

Financial Leverage and Firm Growth in Asia: A Snowball Effect of Godsend or Curse?

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Abstract

Using data from more than 6600 corporations in Asia over the last 30 years, this paper investigates the short to long term impact of corporate financial leverage on future growth. I find that there is a significant negative impact of leverage on growth among developed markets, while the opposite occurs in emerging markets. I also find that after the Global Financial Crisis, leverage becomes a burden for firm growth, which is the complete opposite as compared to previous data. The paper, thus, identifies a regional edge in utilizing the financial leverages to enhance the firms' production scale.

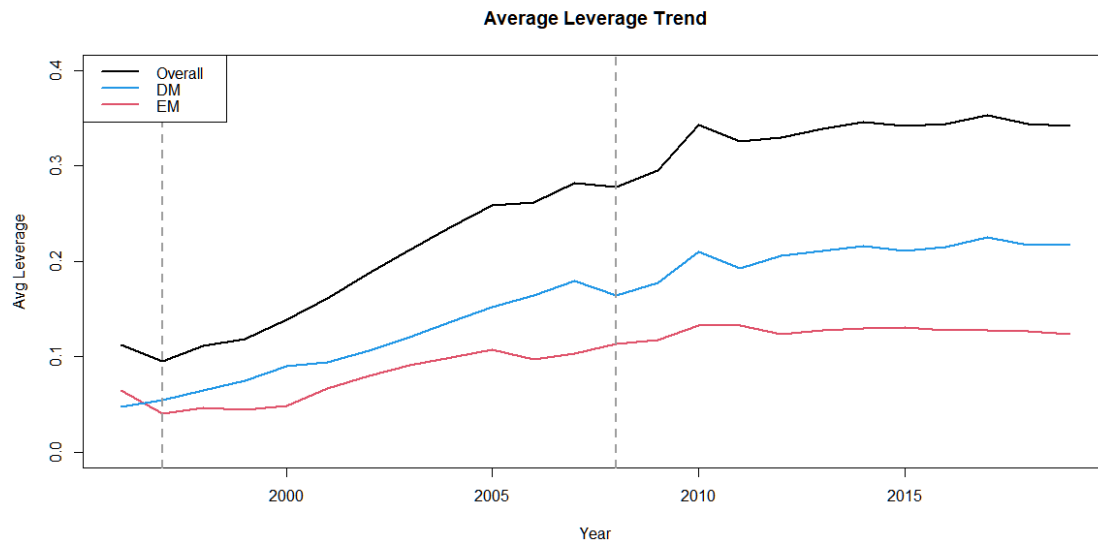
Keywords: Asia Firm Growth, Financial Leverage, Corporate Debts

1 Introduction

It is generally agreed that one of the main causes of the Global Financial Crisis was the overwhelming mortgage and subprime mortgage borrowing. While in the Asian Financial Crisis, the ratio of total credits to GDP was also at its new high. Literature shows that for both individual, corporates, and countries, leverages allow financial flexibility, liquidity, and stability. (Goyal et al., 2017) On the other hand, financial crises have a close relationship with credit expansion. There are reports pointing out the rapid credit expansion trend among corporates in Pacific Asia in the past decade. Ma Guonan (2019) found that China's corporate debt to GDP ratio has risen 65% in the past 10 years, which is one of the fastest among major economies. However, the drawbacks of having such high leverage are also obvious, it may lead to financial vulnerability and heavy interest expenses.

Figure 1 shows that average leverage ratio increased by more than 4 times from 8% to 35% during 1995 to 2010 and hold steadily afterward. This poses concern on whether the mounting financial leverage of firms will trigger another wave of financial instability, which ultimately leads to economic recession or even depression.

FIGURE 1 - TREND OF AVERAGE LEVERAGE



From a corporate perspective, to raise external funds for accelerating future growth, one may choose to either issue bonds or shares, the former can avoid dilution in shareholders' equity, but also lead to fixed recurrent interest expenses before the debt matures. However, the risk of high corporate debt is not limited to firm-level. High corporate default risk in major economies, for instance, China and Brazil, may spark a ripple effect, causing global financial volatility. In the recent COVID-19 crisis, many corporates issued new debt to stabilize the cash flow, continue the expansion and other perspectives. We may refer to the previous financial crisis to evaluate this phenomenon.

In the midst of the COVID 19 pandemic, the US Federal Reserve adjusted down the interest rate multiple times, which was followed by central banks worldwide. This global quantitative easing provides a lower-interest environment, which is favorable for raising corporate debts (OCED 2019). The effectiveness of raising debt for expansion, however, remains unclear. Therefore, the main objective of this paper is to examine the relationship between the firm's future growth with its financial leveraging, including, to what extent should a corporate borrow, how long is the impact of the financial leveraging on growth and etc.

