net Debt/TA) equals debt minus cash, divided by total assets. The full sample contains 329 nonfinancial firms with a total 3266 firm-year observations in the Worldscope file over 1991 - 2015.

Figure 21 above reports annual leverage changes of all of the firms in the developed countries sample. The most important thing to note about this figure is that when leverage is high in one year it tends to decrease in the following year which can be seen in the median annual change. The probability of annual decrease was calculated by taking the year observation, categorizing it by the beginning of year ML ratio, and noting the direction of the leverage of the firm from that year to the next. Specifically, when either market or book leverage ratios exceed 50% leverage at the beginning of any given year, there is a roughly 68% chance of an annual decrease in leverage with a mean annual median change of about --5%. This pattern follows suit as all of the median ML ratios above zero, which is 100% of the sample size, have a negative

median annual change. One major difference between the results from the emerging markets countries and those of the developed countries is that the median annual ML change is roughly half that of the developed countries.

Beginning-of-year ratio	Market Leverage		Book Leverage		Net Debt / TA	
	% of Sample	Firm Yr. Obs.	% of Sample	Firm Yr. Obs.	% of Sample	Firm Yr. Obs.
.5 < Leverage	19.95%	586	9.53%	280	8.17%	240
.4 < Leverage <= .5	14.10%	414	9.74%	286	8.38%	246
.3 < Leverage <= .4	15.25%	448	16.34%	480	13.99%	411
.2 < Leverage <= .3	16.92%	497	19.20%	564	16.72%	491
.1 < Leverage <= .2	15.87%	466	22.23%	653	20.09%	590
.0 < Leverage <= .1	17.91%	526	22.95%	674	18.05%	530
All Leverage >= 0	100%	2937	100%	2937	85%	2508
All Leverage < 0	0%	0	0%	0	15%	429

Figure 22: Deleveraging propensities – Year observations breakdown

e. Deleveraging While Restoring Financial Flexibility

Figure 23 shows that during the deleveraging period from the all-time peak ML to the following trough, a typical firm converts from one that possesses elevated levels of debt relative to cash to one that has ample financial flexibility in terms of reduced debt and high cash amounts on hand. The table is broken down as follows. The first column all the way to the left reports all of the companies in the data set. The second column only contains the companies in the set that have greater than or equal to two years of post-peak to later trough data on Worldscope. This pattern continues until the last column, which represents solely firms that have 10+ years post peak to trough data on Worldscope. Allowing a more comprehensive look at figure 23 will shows us the similarities or differences between emerging market countries and developed market countries.

	Minimum number of years of data available after the market leverage (ML) peak:									
	>=1	>=2	>=3	>=4	>=5	>=6	>=7	>=8	>=9	>=10
Median ML at peak	0.473	0.473	0.474	0.471	0.475	0.483	0.472	0.465	0.450	0.371
Median ML at trough after peak	0.111	0.112	0.112	0.096	0.091	0.089	0.082	0.050	0.036	0.020
Median Cash / TA at ML peak	0.025	0.025	0.025	0.024	0.026	0.025	0.031	0.027	0.032	0.036
Median Cash / TA at trough after peak	0.047	0.046	0.045	0.047	0.047	0.045	0.046	0.044	0.047	0.062
Median Net Debt / TA at ML peak	0.322	0.321	0.321	0.324	0.320	0.326	0.304	0.318	0.279	0.206
Median Net Debt / TA at trough after peak	0.033	0.031	0.032	0.023	0.022	0.020	0.012	-0.011	-0.017	-0.032
Median BL at ML peak	0.348	0.348	0.347	0.352	0.349	0.354	0.343	0.358	0.334	0.278
Median BL at trough after peak	0.085	0.085	0.084	0.077	0.078	0.075	0.069	0.042	0.028	0.018
Median peak-to-trough decline	0.362	0.361	0.362	0.375	0.384	0.394	0.390	0.415	0.414	0.350

Figure 23: Deleveraging episodes: Market leverage (ML) and related financial ratios at the ML peak and subsequent ML trough, with the baseline sample partitioned by the minimum number of years of post-peak data available on Worldscope

Market leverage (ML) is the ratio of the book value of debt to the sum of the book value of debt and the market value of equity. Peak leverage is the maximum value of ML over a firm's entire time in the sample. The trough after peak is the lowest value of a firm's ML that comes following its peak. Book leverage (BL) is the ratio of the book value of debt to the book value of total assets. Net Debt/TA is the book value of debt minus the sum of cash and marketable securities, divided by total assets.