The next section describes the data, variables, trends among observed markets and justifying variable choices. Section 3 presents empirical evidence identifying the general relationship between firm growth and corporate debts, causal relationship in response to the global crises and regional fixed effect related to leverage. This paper will end by concluding all the findings.

2 Data

To investigate the impact of financial leverage on the firm's growth, we need firms listed more than 10 years from different Asian markets to produce a comprehensive and objective result. Since financial firms have different revenue and capital structure, we will limit the scope to only non-financial firms in the Asia-Pacific (Own & Wan., 2020). Firm-level data are mainly collected from Bloomberg and different exchanges by web scraping. The two sources provided detailed panel

fundamental parameters for a wide range of listed companies on the mainboard of the selected Asian markets. The sample is an unbalanced panel data set consisting of 6667 non-financial firms from 1995-2020. Table 1 shows the summary statistics.

Emerging Markets

Emerging markets refer to economies which are at the fundamental stage of establishing a complete economic cycle and system. These economies are given the privilege to participate in the international capital flows, hence advantage from leveraging. (A. Mody, 2004)

The categorizations of emerging markets are vastly different. According to the International Monetary Fund, there are 30 emerging, or developing economies in Asia. Due to the data availability and scope limitation of the research, a total of 8 major players in the Asian emerging markets were chosen, they will be shown in the statistics summary table.

Lag terms

Our objective is to investigate the long-term borrowing's impact on firm growth with some control variables. To fully reflect the relationship between cross-year impact, it would be appropriate to defer all control variables by one year. Also, to fully investigate the short to long-term impact by leverage, I deferred the leverage lag term by 1 year, 3 years, 5 years, and 10 years.

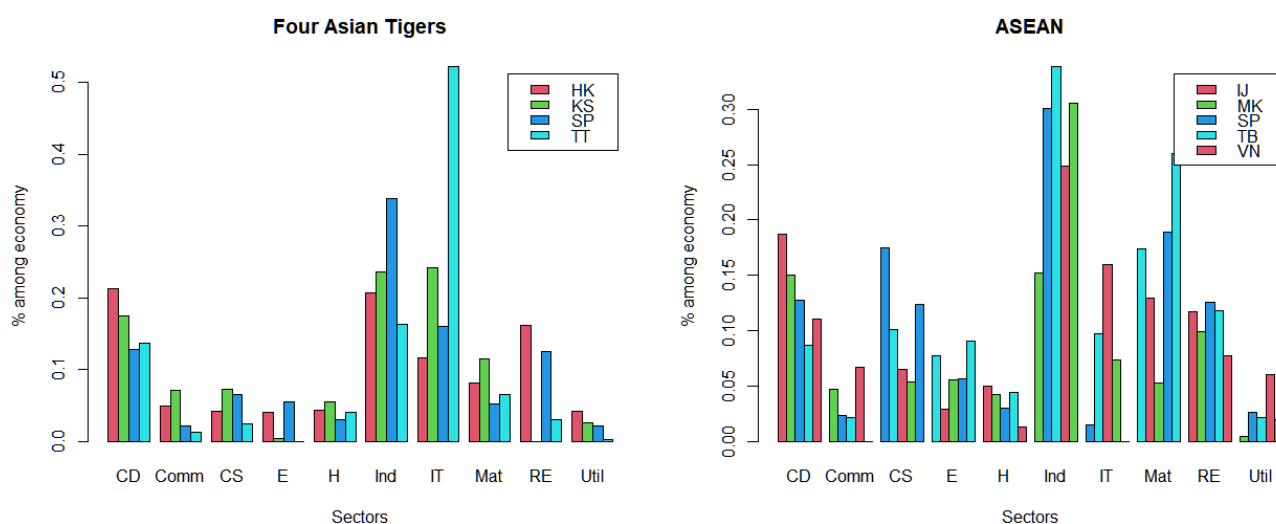
Revenue

D. Frédéric (1997) suggested several variables related to firm growth, such as sales, employment, and multiples. They are all good measures. However, the number of employees can be irrelevant with the growth with the rise of technology firms, also, technological firms can expand rapidly with a “burning money” strategy, an example will be Amazon. Therefore, sales would be the ideal measure among the available variables. For the purpose of showing percentage growth, we take logarithmic scales of sales.

Sample Characteristics

The more developed economies in Asia incline to IT and Real Estate sectors, while the

FIGURE 2 - DISTRIBUTION OF FIRM SECTORS



emerging markets are more specialized in Consumer Staples, Industrials and Materials. Both regions have similar proportion in Consumer Discretionary and Health Care.

Among all the economies, Japan, India, Indonesia and Thailand are the markets with relatively high average leverage. China is not highly leveraged in general; we can conclude that its massive total corporate debt amount is distributed among many low leveraged firms.