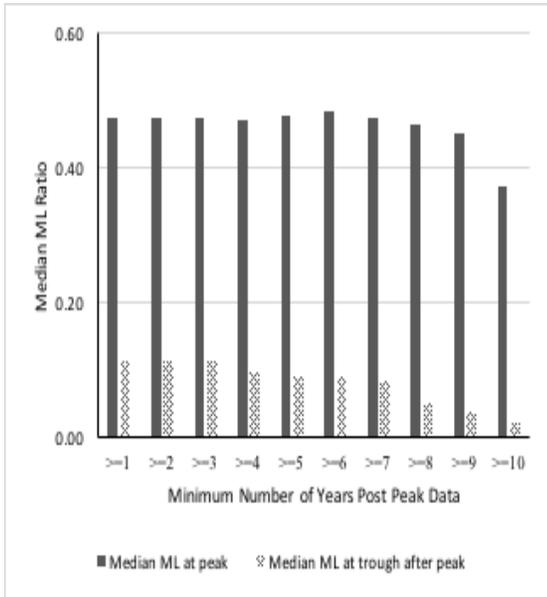


Figure 24

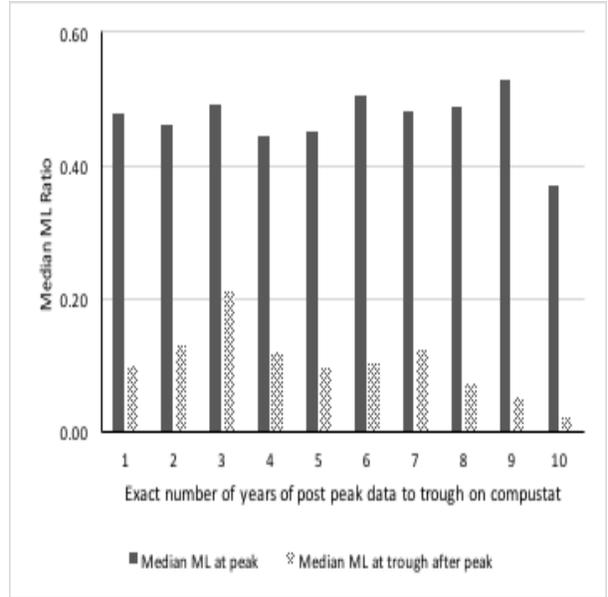


Figure 25

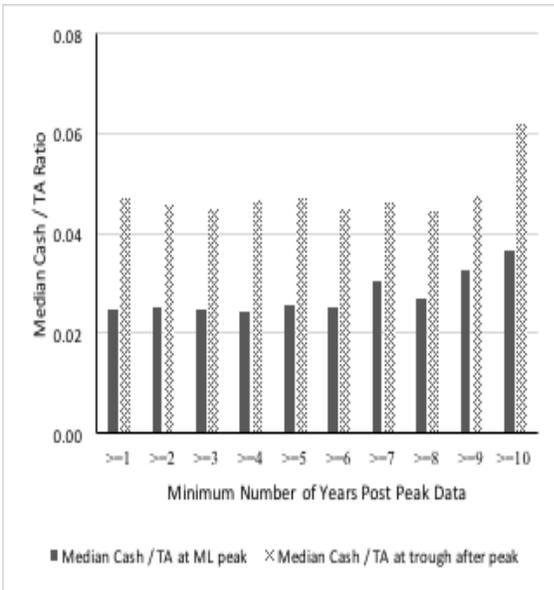


Figure 26

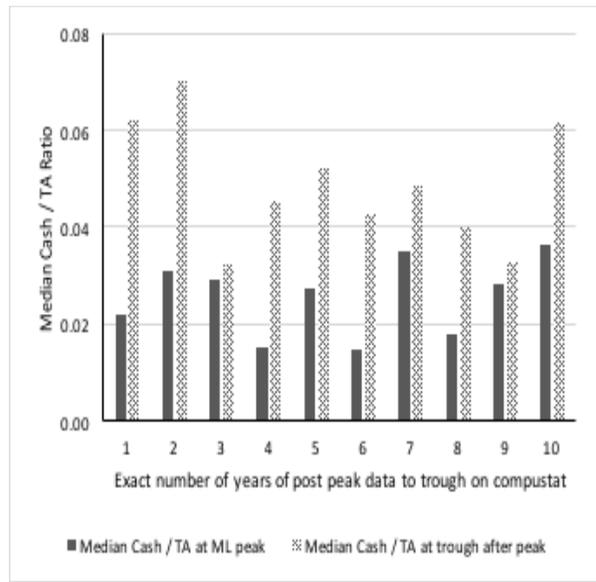


Figure 27

Figure 24: Median ML ratio at peak and trough grouped by minimum number of years post peak data

Figure 25: Median ML ratio at peak and trough grouped by exact number of years post peak data

Figure 26: Median Cash/TA ratio at peak and trough grouped by minimum number of years post peak data

Figure 27: Median Cash / TA ratio at peak and trough grouped by exact number of years post peak data

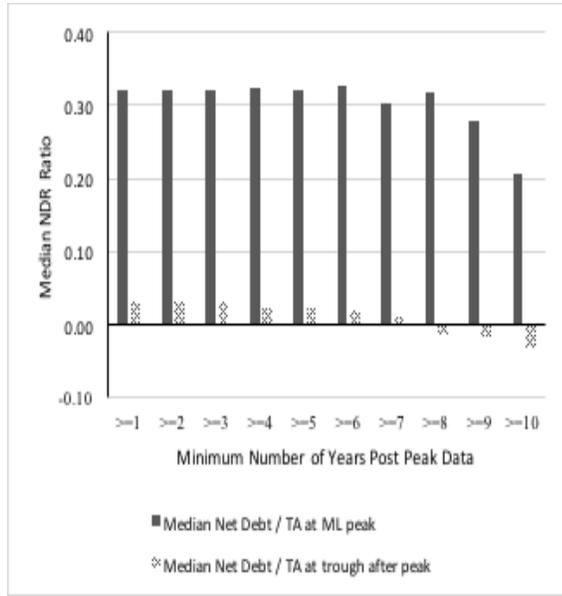


Figure 28

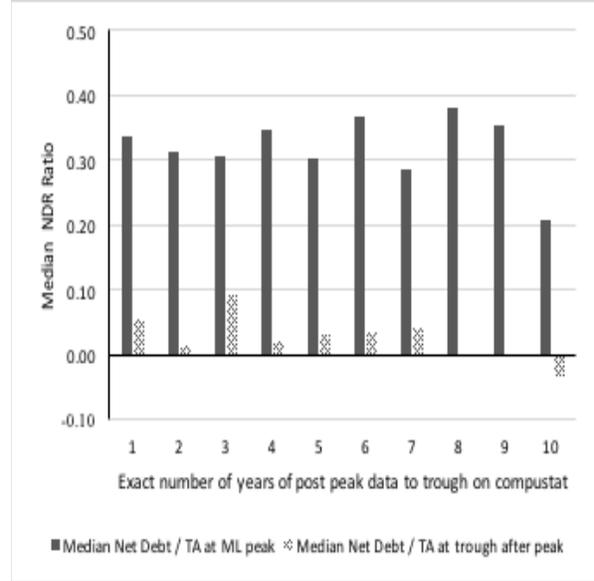


Figure 29

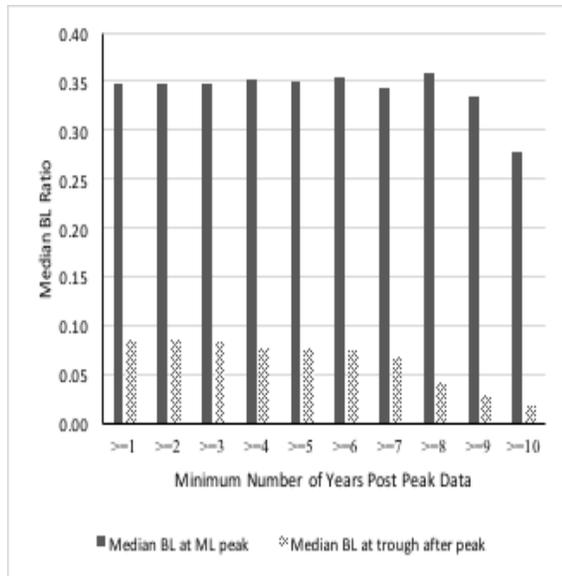


Figure 30

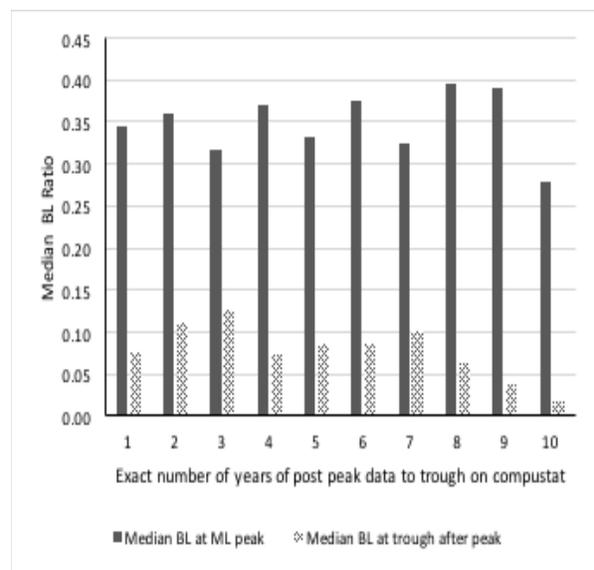


Figure 31

Figure 28: Median NDR ratio at peak and trough grouped by minimum number of years post peak data

Figure 29: Median NDR ratio at peak and trough grouped by exact number of years post peak data

Figure 30: Median BL ratio at peak and trough grouped by minimum number of years post peak data

Figure 31: Median BL ratio at peak and trough grouped by exact number of years post peak data

VII. Key Differences Between Developed and Emerging

There are a few main differences between the emerging market sample and the developed country sample in regard to deleveraging while restoring financial flexibility.