FIGURE 3 - AVERAGE LEVERAGE OF REGIONS

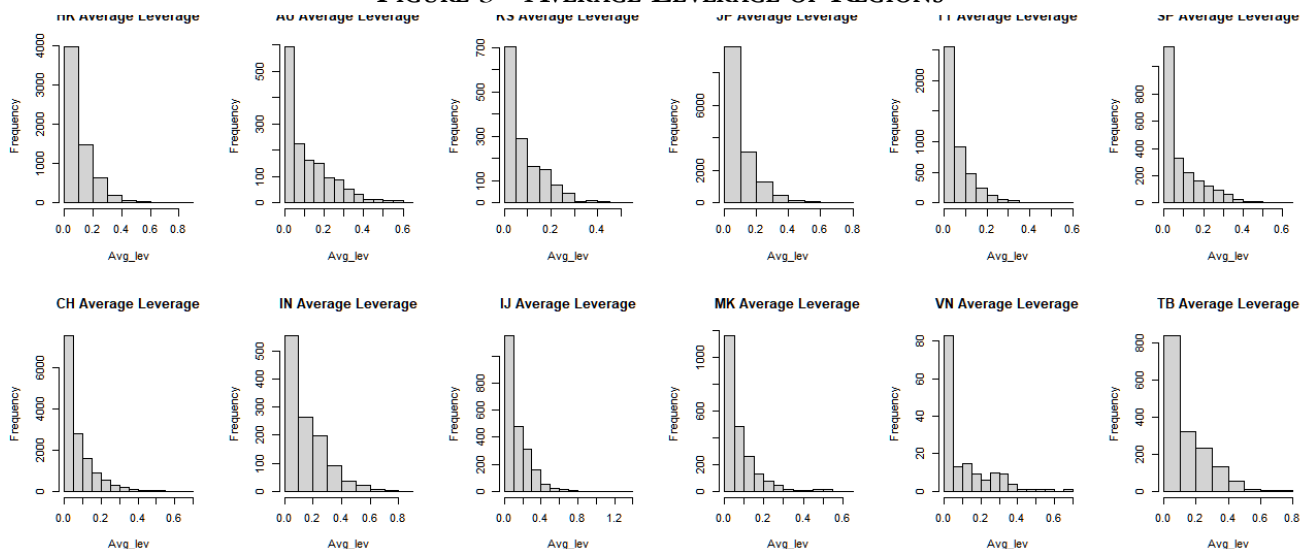


TABLE 1 - SUMMARY STATISTICS

| Statistic | Obs | Mean | St. Dev. | Obs | Mean | St. Dev. | Obs | Mean | St. Dev. | Markets | Firms |
|--------------------|-------|--------|----------|-------------------|-------|----------|------------------|-------|----------|---------|-------|
| <i>is_em</i> | 51896 | 0.413 | 0.492 | Developed Markets | | | Emerging Markets | | | AU | 288 |
| <i>IRv</i> | 51896 | 5.695 | 1.791 | 30465 | 5.71 | 1.815 | 21431 | 5.674 | 1.757 | HK | 880 |
| <i>INI</i> | 51896 | 2.675 | 1.993 | 30465 | 2.609 | 2.024 | 21431 | 2.769 | 1.945 | JP | 1638 |
| <i>lCap</i> | 51896 | 5.662 | 1.749 | 30465 | 5.565 | 1.783 | 21431 | 5.8 | 1.689 | KS | 306 |
| <i>lAsset</i> | 51896 | 5.978 | 1.738 | 30465 | 5.892 | 1.775 | 21431 | 6.099 | 1.676 | TT | 663 |
| <i>Invest</i> | 51896 | 2.249 | 34.701 | 30465 | 1.689 | 28.967 | 21431 | 3.045 | 41.499 | SP | 353 |
| <i>lCAPEX</i> | 51896 | 2.074 | 2.447 | 30465 | 1.862 | 2.514 | 21431 | 2.376 | 2.315 | | 4128 |
| <i>Lev_lag1</i> | 51896 | 0.088 | 0.179 | 30465 | 0.087 | 0.141 | 21431 | 0.09 | 0.222 | | |
| <i>Lev_lag3</i> | 51896 | 0.103 | 2.963 | 30465 | 0.11 | 3.857 | 21431 | 0.092 | 0.346 | CH | 1487 |
| <i>Lev_lag5</i> | 51896 | 0.088 | 0.207 | 30465 | 0.088 | 0.14 | 21431 | 0.089 | 0.275 | MK | 273 |
| <i>Lev_lag10</i> | 51896 | 0.089 | 0.154 | 30465 | 0.09 | 0.122 | 21431 | 0.089 | 0.191 | IJ | 238 |
| <i>Avg_lev</i> | 51896 | 0.092 | 0.755 | 30465 | 0.094 | 0.971 | 21431 | 0.09 | 0.199 | IN | 273 |
| <i>N_Yr_Listed</i> | 51896 | 17.524 | 8.568 | 30465 | 18.99 | 10.005 | 21431 | 15.44 | 5.298 | TB | 214 |
| <i>D_Hi_Lev</i> | 51896 | 0.177 | 0.382 | 30465 | 0.182 | 0.386 | 21431 | 0.17 | 0.376 | VN | 53 |
| <i>D_After</i> | 51896 | 0.873 | 0.333 | 30465 | 0.883 | 0.321 | 21431 | 0.857 | 0.35 | | 2538 |
| <i>is_ch</i> | 51896 | 0.272 | 0.445 | 30465 | 0 | 0 | 21431 | 0.658 | 0.474 | | |
| <i>is_tigers</i> | 51896 | 0.278 | 0.448 | 30465 | 0.473 | 0.499 | 21431 | 0 | 0 | | |
| <i>is_asean</i> | 51896 | 0.161 | 0.367 | 30465 | 0.072 | 0.258 | 21431 | 0.287 | 0.452 | | |