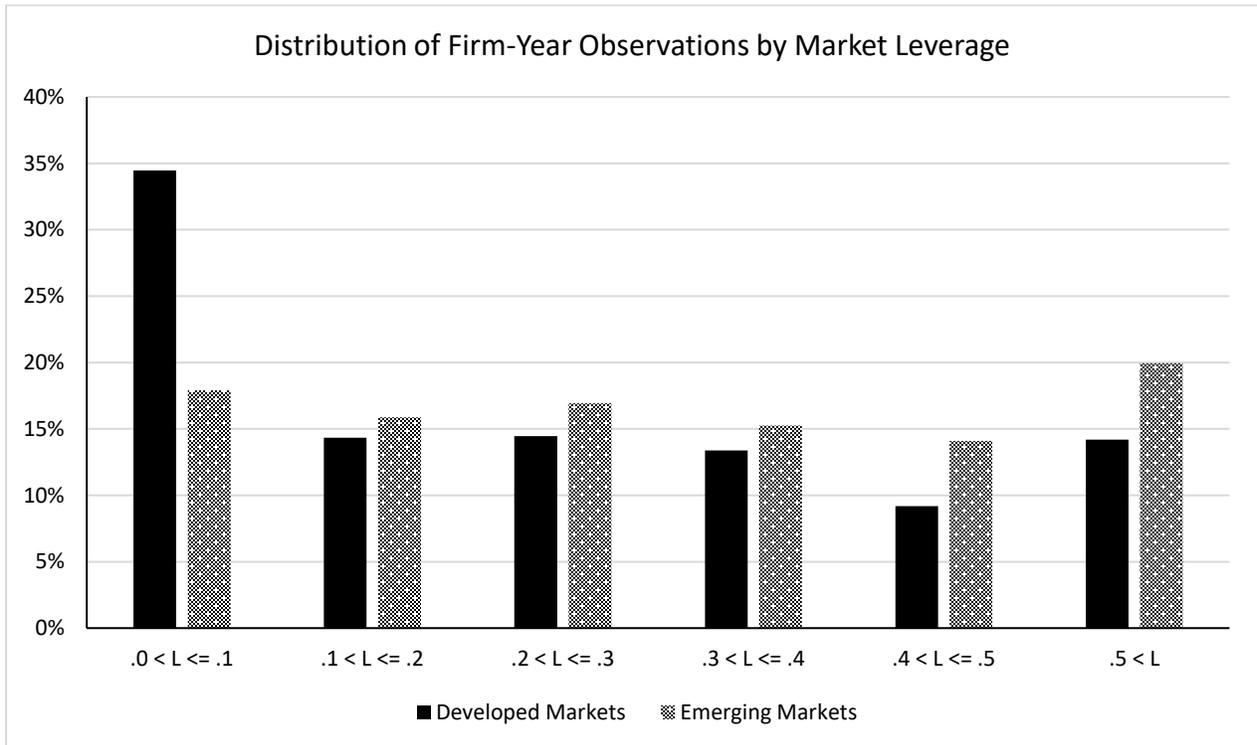


Figure 32: Firm-Year Observations by Market Leverage; L = Leverage

Figure 32 shows that the firms in developed markets have a much higher propensity to have lower leverage than the emerging market sample. The developed sample has more than double the firm-year observations than the emerging market sample for observations that fall in between no leverage and 10% leverage. The emerging market sample is much more evenly spread out yielding a slightly higher average ML than the developed markets. Comparing figures 23 and 8, we see that the market leverage ratio at the peak and trough is 9.1% and 7.6% higher, respectively, in the emerging markets when compared to the developed markets.

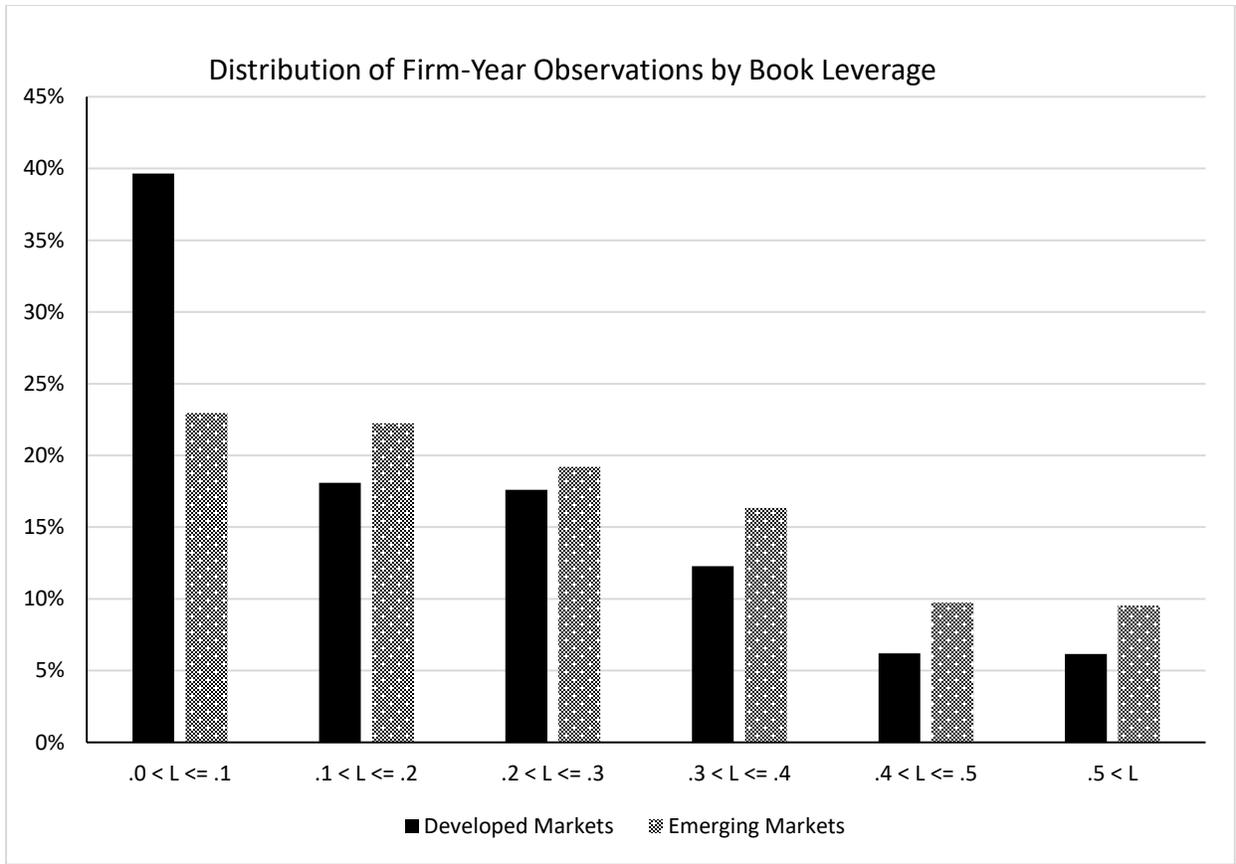


Figure 33: Firm-Year Observations by Book Leverage; L = Leverage

Figure 33 shows the same sample distribution in terms of book leverage. It gives a clearer picture into debt as a measure of a firm’s assets. It is very similar to figure 32, which is expected. The emerging markets are slightly more skewed towards the lower leverage ratios in figure 33 than in figure 32. Firms in emerging markets may hold on to slightly more assets relative to their developed market counterparts due to their unique challenges. Due to the riskiness in their markets, they may have to post more collateral, in the form of assets, to make