3 Empirical Results and Analysis

3.1 Dependent: *lRev* and *lNi*

Since revenue can objectively reflect the production ability and the scale of the firm, I chose it for the first model. Net income will be the dependent variable for the second model, although it involves the impact of management efficiency, it is still an appropriate proxy for assessing firm growth. Both dependent variables are scaled by log transformation. The multiple regression models are in the following form.

$$Y = \beta_0 + \beta_1 Lev_{lag1} + \beta_2 Lev_{lag3} + \beta_3 Lev_{lag5} + \beta_4 Lev_{lag10} + \beta_5 Invest + \beta_6 lAsset \\ + \beta_7 lCap + \beta_8 lCAPEX + \beta_9 N.Yr.Listed + \beta_{10} is.em + \epsilon$$

where $Y \in \{lRev, lNI\}$

The Breusch-Pagan Test shows that the random model is more reliable, and the Hausman Test shows that the fixed effects and random models are not consistent. Therefore, the fixed effect model is more preferred.

The negative coefficient of leverage in the regression result demonstrated a general trend that financing with long-term borrowing is harmful to the firm.¹ Although borrowing has a smaller long run effect, but it is still significant that leverage brings negative impact on firm's revenue growth even in 5 and 10 years.

It is important that how the firms utilize the capital raised by debts, as the *lCAPEX* is consistently significantly positive. In fact, some papers conducted similar experiments in the Euro area countries and found a positive impact of leverage on firm growth. (S. Gebauer et al., 2018) This may reflect Asian companies' incapability to efficiently convert the capital raised by long term debts into growth driver through profitable investment.

One thing interesting to note is, the *Lev_lag3* is not consistently insignificant while *Lev_lag1* and *Lev_lag5* do. This implies the first lag term explained most of the thing, and there is no significant difference in the impact brought by debts during the first 5 years of raising debts.

Another highlight is when the dependent variable is switched to *lNI*, the negative impact on *Lev_lag1* and *Lev_lag5* lessen, but the *Lev_lag10* becomes even negative, while the overall R-square decreased. The strong evidence showing the interest expenses would become a significant burden for the firm as time eclipsed. Also, the impact from *N_Yr_Listed* changed from positive to negative, showing that as the firm gets older, the revenue growth accelerates but the net profit growth slowed down, implying internal diseconomies of scale among Asian firms in general.

Finally, the results show that *is_em* is significantly negative in both models, reflecting that the emerging markets' revenue and net income are both lower than developed economies in general. However, the coefficient increased in net income model, meaning the revenue difference

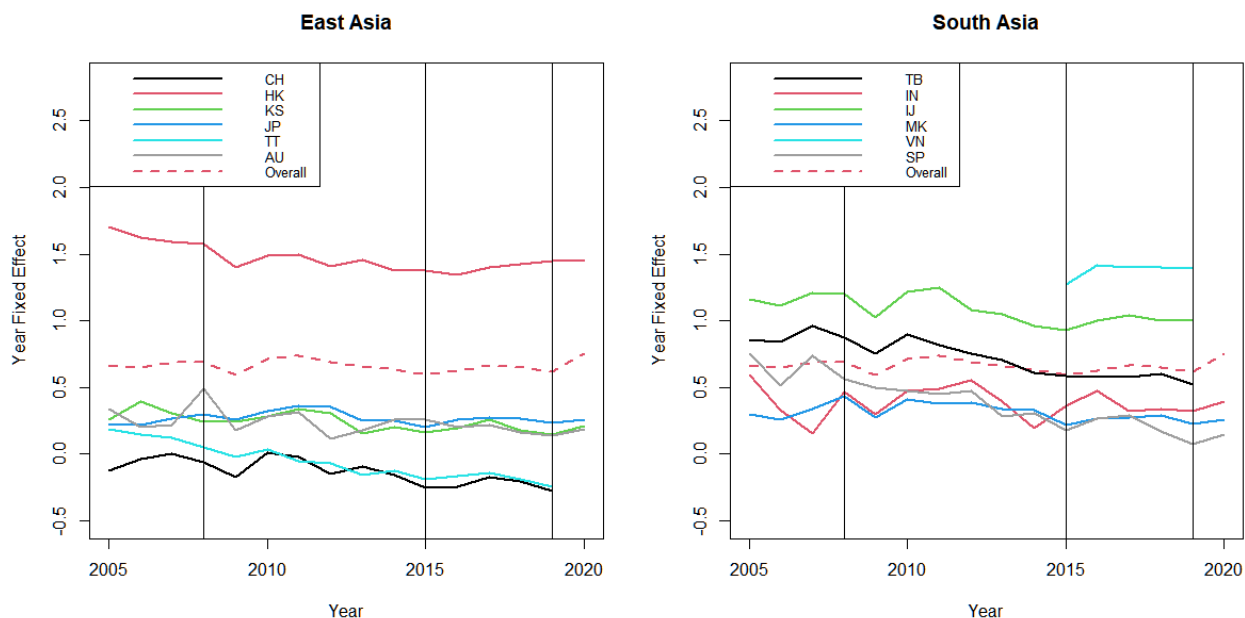
¹ See Appendix - Table 5

narrowed down in net income.

3.2 Investigating Time Fixed Effects

The following figure (Fig 4) shows the overall and market specific time fixed effect.

FIGURE 4 - TIME FIXED EFFECT



From the figure, the overall time fixed effect is generally stable, and a few interesting facts are worth discussing. The three vertical lines stand for 2008 Global Financial Crisis, 2015 Chinese stock market turbulence and 2019 COVID-19 outbreak.

In 2008, it is clear that the fixed effect dropped in the following few years. Despite the fact that it recovered to the pre-crisis level in around 2010, this illustrated that the crisis not only led to a slump in the US, but it also hit all the observed economies. The 2015 turbulence in China generally led to a decrease in fixed effect in East Asia, while an increase in South Asia, probably due to the capital transferral which had a positive impact on IRv . Finally, the when the COVID-19 pandemic hit, the fixed effect dropped in 2019, but most of the economies reported 2020 data showed a significant increase in fixed effect. It is believed that the phenomenon is driven by the quantitative easing of different central banks. (R. Sanglap et al., 2020) Evidence shows,, Japan is relatively stable in 2020, because it has been at the zero-lower-bound for many years and is the only that economy did not perform quantitative easing.

Another interesting observation is, the time fixed effects in South Asia demonstrated a similar pattern while East Asia does not. Plus, the South Asian markets are more volatile. Showing that the South Asian Markets are sensitive to macroeconomic variables as a whole, while East Asia, most developed economies are relatively invulnerable to the macro environment.

3.3 Causal Inference

To further identify the causal relationship between financial leverage and firm growth, I

conducted a Difference-in-Difference model before and after 2008 as the following. To avoid the endogeneity problem, we took away the 2020 data, as only 2 markets provided financial data as of June 2020.

Treatment group: firms with leverage 1 SD higher than the whole universe 10 years ago.

Control group: firms with leverage 1 SD lower than the whole universe 10 years ago.

$$lRv = \alpha + \delta_0 D_{2009,i} + \delta_1 Hi.Lev_i + \delta_2 D_{2009,i} \times Hi.Lev_i + \gamma'X + \epsilon$$

where $X \in \{lAsset, lCap, lCAPEX, Num.Yr.Listed, is.em\}$

With the assumptions of no anticipation and parallel trend, we have the following findings.