their debt more attractive to investors. This also allows them to have access to lower interest rates making debt financing more cost effective in the long run. Comparing figures 23 and 8, we see that the book leverage ratio at the peak and trough is 6.4% and 5.7% higher, respectively, in the emerging markets when compared to the developed markets.

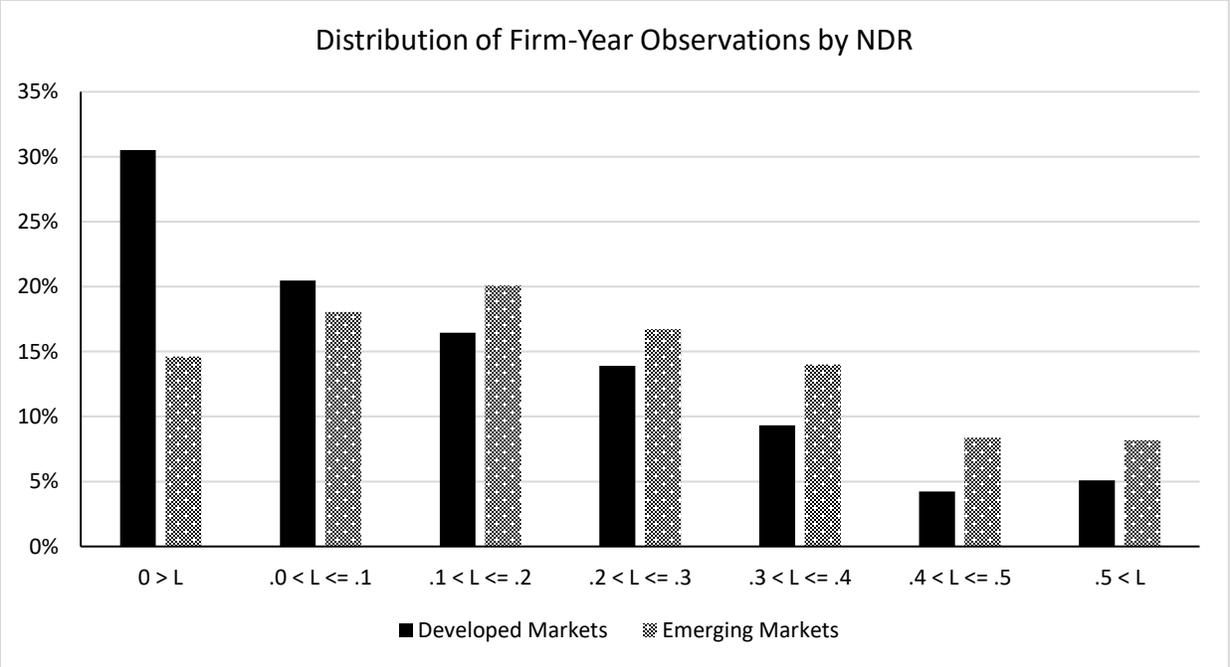


Figure 34: Firm-Year Observations by NDR; L = Leverage; NDR = Net Debt Ratio

31% of the developed markets sample has a negative NDR ratio, meaning that the firm’s debt, net of cash, over assets is less than 0. 15% of the emerging markets sample has a negative NDR.

The net debt ratio is equivalent to the book leverage ratio after removing cash balances. A net debt ratio of 0 or negative net debt means that a company has a higher cash balance than debt balance. The developed countries sample has a higher percentage of firm year observations nearing the zero or negative net debt. Comparing figures 23 and 8 above, the median net debt ratio at the peak and trough is 11% and 6.6% higher, respectively, in the emerging markets when compared to the developed markets.

In relation to the emerging markets, the developed country sample has a 5% greater median peak to trough decline across the entire sample. The developed countries sample has a 26% higher NDR change during the deleveraging period in comparison to the emerging markets. Lastly, the developed countries sample has a 14% greater BL change during the deleveraging period.

VIII. Findings

a. On Deleveraging and Cash Accretion

This paper demonstrates that Non-US publicly traded companies have a propensity to actively deleverage from their peak market leverage ratios. Figure 6 and figure 21 show that at almost any leverage ratio there is above or around a 50% chance for a firm to lower their leverage ratio. They also show that the higher the leverage ratio is at the beginning of the year, the higher the chance of deleveraging in the subsequent year. This shows that managers do not want to be highly leveraged if possible and will make decisions to lower their leverage more than not, especially so at the higher ML ratios of above 50%. While maintaining these preferences, managers also desire to have cash accretion during times of deleveraging. One can see in figure 8 and in figure 23 that for all firms, ML ratios decrease 76% and 90% for emerging and developed countries, respectively, from their median peak ML ratio to the subsequent trough. Simultaneously, there is a cash buildup of roughly 185% for both the emerging and developed samples. This shows that managers have an inclination to increase cash balances during this period, most importantly to acquire financial flexibility to meet possible future funding needs.

b. On Differences Between Developed and Emerging Countries

The market leverage ratio at the peak and trough is 9.1% and 7.6% higher, respectively, in the emerging markets when compared to the developed markets. This shows that there is a significant difference in the capital structure decisions of managers in emerging markets. The firms are, on average, more highly levered than their developed counterparts. The book leverage ratio at the peak and trough is 6.4% and 5.7% higher, respectively, in the emerging markets when compared to the developed markets. This was expected to be around the same as the ML ratio

comparison. The only reason it is slightly lower is due to the fact that relative to their own debt, emerging market firms carry more assets on hand than their developed market counterparts. Primarily to be able to post more collateral and to avoid liquidity/solvency issues in the future. The median net debt ratio at the peak and trough is 11% and 6.6% higher, respectively, in the emerging markets when compared to the developed markets. The developed markets have an easier time building cash balances and driving their net debt ratios to zero or even negative when compared to their emerging market counterparts.

Another considerable difference can be found in figures 21 and 6. Figure 6 shows the annual deleveraging propensities for developed country firms and figure 21 shows the same for the emerging market firms. For all firms, the average of the median annual changes of ML based upon the beginning of the year ML, in the developed sample is -7% while the changes are only about 4% in the emerging markets sample. In relation to the emerging markets, the developed country sample has a 5% greater median peak to trough decline across the entire sample. The developed countries sample has a 26% higher net debt/TA change during the deleveraging period in comparison to the emerging markets. Lastly, the developed countries sample has a 14% greater BL change during the deleveraging period.

IX. Conclusion

This paper has shed light into the topics of how publicly traded non-US firms that are a part of developed countries actively deleverage from their peak ML ratios and how there are key differences in the capital structure decisions of companies in developed countries and that of those in emerging market countries. We learned that managers do not want to be highly leveraged if possible and will make decisions to lower their leverage more than not. In addition, a key takeaway is that Non-US publicly traded companies have a propensity to actively deleverage from their peak market leverage ratios. We learned that there is a significant difference in the capital structure decisions of managers in emerging markets and that the firms are, on average, more highly levered than their developed counterparts.

Based on the results, there are many practical applications that managers could follow. Mainly, using this research to understand why, when, and how managers choose to deleverage. Also, the results shed light into how important cash accretion policies are and how they should be prioritized by management. This study raises a number of opportunities for future research. For instance, a future study could shed light into countries that were not mentioned in this study. Future studies could also analyze other time periods to compare and contrast how debt and manager's tendencies change over time. More research will be necessary to further elaborate the findings in this paper and as more data becomes available, future results and these results can be more refined.

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