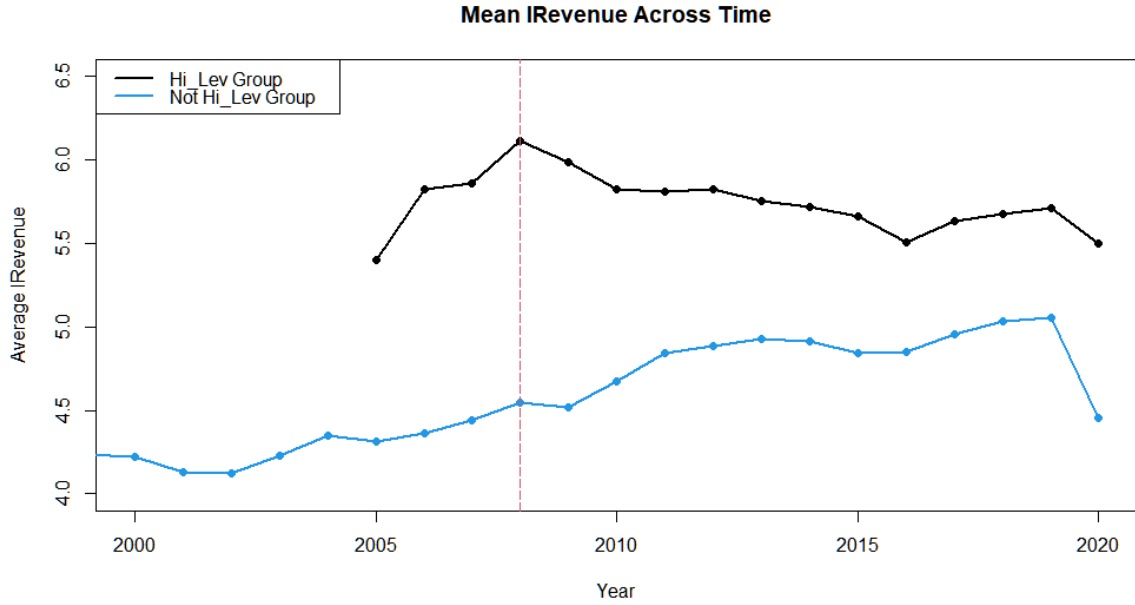
TABLE 2 - DiD MODEL REGRESSION RESULT

| <i>Dependent variable: lRv</i> | | | | | | |
|--------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>D_After</i> | 0.219*** (0.026) | -0.041*** (0.013) | -0.029** (0.012) | 0.003 (0.012) | -0.01 (0.012) | -0.019 (0.012) |
| <i>D_Hi_Lev</i> | 0.715*** (0.054) | 0.002 (0.026) | 0.041 (0.025) | 0.009 (0.025) | -0.001 (0.025) | -0.027 (0.024) |
| <i>lAsset</i> | | 0.911*** (0.002) | 1.856*** (0.015) | 1.817*** (0.015) | 1.797*** (0.015) | 1.782*** (0.015) |
| <i>lCap</i> | | | -0.950*** (0.015) | -1.065*** (0.015) | -1.053*** (0.015) | -1.037*** (0.015) |
| <i>lCAPEX</i> | | | | 0.136*** (0.002) | 0.138*** (0.002) | 0.143*** (0.002) |
| <i>N_Yr_Listed</i> | | | | | 0.006*** (0.000) | 0.003*** (0.000) |
| <i>is_em</i> | | | | | | -0.221*** (0.007) |
| <i>D_After:D_Hi_Lev</i> | -0.245*** (0.059) | -0.179*** (0.028) | -0.164*** (0.027) | -0.159*** (0.026) | -0.148*** (0.026) | -0.130*** (0.026) |
| Observations | 50,315 | 50,315 | 50,315 | 50,315 | 50,315 | 50,315 |
| R ² | 0.013 | 0.772 | 0.789 | 0.801 | 0.801 | 0.805 |

Note: Significance levels are indicated as * for p<0.1, ** for p<0.5, and *** for p<0.01.

The table shows that the time effect on lRev is insignificant when we add more control variables. However, we can see that even with other significant control variables, the Cross-product term *D_After:D_Hi_Lev* term is consistently significant and negative. To interpret this result, we can plot the trend to have a general view.

FIGURE 5 - TREND OF AVERAGE LOG-REVENUE



From the above figure, we can see that before 2009, both groups' average revenues are growing, while the *Hi_Lev* group has an obvious stronger growth. Perhaps because leverage provides stronger cash flows and enabled the firms to engage in capital investment activities. However, a turning point emerged in 2009, one year after the Global Financial Crisis. The highly leveraged firms' growth slowed down, and its counterparts accelerated. We can observe the gap between the two groups has been closing down since 2009. This is illustrated as a negative causal relationship of the Global Financial Crisis on the leveraged firms' growths. One explanation is that the crisis amplified the burden of interest expenses on the highly leveraged firm and thereby dragged down the growth in the long run.

Another observation is that less leveraged firms show a relatively stable trend on *lRev*, this means leverages amplified the changes of business environment on firm growth. Summarizing the above observation, we can conclude that the high financial leverage caused *lRv* to drop after the Global Financial Crisis.

3.4 China vs others and EM vs Dev Fixed Effect

The International Monetary Fund (IMF 2020) is aware of the problem of leverage in Asia, especially China, who is also the main driver of the EM debt surges. In the following model, the key focus is assessing the additional effect of leverage on growth given by the market using dummy variables.

$$\begin{aligned}
 lRv = & \beta_0 + \beta_1 Lev_{Lag1} + \beta_2 Lev_{Lag1} \times D_{geo} + \beta_3 Lev_{Lag5} + \beta_4 Lev_{Lag5} \times D_{geo} \\
 & + \beta_5 Lev_{Lag10} + \beta_6 Lev_{Lag10} \times D_{geo} + \beta_7 lAsset + \beta_8 lCap \\
 & + \beta_9 lCAPEX \times D_{geo} + \epsilon
 \end{aligned}$$

where $D_{geo} \in \{is.ch, is.em, is.tigers, is.asean\}$

Results are as follow:

TABLE 3 - REGIONS FIXED EFFECTS AND INTERACTION WITH LEVERAGE

| | <i>Dependent variable: lRv</i> | | | |
|--------------------------------|---------------------------------|----------------------|----------------------|----------------------|
| | is_ch | is_em | is_tigers | is_asean |
| <i>Fixed Effect</i> | -0.381*** (0.013) | -0.340*** (0.010) | -0.073*** (0.011) | -0.154*** (0.012) |
| <i>Lev_lag1 :</i> | -1.591*** (0.078) | 0.080* (0.045) | -0.272*** (0.049) | 0.451*** (0.045) |
| <i>Lev_lag5 :</i> | -0.260*** (0.079) | 0.241*** (0.044) | -0.429*** (0.048) | 0.329*** (0.047) |
| <i>Lev_lag10 :</i> | 0.076 (0.078) | -0.022 (0.051) | -0.620*** (0.062) | -0.204*** (0.049) |
| <i>ICAPEX:</i> | 0.100*** (0.004) | 0.043*** (0.003) | 0.014*** (0.003) | 0.005 (0.004) |
| <i>Other Control Variables</i> | <i>All included except lCap</i> | | | |
| Observations | 51,896 | 51,896 | 51,896 | 51,896 |
| R ² | 0.812 | 0.809 | 0.807 | 0.806 |

Note: Significance levels are indicated as * for p<0.1, ** for p<0.5, and *** for p<0.01.

The table regression model is arranged in the sequence of *is.ch*, *is.em*, *is.tigers* and *is.asean*. Results show that China has an additional disadvantage of borrowing short and medium run, while it also has the most outstanding extra benefit from *ICAPEX* among the models. This implies investing in China can effectively prompt firm growth; the firms, however, cannot fully capture this benefit with the borrowed capital, leading to a negative impact of borrowing in the short to medium run.

On the contrary, for the overall emerging markets, borrowing and capital expenditure have a significantly positive impact on firm growth in short to medium run over developed markets. Meaning borrowing creates only short to medium run benefits in emerging markets. The Four Asian Tigers, however, does not have an edge in utilizing leverages, the interactive terms are significant and increasingly negative, except *ICAPEX*, which has a positive impact. Showing that the firms in the former emerging markets encountered a bottleneck in further expansion.

Lastly, the ASEAN members presented strong evidence that leverages are exceptionally beneficial for newly developing markets. Leverages created a significantly huge positive impact in both short and medium run despite negative in long run comparing to non-ASEAN markets. Meanwhile, *ICAPEX* has significant positive effect, which matches the fact that service has been the main driver of economic growth in Southeast Asia, as technologies superiority is not as important as in the manufacturing industry. (IGC et al., 2010) Recently, Southeast Asia is transforming into the role of the manufacturing hub of Asia because of China's surge in land and

labor cost². Therefore, the coefficient of *ICAPEX* may further increase in the next 10 years.

4 Conclusion

This analysis finds empirical evidence for a negative impact on finance leverages on firm growth across the past 20 years, mainly since the 2008 Global Financial Crisis. Financial leveraging is inevitably hurting firm sales in the short run, but some economies appear to have a significant positive impact in the long run with leverages and capital investment. This means, the impact of leveraging depends on the macroeconomic environment and the capability of the management to convert new capital into a profitable investment.

The time fixed effect analysis unveiled that Global Crises led to a decrease in average sales in the past, with the quantitative easing, the revenue is possible to increase during crises. The DiD regression model unveil the significant causal relationship that the Global Financial Crisis caused highly leveraged firms to slow down from rapid growth before, despite a general uptrend in Asia. Making borrowing not decent anymore in general.

It should be noted that the macro environment in Asia has changed a lot in the past 30 years drastically, the econometric results and the economic interpretations are based on the long period from 2005 and data from earliest 1995. Given that, firms from emerging markets still demonstrated strong positive short and medium impact with financial leverages and capital investment. We can conclude that financial leveraging has a snowball effect in the emerging markets, but is a curse during a global crisis. Thus, under the low-interest environment, managers of emerging markets should consider utilizing this advantage, leverage on credits to expand the production scale.

² HSBC The Economist Group: Thailand, Vietnam and the evolution of ASEAN manufacturing.

5 Appendix

TABLE 4 - LIST OF VARIABLES

| Variables | Description |
|--------------------|--|
| <i>lRv</i> | Logged Revenue, lagged 1 year. |
| <i>lNI</i> | Logged Net Income, lagged 1 year. |
| <i>lCap</i> | Logged Total Capital, lagged 1 year. |
| <i>lAsset</i> | Logged Total Asset, lagged 1 year. |
| <i>Invest</i> | Absolute value of Capital Expenditure/Operating Cash Flow. |
| <i>ICAPEX</i> | Logged Capital Expenditure, lagged 1 year. |
| <i>Lev_lag1</i> | Leverage (Total Long-term Debts/Total Asset), lagged 1 year. |
| <i>Lev_lag3</i> | Leverage (Total Long-term Debts/Total Asset), lagged 3 year. |
| <i>Lev_lag5</i> | Leverage (Total Long-term Debts/Total Asset), lagged 5 year. |
| <i>Lev_lag10</i> | Leverage (Total Long-term Debts/Total Asset), lagged 10 year. |
| <i>N_Yr_Listed</i> | Number of years since Initial Public Offering. |
| <i>D_Hi_Lev</i> | Dummy variable for firms have <i>Lev_lag10</i> 1 SD higher than the whole universe. |
| <i>D_After</i> | Dummy variable for observations after 2008. |
| <i>is_em</i> | Dummy variable for firms from emerging markets. |
| <i>is_ch</i> | Dummy variable for firms from Chinese market. |
| <i>is_tigers</i> | Dummy variable for firms from the Asia Four Tigers. (HK, KS, TT, SP) |
| <i>is_asean</i> | Dummy variable for firms from ASEAN. (IJ, MK, SP, TB, VN) |
| <i>Sector Code</i> | Categorical variable representing the firm's sector according to GICS: Consumer Discretionary, Consumer Staples, Communication Services, Energy, IT, Industrials, Health Care, Materials, Real Estate and Utilities. |

TABLE 5 - ESTIMATION RESULTS

| | <i>Dependent variable: lRv</i> | | | | | | | <i>Dependent variable: lNI</i> | | | | | | |
|--------------------|--------------------------------|---------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|--------------------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| <i>Lev_lag1</i> | 1.034*** (0.044) | 0.809*** (0.048) | -0.559*** (0.023) | -0.453*** (0.022) | -0.472*** (0.022) | -0.464*** (0.022) | -0.473*** (0.022) | 1.370*** (0.048) | 1.117*** (0.054) | -0.300*** (0.031) | -0.310*** (0.031) | -0.319*** (0.031) | -0.328*** (0.031) | -0.331*** (0.031) |
| <i>Lev_lag3</i> | | -0.004 (0.003) | 0.001 (0.001) | 0.001 (0.001) | 0.001 (0.001) | 0.001 (0.001) | 0.0004 (0.001) | | -0.005* (0.003) | 0.0001 (0.002) | 0.0001 (0.002) | -0.0001 (0.002) | -0.0001 (0.002) | -0.0001 (0.002) |
| <i>Lev_lag5</i> | | 0.179*** (0.042) | -0.132*** (0.020) | -0.111*** (0.019) | -0.104*** (0.019) | -0.105*** (0.019) | -0.105*** (0.019) | | 0.251*** (0.047) | -0.072*** (0.027) | -0.074*** (0.027) | -0.070*** (0.026) | -0.069*** (0.026) | -0.069*** (0.026) |
| <i>Lev_lag10</i> | | 0.738*** (0.053) | -0.143*** (0.025) | -0.068*** (0.024) | -0.123*** (0.024) | -0.128*** (0.024) | -0.139*** (0.023) | | 0.719*** (0.058) | -0.195*** (0.033) | -0.202*** (0.033) | -0.228*** (0.033) | -0.223*** (0.033) | -0.227*** (0.033) |
| <i>Invest</i> | | -0.0003 (0.000) | -0.0003** (0.000) | -0.0002* (0.000) | -0.0005*** (0.000) | -0.0005*** (0.000) | -0.0004*** (0.000) | | -0.001** (0.000) | -0.001*** (0.000) | -0.001*** (0.000) | -0.001*** (0.000) | -0.001*** (0.000) | -0.001*** (0.000) |
| <i>lAsset</i> | | | 0.922*** (0.002) | 1.837*** (0.015) | 1.797*** (0.014) | 1.775*** (0.014) | 1.761*** (0.014) | | | 0.956*** (0.003) | 0.866*** (0.020) | 0.848*** (0.020) | 0.871*** (0.020) | 0.865*** (0.020) |
| <i>lCap</i> | | | | -0.922*** (0.015) | -1.034*** (0.015) | -1.021*** (0.015) | -1.006*** (0.014) | | | | 0.090*** (0.020) | 0.037* (0.020) | 0.024 (0.020) | 0.029 (0.020) |
| <i>lCAPEX</i> | | | | | 0.135*** (0.002) | 0.136*** (0.002) | 0.142*** (0.002) | | | | | 0.063*** (0.003) | 0.061*** (0.003) | 0.063*** (0.003) |
| <i>N_Yr_Listed</i> | | | | | | 0.006*** (0.000) | 0.003*** (0.000) | | | | | | -0.006*** (0.001) | -0.007*** (0.001) |
| <i>is_em</i> | | | | | | | -0.222*** (0.007) | | | | | | | -0.081*** (0.010) |
| Observations | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 | 51,896 |
| R ² | 0.011 | 0.015 | 0.777 | 0.792 | 0.804 | 0.805 | 0.808 | 0.015 | 0.019 | 0.682 | 0.683 | 0.685 | 0.685 | 0.686 |

Note: Significance levels are indicated as * for p<0.1, ** for p<0.5, and *** for p<0.01.

6 References

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